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UNIVERSITY OF TORONTO

THE Psychological Bulletin

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THE PSYCHOLOGICAL BULLETIN

SPRING SUSPENSION FOR LABORATORY MOTORS.

Small motors of high velocity, such as are used in laboratories in verifying the laws of color-mixing or in driving apparatus, when left free on a table or clamped to it, produce a noise that is troublesome and under some circumstances intolerable. This fact led five or six years ago to a trial of certain remedies, one of which proved thoroughly satisfactory and has been in use here since that time. By this means the reduction of noise is about as great as that effected by holding the motor in the hands, so that a large number of motors may be in use in a room at the same time without disturbing individual concentration or instruction or making a noise that is felt to be disagreeable by the average person.

The device consists of suspending the motor by one or more springs, according to the position and work required.

Fig. 1 represents the mode of suspension for a color-mixer rotating in a vertical plane.

The more extensible the spring the less will the motor be able to communicate vibration to the point of suspension; long, extensible springs have this advantage, but rather short and stiff springs will give results sufficiently good for most purposes. The springs employed have usually been from four to eight inches long and have stretched from two to four inches respectively from the weight of the motor.

The point of suspension may, of course, be anything suitable, such as the arm of a standard, which is convenient if the motor is to be moved about, as may be the case in giving demonstrations before a class; attachment by means of a wire to a hook in the ceiling is also a good way, especially for motors to be used in general laboratory practice.

As the motor hangs free, it can easily be turned and moved in any direction so as to bring the discs into the best light or to the point for most convenient inspection. Rocking or twisting movements of the

motor have not proved troublesome; the motors keep the plane of rotation quite steady, partly no doubt because of the very considerable gyroscopic force developed, the effects of which are easily detected

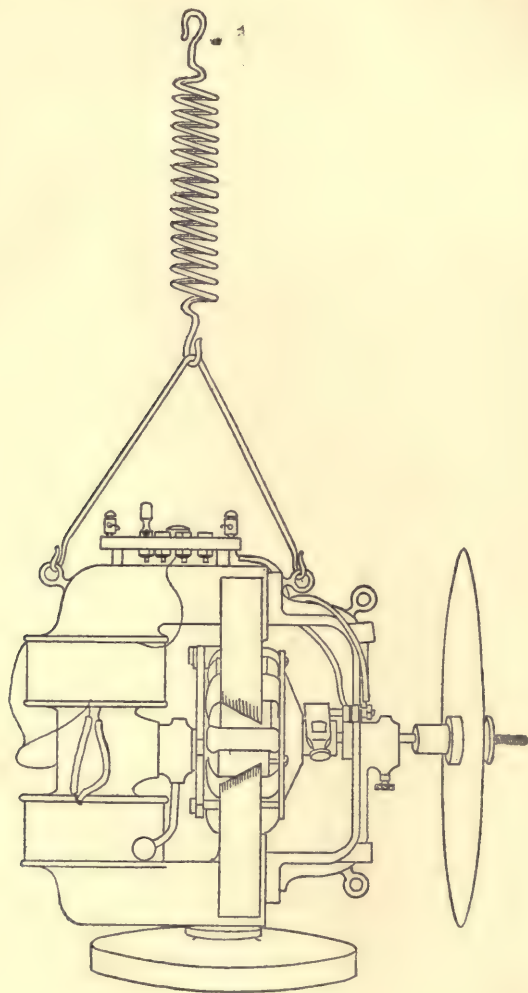


FIG. 1.

when a motor is held in the hands and its plane of rotation is forcibly and suddenly altered.

Motors with heavy armatures keep in motion so long after the current is turned off that the use of a brake is very desirable. It

would be well if motors of this type, when constructed especially for color experiments, were fitted from the start with brakes; if they are not so equipped, a simple form of brake can be made by screwing a short cylinder on in front of the disc holder, to which friction is then applied by means of a U-shaped metal band fitting closely over it.

The measuring and changing of discs is a little more difficult than when the motor is fixed in position; some would perhaps on that account prefer the plan illustrated by Fig. 3, in which the motor is hung by two springs and is in a more stable position. For purposes of color-mixing, if this plan is adopted, it would be better to have the

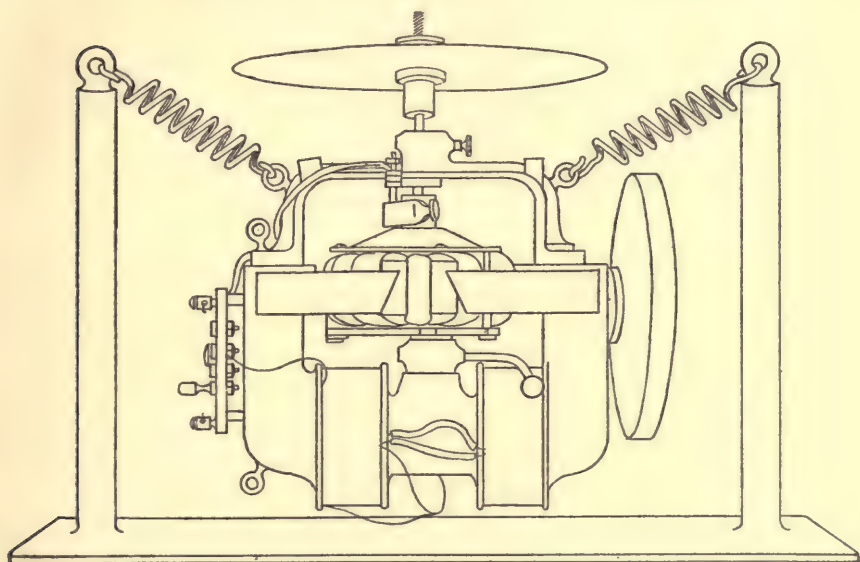


FIG. 2.

clamp part of the fixture turned half way around so as to make the arm project away from the table, especially if the table is broad.

Fig. 2 represents the mode of suspension for rotation in a horizontal plane, such as is necessary, for example, in mapping out the color fields with the aid of the campimeter. The position is stable and in every way convenient for the purpose it serves.

Fig. 3 represents one of the several possible applications of the plan of spring suspension in the case of motors used for running laboratory apparatus. The motor may be placed below or at the sides as well as above, as represented here; while the application of the

plan affords no special difficulties in any position, the position above is perhaps the most generally serviceable.

In any case, the thing important is to have the spring over the belt wheel of the motor a little shorter or stronger than the other, so

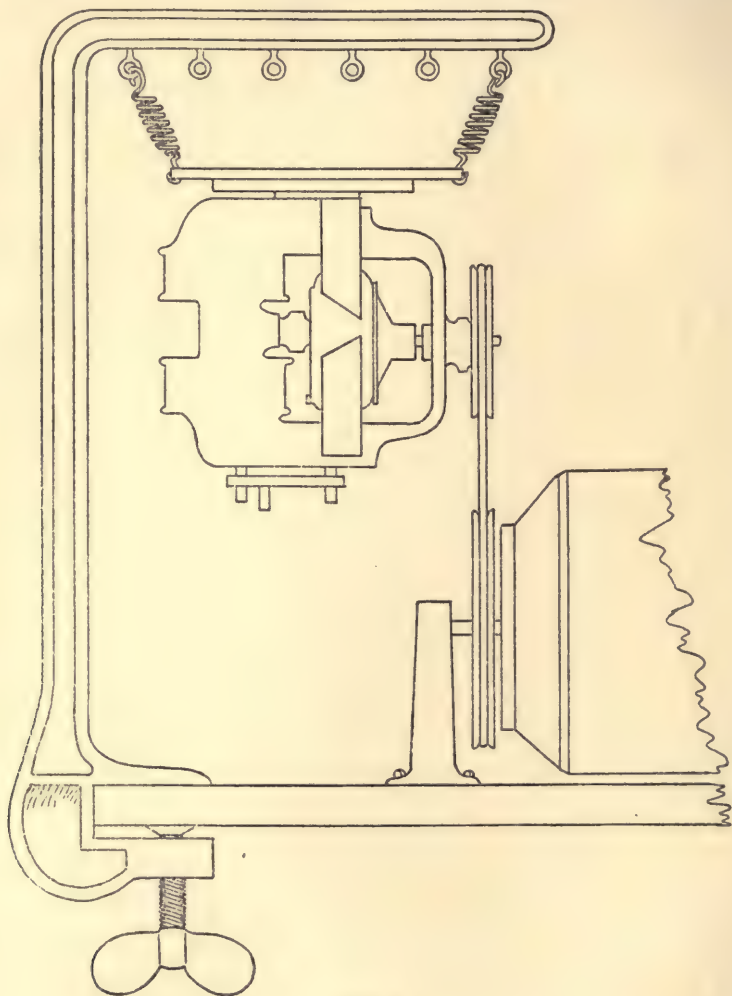


FIG. 3.

that this end of the motor must be pulled down an inch or so to bring the axis of the motor parallel with the axis of the apparatus which it is to run. The belt should be just long enough to keep the motor in this parallel position.

The arrangement does not merely reduce the noise, but, what may be more important in some cases, it largely prevents vibration and keeps the belt, which may be quite short, always tight.

Some reduction in noise and vibration may be secured by giving the motor a spring base; but the base will be comparatively rather stiff, and as good results have not been obtained with this as with the plan of suspension.¹

JOHN A. BERGSTRÖM.

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¹The MS. of this article was received November 17, 1904.—ED.

MEETING OF THE NORTH CENTRAL SECTION OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION.

A meeting of the North Central Section of the American Psychological Association was held in Chicago, November 26, 1904, in the building of the Northwestern University. Professor W. D. Scott, of Northwestern University, presided. Thirty-five persons attended the meeting. The following papers, presented by members of the association and others, were read and discussed:

ABSTRACTS OF PAPERS.

1. *Is Subjective Idealism a Necessary Point of View for Psychology?*
STEPHEN S. COLVIN, University of Illinois.

The speculative attitude of the psychology of to-day in regard to reality tends towards subjective idealism. The chief argument for this view is that the senses give us only a mediate, and hence inadequate, knowledge of externality. This argument can establish its contention as to the relativity of perception only by holding that certain perceptions are not relative. As an additional support to its thesis subjective idealism also holds to the proposition that we know only our individual conscious states. This may mean either: (a) I can have, as an object of direct, intuitive knowledge, only my past conscious states; or, (b) that in any mental state which I may possess my knowledge is limited to a content which is itself a part of that mental state. Both of these propositions, when analyzed, end in self-contradiction, and subjective idealism becomes an absurdity by reducing the mental life to psychic atomism.

2. *The Genesis of Meaning.* I. E. MILLER, State Normal School, Milwaukee.

The analysis of an act into the two phases, stimulus and response, is not a complete account of activity. It gives a cross-section view only. Studying activity in continuity, we see that out of the motor response arise new sensory experiences, which may in turn serve as new stimuli to still further action. Moreover, if the original stimulus recurs, the outcome of motor response can now be anticipated. Such anticipation of the outcome of motor response to a stimulus is meaning. Analysis of the state of consciousness concerned reveals it as

suffused with motor tendency. It is in a state of tension. It is undergoing a subtle species of disruption, the more immediate phase becoming symbol, the more remote, meaning. Symbol and meaning, evolving thus together, are strictly correlative.

3. *Relation of Sensation and Revived Mental Processes.* T. H. HAINES and J. C. WILLIAMS, Ohio State University. (Appearing in full in the *PSYCHOLOGICAL REVIEW*.)

The control of the visual after-image affords a unique case for the examination of the relation of sensational and revival processes to each other. The attention process is similar in the study of after-images and memory images. This paper exhibits experimental evidence of the interference of a voluntarily aroused subjective color impression (memory image) with the after-image.

How do these processes interfere? H, as observer, when trying to control the after-image, for a given color, often lost entirely the point of departure of the after-image and went on observing the play of colors for as much as a minute longer than the normal after-image ever lasted for him. The imagination product so nearly simulated the retinal product that it was mistaken for it, and this in an individual who is by no means a strong visual. There seems to be no doubt that the after-image is a retinal affair, and the fact of this so close similarity of the memory or revived image of color seems to us to indicate a retinal factor in its generation. The function of the efferent sensory fibers, so-called, of the optic nerve would bring this peripheral apparatus into play without objective stimulus.

4. *The Vehicle of Cognition.* B. H. BODE, University of Wisconsin.

According to Hume the atomic sensation is the sole vehicle of cognition; according to Kantianism sensation is not cognitive at all, except through the relating activity of thought. Kantianism rightly denies that sensation as thus conceived can be cognitive, but suffers from this misconception of sensation, which it borrows from Hume. This error is corrected by James, who in turn errs when he attempts, like Hume, to make sensation the sole mode of cognition. The attempt appears plausible, because relations without terms are substituted for the experience of relations together with their terms. Similarly Bradley and Bosanquet. In Stout's imageless apprehension due recognition is temporarily accorded to the idea. Sensation or image and idea are distinct modes or vehicles of cognition.

5. *Psychological Method.* C. A. BLANCHARD, Wheaton College.

There is a tendency in our time to make Psychology a chapter of Physiology. The nervous system and the psychic powers are intimately connected, hence some careless thinkers have identified them.

The subject matter of Psychology is known only by consciousness. No sense perception can attain either to mind or the products of mind.

The physical reactions of mind are unreliable, — they vary with the constitution of different persons, or with the physical state of the same person at different times.

Still further, if physical reactions were constant for all men at all times, the psychological observer who works through the senses is dependent upon the ability and disposition of the person to report correctly his psychic activities.

The method of introspective study of psychic phenomena by the individual, and comparison with the results of like study on the part of other men, is the only serious and complete method for the study of psychology.

6. *An Iowa Case of Complete Congenital Cataracts, in which Vision was Acquired by the Removal of the Lenses of Both Eyes after Twenty-two Years.* JAMES BURT MINER, University of Iowa.

Partial report was made of a few of the tests on Bertha R. Witmer. Miss Witmer's eyes were operated on in 1902 by Dr. W. L. Dean. Color discrimination was found to be about normal, in spite of the almost total disuse previous to the operations. The black square appears larger than the white of the same size. This reversal suggests that irradiation is mainly central, rather than peripheral. Probably it is due to the emphasis on dark instead of bright objects in the subject's experience before the cataracts were removed. Interrupted space seems shorter. It was suggested that this might be explained by the subject's difficulty in following a continuous line, which comes from the abnormal tendency of her eyes to twitch. The parallel-line illusions of Hering and Wundt are apparently not obtained in the usual manner. The Müller-Lyer arrow-illusion maintains. Contrary to medical opinion, hints of binocular vision have been obtained.

7. *The Relation of Psychology to Logic.* HARRIET S. PENFIELD, Rockford College.

8. *The Functional Theory in Psychology and the Concept of Transcendence.* J. H. FARLEY, Lawrence University, Wis.

Functional theories emphasize the dependent, the changeable,

and are correlative to dynamism in science and the tendency away from the identity of exclusion and unchangeableness in metaphysics. But these very theories often embody the identity of exclusiveness in the very concepts of movement, change and purpose. In so far as they interpret consciousness or thought in terms of the biological or mechanical movements as such, the union of the logical with the psychological event must remain only external, for every movement or change, considered as a biological or mechanical fact, is a completed movement. Every movement implies anticipation. The self active purpose alone realizes the concrete flow. In the life of depleted sense experience, the concept of definition must take the place of the completed and divorced abstractions of representativism, and in the perceptive life the notion of identification must supersede that of presentativism.

9. *The Psychology of Linguistic Development in the Individual.*
M. V. O'SHEA, University of Wisconsin.

The primitive cry of the infant has from the outset modifications for the trained ear, by which bodily needs and emotions are expressed. Expressional activity, reflex to about third month, appears in response to personal stimuli about fourth month. Vocal activity for first three months is limited to vowels, then labials, dentals, gutturals. Vocal play begins about fourth month, when the child accidentally hits the mark, others take it up and impress it so that he repeats it, with occasional variations but little true invention. At first the child in interpreting expression relies wholly upon gesture, facial expression and vocal timbre. Words as such are not reacted on before the eighth or ninth month. The first words used are 'sentence-words,' and have nominal, verbal, pronominal and probably adjectival function.

10. *Is the Beauty of Art a Higher Type than that of Nature?*
GEORGE REBEC, University of Michigan.

The paper is a criticism of the restriction of æsthetics to fine art; or, more directly, of the accompanying condemnation of nature to an inferior rank in beauty, and the assertion that art includes everything significant in nature, as well as more besides. The discussion is largely with reference to the Hegelian justification of this point of view. The questions raised are: Does the mind only imperfectly reveal its content in immediate perception (nature)? Does the deliberateness of art imply an enrichment of meaning-content? Is the fuller sensuous concreteness of nature a 'contamination' and a sheer hindrance to the mind's self-awareness? Incidentally also this, — Can we accept Bosan-

quet's definition of nature as 'the perception of the ordinary observer'?
Conclusions: The greater concreteness of nature may be only an ampler power at least of *hinting* import; nature has advantages of magnitude, variety, and intensity, which even poetry cannot compete with; the very sense of reality, which goes with nature, constitutes an *æsthetic* superiority.

11. *The Reality and the Symbol in Education.* JULIA H. GULLIVER, Rockford College.

The truer the symbol the more organically connected it is with the reality it represents. In education the primary necessity is to understand the organic self we are trying to educate and not to substitute for it a dead abstraction as its false symbol.

If psychological analysis asserts that the soul reflects the growth of every part and organ of the body, that involuntary movement must precede and condition voluntary conduct, it follows that the healthy body so far from warring against the soul is to be regarded as its indispensable coadjutor.

The moral antithesis is not between soul and body but between the lower and the higher, the less and the more worthy, both physically and mentally.

12. *A Motor Theory of Rhythm.* R. H. STETSON, Beloit College.
[To be published in full in the PSYCHOLOGICAL REVIEW.]

PSYCHOLOGICAL LITERATURE.

PHILOSOPHY.

Elements of Metaphysics. A. E. TAYLOR. London, 1903. Pp. xvi + 419.

It is perhaps somewhat early to put into the form of a systematic work on Metaphysics the results of the very recent studies, however fruitful, of Mr. F. H. Bradley, Professor Royce, Professor Ward and their collaborators. Nevertheless, everybody will welcome Professor Taylor's clear and systematic treatment of metaphysical problems in the light of recent English and American philosophy. Not that the present volume is a mere digest of a certain school of thought. It is an independent and able work on general Metaphysics which no student of philosophy should fail to read and study. It illustrates, however, the new method in philosophy, whose progress depends no longer upon the brilliant utterances of one man, the so-called philosopher, but upon the collaboration of a large number of workers who themselves stand in close touch with the psychologists. The author makes due acknowledgment of his indebtedness to Mr. Bradley and to Professor Royce, as well as to Ward, Avenarius and Münsterberg. Among other writers often suggested for collateral reading, are Lotze, Mach, Bosanquet, Ostwald, Hobhouse, Pearson and Stout.

Under the threefold division of ontology, cosmology and rational psychology, the author discusses the metaphysical criterion and method, the nature of reality, substance, quality and relation, causality, matter, law, space and time, conditions of evolution, the logic of the descriptive sciences, soul and body, the self, freedom, and incidentally many other questions, such as the existence of evil, the personality of God and the immortality of the soul.

So far as the positive or constructive part of the work is concerned, we may say that its chief significance lies in the emphasis which is placed, first, upon the teleological character of everything, upon purpose, end and interest; second, upon the individuality of everything, and third, upon the social aspect of everything. Physical nature is a society or group of societies. Even the absolute may, without any serious error, be thought of as a society. Still more is the notion of individuality insisted on. The absolute is an individual, not however

'because it is numerically one, but because it is the complete expression of a coherent idea or purpose.' The so-called physical world is composed of individuals, whose reality is throughout psychical, characterized by the possession of purpose, desire, interests.

In the first part, on Ontology, the author attempts the ever-fascinating task of constructing a philosophy of being which shall be apodictical and not merely speculative in character and at the same time escape the absurdities of subjectivism and the fallacies of realism. With the principle of self-consistency as an infallible criterion, he proceeds to the search of that which really is, and, following Bradley, finds it in 'experience.' It is, of course, psychical matter of fact. It is essentially teleological and individual. As experience, it is not my experience nor the sum of human experience, but a superhuman or supreme experience, a conscious life embracing the totality of existence in a perfect systematic unity. As such, it may be called the absolute, which is defined 'as that structure of the world-system which any and every internally consistent purpose must recognize as the condition of its own fulfillment.'

In this brief notice, I cannot of course enter upon any critical examination of Professor Taylor's book. I wish only to refer to the author's exposition of the general doctrine that reality is 'experience.' Those who have been puzzled rather than convinced by Mr. Bradley's metaphorical and often contradictory statements of this view will turn with expectancy to Professor Taylor's clear and systematic treatment. Mr. Bradley himself says that it is only the completed system which in Metaphysics is the genuine proof of the principle. The 'proof' offered by Professor Taylor, however, will be found to be disappointing. After a critical introduction, in which the author, as metaphysician, devotes himself to the greatest of all problems by the most severe and rigid methods, by 'sheer, hard and continuous thought,' the result that reality is experience is gained so quickly and easily in a single chapter that the naïve reader, who has at the start no prepossessions in favor of 'experience' over the many other names given to reality since Plato and Democritus, is struck with amazement and turns back to read the chapter more carefully. He finds that the proof given is merely the Kantian argument that the difference between the 'real' and 'imaginary' is that the former is always the object of sentient experience, is indissolubly connected with the psychical life of a sentient subject. But this, of course, does not prove that reality is experience, but only that that which is real *for me* (or for us, that is, all possible sentient subjects) is the *experienced*. I am unable to see

how we are entitled to substitute 'experience' for the 'experienced' even if we grant the validity of the many arguments which the author urges in support of the immediacy of experience, since the Kantian principle upon which the whole proof is based involves just the distinction between subject and object. But I pass this to consider a more serious difficulty. It is in the ambiguity of the word 'real' that we have the gist of the whole difficulty or, rather, the key to the whole fallacy. The author says, "It is a philosophical blunder to identify the real with the merely 'independent' of ourselves. What is merely independent would be for us the merely unreal. Presence in immediate experience is a universal character of all that is real, because it is only in so far as anything is thus presented in immediate unity with the concrete life of feeling that it can be given as a condition or fact of which an individual interest must take account, on pain of not reaching accomplishment." This use of the word 'real,' as opposed to the 'imaginary' or 'merely possible,' is of course legitimate enough if a writer chooses to adopt it and stick to it. But it should be remembered that the use of the word through all the history of philosophy from Thales to the present has with few exceptions been something wholly different. It has reference to the real as opposed to the phenomenal. This is also the meaning of the word to every young student of philosophy who turns to Metaphysics to satisfy his longing to know what the great reality is which lies beyond the world as it appears to him. To such an inquiring mind, the seen is the unreal and the unseen is the real which Metaphysics seeks. In the above quotation from Professor Taylor, the seen is the real and the unseen the unreal.

Now if with Hodgson we define Metaphysics as the subjective analysis of experience, or explicitly limit it, as Mackenzie does in his *Outlines*, to experience as a whole, well and good. Then, possibly, 'reality' may be defined as experience and so far as reality in the larger sense is concerned these systems remain thoroughly agnostic. Students whose interests are purely psychological will no doubt read these books on the metaphysics of experience with appreciation, but the larger class of readers will turn away unsatisfied with this conception of philosophy and again take up their Plato, Plotinus or Leibniz.

But now Professor Taylor does not stick to this subjective sense of the word 'real.' His proof that reality is experience rests, as above pointed out, upon this narrower conception of reality, but otherwise throughout the book he uses the word in its common and larger meaning and his work is a straightforward attempt, quite as much as

any of the older works on Metaphysics, to penetrate to a knowledge of the world of reality beyond the world of appearance.

This purpose is definitely stated again and again in his introduction, and in general he opposes and successfully refutes both subjectivism and phenomenalism. The author's ontology is throughout, just what every system of ontology must be, a piece of speculative construction, and his attempt to give it a demonstrative form rests upon the fallacy mentioned. The same equivocation in the meaning of the word 'real' is seen in another form of the author's argument, which is virtually as follows: Since anything to be real must be experienced, and since it is idle to suppose that finite minds experience all that is real, we must suppose a superhuman experience, an absolute experience embracing all things.

I am unable to find in Professor Taylor's book any other argument that proves, or has to me any convincing force, that ultimate reality is experience.¹ In the interesting chapter on Matter, following Professor Royce, he develops the social argument in proof of the independent existence of our fellow-men and of an external physical order. The very existence of my own purposive life, he says, is meaningless apart from the existence of a similar inner purposive life of my fellow-men with similar aims, ideals, and beliefs, and these again cannot be understood without reference to geographical, climatic, economic and other conditions. Furthermore, the 'independent' existence of my fellow-men means existence as centers of experience, as feeling, purposive beings. Let us grant the validity of this reasoning thus far and notice what follows. "We have also seen that the grounds on which an 'independent' existence must be ascribed to the rest of the physical order are essentially of the same kind as those on which we asserted the 'independent' existence of our fellow-men. *It appears patent, then, that 'independent' existence must have the same general sense in both cases.* It can and must mean the existence of centers of sentient purposive experience." "What appears to us in sense-perception as physical nature must be a community, or a complex of communities of sentient experiencing beings." The paralogism here is in the sentence which I have italicized. It does not in any way follow because my fellow-men must exist as sentient beings to explain my own social nature, that my geographic and climatic environment must likewise

¹The reasons offered by Mr. Bradley appear equally inconclusive. He argues that as we cannot think of anything nor speak of anything except in terms of the experienced, therefore absolute reality must *be* experience. The connection here between the premises and the conclusion is not obvious.

be composed of sentient beings. The author admits that the types of experience with which we are dealing in physical nature are 'too remote from our own for detection,' which, he thinks, may account for the apparent deadness and purposelessness of so much of nature. One begins to suspect that what the word 'experience' means in Metaphysics is not what it ordinarily means, that it is a kind of *X*. This feeling increases when we find it spoken of as an 'absolute experience,' especially when we learn that the Absolute does not exist in time nor space, is not a self and does not develop. When an all-embracing unity which does not develop and is not a self is said to have or to be an 'experience,' it is evident that the word has a new or at least an indefinite meaning. Does it all amount to this, that the conception of the Absolute as 'psychical matter of fact,' while there can be no thought of demonstration, gives us that intellectual satisfaction at which Metaphysics aims? If so, the idea is certainly not new.

The strength of Professor Taylor's book lies not in his constructive ontology but in his clear and masterly analysis of general metaphysical concepts, such as substance, quality and relation, change and causality, space, time, law, soul and body, freedom, etc., and in the fact that the whole treatment is both modern and systematic. It will be an excellent text-book for classes in Metaphysics, of which there has been a great need.

G. T. W. PATRICK.

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Deception and Reality. A. KIRSCHMANN. Amer. J. Psychol., XIV., 288-305.

The author attempts to show the inconsistency of the view that 'the world of the senses is a deception, an illusion, behind which stands a real world of entities unknown and imperceptible to us.' It is fallacious to try to reach from a deceptive world of the senses to a real world. "We must have the reality in order to be able to ask for it or to question it." It is, therefore, illegitimate to ask, What is the real? We should ask, Is there anything unreal? and, What is unreal? The deception in an optical illusion, in a mirage, or in a hallucination is not an inherent deception in the senses but it is due to the misinterpretation of the sensory impressions. More is read into the given data than they warrant, and hence the deception. Our sense impressions are real. Indeed, there is no opposite to the 'real' unless the 'real' is made identical with the 'true.'

DANIEL STARCH.

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Voluntarism and Intellectualism. GUSTAV SPILLER. Philosophical Review, 1904, XIII., 420-428.

The possibility of reconciliation between the hostile camps of Intellectualism and modern Voluntarism, between the advocates of pure reason and the worshippers at the shrine of feeling and the individual will, is to be found in a more organic conception of human nature. Such a conception is, indeed, the natural outcome of a conflict which has brought to light the inconsistency and incompleteness of Intellectualism on the one hand and the dogmatism and anarchy involved in absolute Voluntarism on the other. The reasoned and organic Voluntarism, the purified Intellectualism if you will, advanced by the author is the expression of the element of truth common to both theories. The Intellectualist, the scorner of all aims save that of seeking the one permanent fact, the truth of natural science, must be brought to a realization of the impossibility of logically defending his position. The conceptions current at any given time may be traced to certain factors active in human history. Hence they may well be in some centuries predominantly scientific. In others again they will as surely be predominantly æsthetic or moral. What we believe, is conditioned inevitably by what we are naturally inclined to believe. Moreover the object of scientific research is not the fact as such, but the general truth sought, that superstition and fear may be banished and helplessness relieved. Its purpose is utilitarian. Plainly, then, we must go to that despised realm of the feelings, to some need seeking satisfaction for the origin of science. Intellectualism, further, while vaunting its impartiality has set up a standard of values for facts. It has confined its attention almost exclusively to those of physics and philosophy, ignoring psychology, ethics, sociology, æsthetics, education, religion, economics. Its fetich, too, the physical fact, is, in truth, but a product of mind. Our conception of the universe is largely determined by socio-utilitarian considerations. It is seen not as it is, but as our senses would have us see it. The absolute voluntarist on his side must recognize the limitations of his belief. Truth is *not* a matter of individual opinion. Government and society are based on the fact that truth is social. To see, or feel, or think very differently from one's fellows is to deserve the name of anarchist or madman and to suffer banishment. Truth, moreover, is natural. The individual who defies the conditions imposed by nature dies. Finally, each one of us is a self of *many* wills. As we are one with society, so the various needs within us must be adjusted until there is harmony—subordination of the lesser needs to the ruling principle of the organism. The

individual present ideal is neither right nor wrong per se. It is to be evaluated from the standpoint of a progressive social and moral ideal.

GRACE BRUCE.

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MEMORY.

Connected Trains of Thought. E. N. HENDERSON. Psychological Review, Monograph No. 23, 1904. Pp. iv + 94.

This monograph is divided into two parts, in the first of which there appears a review of such experimental work on memory as seems to have any significant bearing on educational questions. It discusses previous investigations into the growth of memory with increasing age, sex differences in the development of memory, the value and limits of repetition in committing to memory, and the influence of the character of the material, of the method of memorizing, of rhythm, and of various kinds of distraction upon the power to remember. Nearly all of these studies have considered only the ability to retain disconnected material. In the school, however important such retentiveness may be as a fundamental power upon which mental efficiency rests, it is evident that what is appealed to and developed is the memory for organized material. The study, an account of which constitutes the second part of the monograph, is concerned with this. The material employed comprised a condensed fable, a character sketch of Cicero, an historical outline, a description of a house, and a passage from the philosophy of Comte. Each selection contained from 125 to 180 words. The experiments consisted in having a class of students commit to memory as much of one of these passages as could be done in three minutes. The result was then written down. Two days later the class was asked to make a second reproduction, and after a lapse of four weeks a third. An endeavor was made to insure that there should be as little thought as possible on the passages in the intervals between the successive reproductions. The students were, if they could, to make a literal reproduction. Otherwise they were to give what they remembered of the thought. The subjects included classes of boys from a grammar school in New York City, mixed classes in a high school in Brooklyn, undergraduates in Columbia College and graduates in Columbia University. The latter class of students worked with three of the passages.

The three reproductions were compared as to amounts of forgetting both in ideas and words during the various intervals. It was found that in general those who learned most of the passages in the given

time retained in the later reproductions a larger percentage of what they had learned than the others. On the whole, then, quick learners are good retainers. With advancing age very slight increase in power to learn was noted. Even less increase in power to retain appeared. The growth in both powers seemed due to better methods of committing to memory and greater comprehension of the material learned. Rank in school work correlated very little if at all with success in the tests. The students who took several tests attained in each about the same rank in power to learn. In power to retain the ranking varied more widely, due, it seemed, to the familiarity of the student with the general thought of the different passages.

A careful study was made of the character of the changes from the original reproduction in the later ones. It was found that the tendency is to remember something from each of the important topics and to forget some of the details in the elaboration of these. A general meaning is left in mind that constitutes the bond of union in the connected material. The act of recall was described by the older students as a process of unfolding such a meaning. It involved regrouping of the original topics and various sorts of modification. All the topics were vaguely in the mind at once, and this recall was quite different from the serial repetition of mere mechanical association. The paper endeavors to sketch the process of generalization as illustrated in the evolution of this general meaning that in the mind of each individual represents the passage he has learned.

THE AUTHOR.

SPACE DISCRIMINATION.

La mesure de la sensibilité. A. BINET. Année Psychologique, 1903, IX., 79-128.

Is the threshold of sensibility determinable? Or is the determination rendered impossible by the complexity of the judgment upon which it depends? Binet attempts to solve this problem through an investigation of the tactual discrimination of points, since this mode of sensibility has been already more worked upon than has any other.

He accuses psycho-physiologists of using and confusing 'sensibility' in two significations, viz. : (1) The ability to discriminate objects in our environment, in particular, 'stimulations.' In this acceptation the measure of sensibility applies directly to the physical force which is the excitant, and not to any mental phenomenon. We measure the physical intensity (initial threshold) or physical differ-

ence (difference threshold) corresponding to a definite judgment, but there is no implication of a measure of judgment itself. (2) The second signification of 'sensitivity' is the collective group of sensations produced by the excitations. The measure of sensitivity under this acceptation becomes a measure of sensation, which depends on the questionable hypothesis that sensations have intensity and are quantitatively comparable. In the problem he proposes for solution he takes sensitivity in the first acceptation only.

As regards tactual sensitivity, Binet objects to the terms 'Raumsinn' and 'Ortsinn,' because both *Ort* and *Raum* refer directly to space. He therefore proposes 'discrimination' and 'localization' as preferable terms, because in the mere discrimination of points we need assume no real space judgment.

He confines his investigations to two-point discrimination, excluding localization and in most cases the third possible topic, viz., judgment of distance separating two points. With a rather full account of the work of Weber, and references to later work, he proceeds to state the conditions of his own experiments.

By use of an instrument in which the two points are attached to independent pieces of metal of equal weight, sliding freely in a vertical frame, Binet secured equality of pressure; by observation of the positions of the sliding members at contact, he detected errors in simultaneity; and by observation of an indicator moved by an air vane attached to the instrument, he detected variations in rapidity of descent and consequent force of impact of the instrument.

On account of the defects in ordinary psychological methods, Binet employed a 'method of irregular variations' elaborated by himself and Victor Henri. This method consisted of the arrangement of a series ranging by regular steps from the minimum to the maximum of differences employed, but in which the terms succeeded each other irregularly, although each one was given the same number of times in completing the series.¹ This method combined the merits of the method of minimal change with the lack of suggestion and the superiority in practice afforded by the immediate sequence of large and small members. Experiments on a number of school children demonstrated signally its superiority.

The exclusive use of laboratory students as subjects is objectionable in Binet's estimation, since their knowledge of the conditions and objects of the experiment makes them liable to suggestion in high

¹ This method is not entirely novel. See *Harvard Psychological Studies*, Vol. I., p. 103.

degree. Hence he employed professional men, ladies of various ages, school children, servants, artists, and blind persons, as well as laboratory students. In order to keep track of all conditions which might influence the subjects, all that took place during each séance was taken down stenographically. The forms of response were not dictated to the subjects as is the case in the German method; thus ambiguity was avoided.

To guard against distraction the judgment was in some cases complicated; *i. e.*, the subject was required to judge the distance of the two points if there were two perceived. Careful tests with one subject showed that this complication reduced the number of errors. Moreover, the declaration of different distances for different actual distances tends to guarantee the precision of the discrimination, while the declaration of uniform distance for different actual distances throws suspicion upon it.

The results of the experiments along the lines laid down are given in the succeeding articles of the series of which this is the first, and particularly in those entitled, '*Influence de l'exercice, etc.*,' and '*Le seuil de la sensation double.*'

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Influence de l'exercice et de la suggestion sur la position du seuil.

A. BINET. Année Psychologique, 1903, IX., 235-245.

The investigations here described confirm those of Tawney in regard to the effect of practice upon tactual discrimination. Binet agrees that suggestion plays an important part when the threshold decreases after practice, but he would add that the subject, while under the impression that his threshold is going to be lowered, makes an increased effort to analyze his sensations. This conclusion is confirmed by the increasing number of Vexirfehler after practice, noted by Tawney as well as by independent observations. These observations cover the complete training of two subjects and the partial training of others, all of whom were ignorant of psychology and of the results to be anticipated, so that the factor of suggestion was minimized.

The training of the first of these subjects was accomplished without any suggestion or explanation from the experimenter. Four stages of development are described. First, the initial attitude, covering the first three sittings, and marked by a high threshold and few mistakes. Second, increase in the number of answers 'two' for the single point or minute distances between the points. Third, preponderance of answers 'two.' Fourth, fewer answers 'two' for the single point.

The subject developed, spontaneously, the notion that her sense of touch ought to improve, and must have been influenced by that suggestion, but Binet attributes the development primarily to a change of attitude, from candid observer to analyst.

The other subject showed the same change of attitude, but the process through which the change was effected was entirely different. As in the first case, the subject started out with a high threshold and no errors for the single point, but she showed no tendency to improve, even after elaborate instruction in the construction and operation of the esthesiometer. The change of mental attitude was only brought about by giving a reprimand on the occasion of each failure to perceive the two points as separate. Under this stimulus the subject became what Binet designates an interpreter. The threshold was immediately lowered, the number of answers 'two' for the minute distances increased, and the Vexirfehler became numerous. That the decrease in the threshold for this subject was not the result of increased sensibility of the skin is shown by the fact that the estimates of the distances between the points were the same for the three distances 15 mm., 10 mm., and 5 mm., indicating that those distances were not distinguished from one another.

The conclusion is that purely psychological causes can effect an apparent modification of the subject's sensibility, and a warning is sounded against overlooking circumstances in the laboratory which may largely influence the judgments formed by the subjects.

Le seuil de la sensation double ne peut pas être fixé scientifiquement.

A. BINET. *Année Psychologique*, 1903, IX., 247-252.

Binet makes use of his division of psychological 'subjects' into two groups, 'les simplistes' and 'les interpréteurs,' to prove that the determination of the threshold for the discrimination of separate points on the skin is not possible. For as the result of practice all members of the first group — *i. e.*, those who answer directly with regard only to the objective stimulus — tend to pass over to the ranks of the 'interpreters' who have no determinable threshold. Those who have published numerical values for the tactual threshold must have taken only the first few determinations or have neglected the answers 'two' for the single point, according to Binet, for if all the answers are recorded and the investigation continued long enough, the threshold always becomes indeterminable. The threshold is not directly measurable and is not of great value to psychology because it is only the sign of subjective states which are not equivalent. That is, the words 'one'

and 'two' have different meanings according as the attention is fixed exclusively on the external stimulus or in part upon the sensations experienced. As long as the interest of the subject lies mainly in the stimulus as such his threshold will be high; he will distinguish quickly the object which seems single. But when he begins to analyze more closely he detects differences in the sensations which at first appeared to arise from a single object. This is interpreted to mean that some of the single objects are really double. This interpretation may be reached only after suggestions have been received or it may be spontaneous, but in either case the result is a decrease in the threshold. That this decrease is not due to increased sensibility from practice is demonstrated when we know that a mere verbal explanation of the apparatus is sufficient to produce it.

The considerations which lead Binet to proclaim that the determination of the threshold is impossible in practice are twofold. First, 'it varies from moment to moment, and the more it is sought, the more difficult is it to discover.' Second, 'even in the cases where it seems to have a definite position, it is related so closely to the method of interpreting sensations that we cannot be sure that it represents the degree of acuity of the organ.'

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AUDITORY DISCRIMINATION.

Untersuchungen über die akustische Unterschiedsempfindlichkeit und die Gültigkeit des Weber-Fechnerschen Gesetzes bei normalen Zuständen, Psychosen und funktionellen Neurosen. Dr. G. A. HOEFER. Zeitsch. f. Psychol. u. Physiol. der Sinn., 1904, XXXVI., 269-293.

This paper refers to a more detailed treatment in the *Psychiatrie en Neurologische Bladen*. Its chief interest centers in the application of the difference threshold for different sound intensities and the method of right and wrong cases to neuro- and psychopathic individuals. A single drop phonometer with a zinc plate was used; but even with the use of the latter it was not possible to eliminate all differences in timbre. Five heights (from 325 to 1,300 mm.) were tested in 100 single experiments in a series. Fechner is followed in the matter of distributing the equality judgments equally among the right and wrong cases. This procedure, which, as the author observes, is at variance with American practice, is justified, in the reviewer's opinion, by his results: 34 per cent. of equality judgments, which

sustained no regular relation to the D used, and 28 per cent. of doubtful judgments. This uncertainty comes from the momentary flagging of attention and the indistinctness, in spite of maximal attention, of the sensation difference.

The following summarizes the conclusions :

An absolute impression of the first stimulus is possible, fully 50 per cent. of the right judgments being based upon such impression, but not of the second. There can be no absolute impression of a stimulus preceded by another.

The h -value remained fairly constant with the same stimulus for the different D (with the notable exception of the shortest distance) in accordance with the theory; it decreased with the increase of G ; it was greatly reduced by fatigue, but was far less influenced by depression when the observer had enough control to be attentive; it was constant, as a rule, for both D and G in epilepsy and dementia hebephrenica, for G in dementia paralytica and paranoia chronica, for D in melancholia and mania, but not for D and G in neurasthenia and hysteria, nor for D in paranoia and G in mania; but the number of patients for some maladies was very limited. Of special importance is the fact that the absolute value of the difference threshold was not, as a rule, subnormal.

Sundry time errors appeared (p. 288), but strangely these disappeared when the interval between the stimuli was more than doubled (6 sec.); they were positive only with G 650 mm., waned 'for the same G with the same D ,' diminished with practice, and were both positive and negative for some of the maladies.

The value representing the crucial test of the Weber law, the product of hG , indicated that it was approximately constant with the larger D only.

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REACTION TIME.

A Study in Reaction Time and Movement. THOMAS VERNER MOORE, C.S.P. Psychological Review, Monograph No. 24, 1904. Pp. iv + 86.

The primary problem in this piece of research is not that of reaction time itself, but the relation between the time of reaction and the speed of the movement with which the subject reacts. The movement selected for reaction was an outward rotation of the *humerus*,

the arm being bent at a right angle near the elbow, and supported in specially constructed apparatus. The speed was measured by the time taken to pass through a given angle, usually twenty degrees.

When the subject was uninstructed as to the speed of the movement, it bore no constant relation to the time of reaction. When told, however, to react with the fastest possible movement, the time of reaction was subject to the usual variations, but the movement time was very regular. The attempt was then made to affect the time of movement by disturbances of the attention which are known to vary the reaction time, such as variations in the interval between the preparatory signal and the signal for reaction, and the total lack of any preparatory signal. Such disturbing influences affected the reaction time, but not the movement time. The effect of carrying on a process of addition during the series of experiments was in general to lengthen the time of movement. In the case of a compound reaction of choice, the movement time, as well as the reaction time, seemed to vary according to the direction of the attention to the speed of movement or the signals for reaction. No considerable difference was found between the speed of the quickest possible voluntary movement and that made in response to a stimulus for reaction. The effect of continuous sensory stimuli during a series of experiments was to lengthen both reaction time and movement time. An intermittent sound, however, lengthened the reaction time without appreciable effect on the movement time. A very loud signal for reaction accelerated the movement time. A graphic curve of the movement showed an accelerated velocity up to a point where it passed into a straight line, indicating a constant velocity.

The attempt was then made to bring these empirical conclusions into relation with more general psychological problems. The facts discovered as to the speed of movement in its relation to the fluctuations of the attention and sensory stimuli were more fully developed; and an attempt was made to criticise Professor Münsterberg's 'Action' Theory, according to which attention varies as the motor discharge connected with the ideas on which it is focused. The empirical results also appeared to indicate that the motor center employed in sensory reactions is not the *cerebellum* or any subcortical center, but the cortex itself. Neither the Wundtian nor the 'type' theory of simple reaction was criticised; but the assumption was made 'that when the strain of attention is really in the efferent circuit' the subject reacts in the so-called muscular manner.

THE AUTHOR.

Zur Frage nach der Fortplanzungsgeschwindigkeit der Erregung im sensiblen Nerven des Menschen. F. KIESOW. Zeitsch. f. Psych. u. Phys., 1903, XXXIII., 444-452.

Ein Beitrag zur Frage nach den Reaktionszeiten der Geschmacksempfindungen. F. KIESOW. Ibid., 453-461.

Reaction-time methods of the usual sort were employed in both of these investigations. In the first series simple motor reactions of the author himself were taken when the stimulus was applied first to the lower arm and then to the upper arm, or in like manner to two parts of the leg. The difference in the two reactions to arm stimulations was assumed to be due to the time consumed in conduction of the sensory stimulation along a section of sensory nerve equal in length to the distance between the two points. In like manner comparison was made for the two points on the leg. The results show an average rate of conduction along the arm sensory fiber of about 30 meters per second. For the leg the results average a rate of about 33 m. per second.

The second investigation deals critically with earlier results of taste reaction-times on the basis of the author's own results. Taste times range with the author from 307 to 1,081 sigmas. Short times, such as 140 sigmas, reported by v. Vintschgau and Hermann, are criticised as doubtless simple motor reactions to touch rather than true taste reactions.

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WORK AND FATIGUE.

Untersuchungen über psychische Hemmung. Art. III. G. HEYMANS. Zeitschr. f. Psychol. u. Physiol. d. Sinnesorg., 1904, XXXIV., 15-28.

This article is on the inhibition of auditory perception through cutaneous perception. The observer listens for five minutes to the ticking of a clock a short distance from him. At the same time he dips the fingers of the left hand into a pan of water in circuit with an electric current whose strength may be varied according to definite gradations. With the right hand he indicates how long during the five minutes he hears the clock. The experiment shows that an increase of the electric current (cutaneous stimulation) is accompanied by a decrease in the perception of the auditory stimulation (ticks of the clock), and that a more or less definite functional relation exists between the two.

Intervall und Arbeit. W. SPECHT. Archiv f. d. Ges. Psychol., 1904, III., 1-32.

The problem is, what is the effect of the 'interval' (length of time between the warning signal and the work signal) upon the time and type of reaction? Eight such intervals were chosen differing in length by one quarter of a second, the shortest interval being one quarter of a second and the longest two seconds. The reaction consisted in lifting a 5 kg. weight with the middle finger of the right hand. Of the two observers, one showed a uniform increase in the time of lifting the weight with the increase of the interval. In the second observer this relation holds only for the larger intervals. A second series of experiments in which the interval was constant (one second) and the weight varied, shows that for both observers the time of action increases as the weight increases.

Ueber klinische Ermüdungsmessungen. I. Teil: Die Messung der geistigen Ermüdung. W. SPECHT. Archiv f. d. Ges. Psychol., 1904, III., 245-399.

This study presents a comparison of normal persons with individuals suffering from traumatic neuroses, for the purpose of demonstrating a clinical method of diagnosis by a fatigue test. The tests consisted in the addition of figures according to Kraepelin's 'Pausenmethode.' The observers added figures continuously for ten minutes with and without a pause, or rest, on alternate days. This brought out the effect of rest and practice. In the first series of experiments normal observers of both sexes and of different ages and grades of education were employed, while in the second series neurotic patients were employed. Dr. Specht found that the normal and the abnormal persons gave different types of work curves. A comparison of the two types shows that the neurotic patients are far more subject to fatigue (Ermüdbarkeit) than normal persons, that they are much less capable of regaining strength (erholungsfähig), that their capacity for work (Leistungsfähigkeit) is considerably decreased, and that, however, their capacity to improve by practice (Uebungsfähigkeit) is not very noticeably diminished, although it is much less permanent.

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Ueber Ermüdungsmessungen. EMIL KRAEPELIN. Archiv für die Gesamte Psychologie, I. Band, 1 Heft.

The author aims to give a review of what has been accomplished

by way of measuring fatigue. He expresses his long cherished hope that psychological investigations might be made practically useful, which for him means especially in the field of mental diseases. Psychology must not remain the hobby-horse of the learned. The problem of measuring fatigue involves two things: the determination of the effects of different kinds and durations of work upon different persons and upon one and the same person. This is to be done by measuring the amount of work done or noting the effect upon a test given before and after the work whose effect is to be measured.

Practice, changing conditions of the subject, the selective nature of fatigue in showing itself in one kind of work and not in another, psychomotory excitement of some kinds of work, are factors to be reckoned with in measuring work capacity. Psychomotory activity is a poor test of fatigue. The methods of Griesbach and Kemsies are discredited and discarded. Laboratory methods in general are unusable for school tests and entire classes should not be used; selected pupils should be taken instead. The principle governing the study of personal fatigueability is that the fundamental peculiarity comes out in all work in the same way. The problem becomes complex through the interrelation of practice and fatigue. The effects of practice cannot be measured alone. The method of the most favorable pause alone gives results and these are not wholly satisfactory. A further factor is incitation. Caution against mass experiment and hasty work is reiterated with great emphasis. The discussion is based mostly upon researches made in the author's own laboratory. The chief value of the paper lies in showing how complex the problem is and how difficult it is to win trustworthy results.

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MOTOR FUNCTIONS.

La Mimica del Pensiero. SANTE DE SANCTIS. Milan, 1904. Pp. 208.

This interesting little treatise is by the author of an important work on Dreams (*I Sogni*, Turin, 1899). He says that hitherto experimental psychology has investigated conative attention, *i. e.*, attention artificially provoked and maintained, here is an attempt to measure natural attention, *i. e.*, the capacity of a subject to attend to the ordinary happenings of life. In the passage from a state of indifference to that of attention, as marked by changes in the sense organs, the vegetative and motor functions, use has been made of the

plethysmograph, the cardiograph, etc., while but little has been done to record the imitative movements. Some have claimed that the motor activities accompanying attention constitute the attention itself; others deny that they are equivalent. The physiologists incline to a mere analysis of the phenomena of mimicry, the psychologists to a search for the bio-physiological laws. This study confines itself to intellectual mimicry by a comparative study of photographs and kinetoscopic views.

Chapter I. deals with the relations of emotional and intellectual mimicry. Contrary to the view that the act of ideation is not in itself an effort but simply the preparation for an effort (Angell and Thompson) is the principle of psycho-physical parallelism, that there is no thought without some objective sign, some harmonious combination of affective and intellectual elements. In certain abnormal cases among degenerates and psychasthenics there may appear to be affective states without intellectual motive, but such are merely temporary points of indifference where the psychical and physical forces diverge. The description in Chapter II. of the muscular and nervous structure of the face shows that there is a specific expression for thought which has had an evolution not only from the anthropoid to the human type but from the lower to the higher. This expression in man has its principal location in the ocular imitative zone and chiefly though not exclusively by means of the supraciliary muscles. According to Chapter III. the intellectual mimicry of animals is shown by a general posture of attention, this being an attenuated form of emotional mimicry. But not even the primates here possess a definite center, for some are of the auditory, others of the ocular type of attention. In all animals the signs are diffused, radiating from the head and throughout all the body, unlike man where the activity is limited to a small muscular zone of the face. In these diverse localizations there is an evolution disclosed. From diffusion, where the representative elements predominate over the affective, there is a tendency to immobility which, if persistent, indicates mental effort as shown by inhibition of motion. Among children, as shown in Chapter IV., concentration of thought is mainly sensorial, and more passive and reflex than among adults. It takes the form of primary attention (Ladd) or presentation (Titchener). Tentative experiments with children make attentive mimicry to be a continuation of reflex mimicry provoked by optical stimuli. Among the aged the contrary holds true: attention is weaker than in youth, and the facial expression tends to become stereotyped. From the reflex character of attention in infants and

the adaptation of the visual organs there is developed the center of attention, *i. e.*, intellectual mimicry has a sensorial origin. Through an association of habits visual mimicry, which is fundamental, develops along with the auditory and tactual senses, but when self consciousness arrives there is a certain degree of functional independence. Chapter V. presents a synoptical table of muscular and sympathetic movements in acts of attention, a series of photographs of the frontal muscles, and a study of the expression of the emotions in art. Here the phenomena are anomalous, being often asymmetrical.

Dealing with concentrated thought, in Chapter VI., the types are said to vary with the nature of the object, the habits of the subject and with the degree of intensity. Diffuse thought is characterized by a minimum of force and of the affective elements and by weak states of consciousness and of will. Ecstasy is analogous to hypnosis (Leuba), but mystic reverie is far from giving a maximum concentration of spirit (James). The modifications of intellectual mimicry are due to race, sex, habits and age, the maladies to lesions of the facial nerves or to neurasthenia. Experiments with the deaf, as disclosed by elaborate tables of both spontaneous and commanded acts of attention, lead to the hypothesis that intellectual mimicry is not so much hereditary as an individual acquisition, a transformation of a sensorial reflex. In fine, the origin of the matter lies in the reactions defending the organism from excessive stimuli and in the adaptation to useful and pleasurable stimuli (Baldwin).

I. WOODBRIDGE RILEY.

NEW HAVEN, CONN.

La graphologie et ses révélations sur le sexe, l'âge et l'intelligence.

A. BINET. *Année Psychologique*, 1904, X., 178-210.

M. Binet here gives the results of tests to which he has subjected two French authorities in graphology, M. Crépieux-Jamin and M. Eloy, as to their ability to determine sex, age and intelligence from handwriting. One hundred and eighty addresses, eighty-nine written by women, ninety-one by men, were submitted to the experts and to lay people with the request to say whether they were written by men or women. The experts were correct in 78 per cent. and 75 per cent. of the cases, the inexpert in from 66 to 73 per cent. of the judgments. When questioned as to the criteria of differentiation, the experts could give no definite grounds for their conclusions.

M. Binet quotes from an unpublished manuscript of M. Bertillon some statistical results which show that certain forms of letters are

more frequent in the writing of one sex than another in a proportion of from 5 to 7 to from 1 to 2, but the results contain nothing that would guarantee an absolute determination.

Age and intelligence come off even worse. The average mistake in determination of age by M. Crépieux-Jamin was ten years. The results on intelligence were entirely negative.

W. B. PILLSBURY.

UNIVERSITY OF MICHIGAN.

DREAMS.

Contribution à la psychologie du rêve. H. BEAUNIS. Amer. Jour. of Psych., Vol. XIV., Commemoration Number, p. 7.

M. Beaunis has made observations upon his dreams the greater portion of his life. During this period the subjects of his dreams have followed generally his habitual occupations. The dreams that come between sleeping and waking are the only ones that are remembered. In this transition stage impressions come somewhat feebly and vaguely and there is a kind of half conscious torpor in which images appear. Dreams resolve themselves into three classes; those of initial excitement, of memory and of irradiation. Dreams of memory are due to variations in the pressure or composition of the blood, which acts directly upon the cerebral centers. The affective sentiments appear in the dream in an attenuated form. The pleasurable sentiments remain vivid. His dreams keep his actual personality and there is consciousness of self. He maintains that one can in dreams be conscious that he is dreaming, and that reason, judgment and comparison often show themselves, but the will never does. Visions are only dreams prolonged. Dreams have played an important part among both primitive and ancient peoples. Beliefs in survival after death and in a future life had their germs in the dream.

M. EDITH WALKER.

UNIVERSITY OF NEBRASKA.

GENERAL.

Psychology and Common Life. FRANK SARGENT HOFFMAN. New York and London, Putnam's Sons, 1903. Pp. viii + 286.

The aim of this volume seems to be to give a popular discussion of some of the facts of psychical research, in preparation for which there are some introductory chapters on the relation of the brain to intelligence, and on attention and memory. Then follow chapters on hallucinations, sleep, hypnotism, the relation of the mind to disease,

the healings of Christian science and the miracles of Lourdes, telepathy and the so-called secondary self.

There is nothing in the book that is new to the psychologist, but it is nevertheless to be commended for its attempt to give in simple language for the lay reader the scientific explanation of many of the things usually shrouded in mystery. It is unfortunate, however, that such a professedly scientific work should be marred by many inaccuracies of statement. Some of these may be typographical errors, but in any event they are gross. To mention only two at the very beginning, on page 12 Professor Donaldson is referred to as if he were at present at Clark University (spelled Clarke!), and on page 13 Helen Keller is said to have been blind, etc., since her eighth year only.

IRVING KING.

PRATT INSTITUTE.

The Theory of Advertising. WALTER D. SCOTT. Boston, Small, Maynard & Co., 1904. Pp. 240.

This volume, though addressed to the practical world of advertising, bears as its subtitle, 'A Simple Exposition of the Principles of Psychology in their Relation to Successful Advertising.' The volume contains chapters bearing such familiar titles as attention, association of ideas, suggestion, perception, mental imagery. Professor Scott has thus presented advertising as a problem in applied psychology. As in all applications, there is a constant reference to the theory which is here very sensibly and forcibly applied, and also an equal reference to the needs of those who wish to use what a scientific analysis approves. This Janus-faced point of view leads to some unavoidable incongruities; but no one who has attempted work in the field of applied psychology will fail to appreciate how creditably the task is here accomplished. The several factors upon which the advertising reaction depends are clearly analyzed and carefully illustrated. It is possible that the psychology of the purchaser or the individual aimed at in the advertisement, is not adequately considered. One would be tempted to modify the title to read 'The Psychology of the American Advertisement,' as it is not unlikely that very different methods and formulæ would be needed in a different environment. It is, however, mainly to call attention to the existence and the value of this monograph in applied psychology that the present note is written.

J. J.

CHILD PSYCHOLOGY.

The Child, his Thinking, Feeling and Doing. AMY ELIZA TANNER. Chicago, New York and London, Rand, McNally & Co., 1904. Pp. 430.

In Dr. Tanner's *The Child*, we have a résumé of the child-study literature and, without doubt, it is the most complete, systematic and painstaking work of its kind extant. Such topics as these are treated: the problems of physical growth and abnormality; the feelings and ideas of sex; the mental processes; religious and moral ideas; emotions; interests; movements; imitation; language; rhythm; music; drawing and play. At the beginning of each chapter are definite suggestions for collecting data along the line of the chapter. The bibliographies at the close of each chapter are most ample. The author does not usually state the exact source of the data discussed, it being the purpose of the book to present an account of the child for 'the mother and teacher who have little access to libraries.' The author has not desired to draw conclusions or work out any theory, but to furnish the individual observer with a background of the results of the observations of others.

The criticism will naturally be applied to this book that has already fallen on much of the material with which it deals.

It is hardly necessary here to go into details which are familiar to every one who has followed the current literature of the subject. One often feels, however, the need of some background of theory as he peruses the book. In the midst of so much detail, the reader harbors the suspicion that some of it must be of more value than the rest—but which? There is no guiding suggestion; nor is any general meaning given to anything—to be sure intentionally—and yet there are a plenty of detached, fanciful interpretations.

The obvious conclusion from the very questionable study of Dr. Hall's on the Contents of Children's Minds, is certainly not 'that it is useless to try to teach a child about thing until he knows the things themselves' (p. 93), but rather the commonplace that he is ignorant of all that has transcended his experience. Far from its being one of his disabilities on entering school, it is the very occasion of his going to school. Why should he go if not to learn about these very things?

When we are told (p. 345) that 'in children from six to nineteen years of age, the least sensitive age is six, when the least perceptible difference of two tones is about a quarter of a tone,' we wonder whether the introspection of a child of six is sufficient basis for such a

generalization. So also as regards drawing — the fact that ‘one child drew twenty-six Johnnies, in Johnnie Gluck in die Luft’ (p. 384) does not necessarily prove that he thought in small units and failed to grasp the situation as a whole, but simply that he got started to drawing Johnnie and liked it so well he forgot the rest and kept on doing it, or perhaps he didn’t find out there was any thing else to draw.

It is to be regretted that so much space should have been assigned to material collected under small sense of the necessities of scientific method. It is likewise unfortunate that the *naïve* statistics of the Clark University type, with the complacent deductions therefrom, should have been so largely used.

But these are only suggestions and we would not have them reflect upon the work as a whole, which is certainly unique in its sphere, presenting in convenient and readable form a vast amount of information regarding child life. It should meet with great favor at the hands of those for whom it was written.

IRVING KING.

PRATT INSTITUTE.

VISION.

On Binocular Flicker and the Correlation of Activity of ‘Corresponding’ Retinal Points. C. S. SHERRINGTON. *British Jr. of Psychology*, 1904, I., 26–60.

Professor Sherrington’s main problem is the nature of the ‘tie’ between corresponding retinal points — the point in the psychophysical process where the effects of binocular excitation intercommunicate or conjoin. The experimental evidence is based chiefly on a comparison of symmetrical and asymmetrical binocular flicker and summation. If the nervous impulses from the two retinae were united early in their course it would seem that alternating, intermittent stimulation of corresponding points ought to involve less flicker than synchronous intermittent stimulation, while the effects of synchronous flashes of light on corresponding points ought to summate. Neither of these hypotheses corresponds with the facts, and the author concludes that “during binocular regard of an objective image each uniocular mechanism develops independently * * * a sensual image of considerable completeness. The singleness of the binocular perception results from the combining of these uniocular sensations: it is the product therefore of a psychical synthesis that works with already elaborated sensations. Such synthesis lies obviously more within the province of study of the psychologist than of the physiologist.” The author’s rotating binocular lantern gives a series of flash-lights from superposed

revolving turrets, projected through a revolving screen, and viewed through prismatic lenses. It is an ingenious arrangement capable of accurate adjustment and adapted to a wide range of experimentation wherever prisms are permissible.

The Sensations Excited by a Single Momentary Stimulation of the Eye. W. McDougall. British Journal of Psychology, 1904, I., 78-113.

Intrinsically as well as with reference to his elaborated scheme of the visual processes, McDougall's observations of the sensation pulses and allied phenomena consequent to the momentary stimulation of the retina are of marked interest. The mutually conflicting accounts of previous observers arise from the limitations of their methods and the diverse character of the sensation according to the brightness, form, rate and mode of movement of the stimulus, as well as to the state of adaptation of the eye, and to the part of the retina affected. The paper presents a systematic study of these conditions. The writer finds that the result of every momentary stimulation of the retina is a series of pulses of sensation of diminishing intensity. Except in some peculiar cases, the initial series of sensation pulses arises from the cones, while the terminal pulses arise from the rods. The ordinary after-image, succeeding the pulses, is due to 'the continued action in the rods and cones of exciting substances liberated in them by the action of light upon stored mother-substances.' This is evidenced by the cumulative character of the after-images. They grow brighter with each successive moment of stimulation. The last of the series of pulses is Bidwell's ghost. This is usually a pure rod phenomenon. Its appearance of detachment from the rest of the series of pulses is due to the inhibition of the intermediate members of the series by the bright initial reactions which constitute the leading image. "The colorless sensations which arise from excitation of the rods are developed more slowly than those due to excitation of the cones." This supports the view of v. Kries that the two physiological processes are independent.

RAYMOND DODGE.

WESLEYAN UNIVERSITY.

We regret the delay in the appearance of the January REVIEW (Article Section). It was due to the loss of certain proofs, without which the color-plates could not be printed.—EDITORS.

BOOKS RECEIVED FROM DECEMBER 5, 1904,
TO JANUARY 5, 1905.

Education in Religion and Morals. G. A. COE. Chicago and New York, Revell, 1904. Pp. 434.

Multiple Personality. B. SIDIS and S. P. GOODHART. New York, Appletons, 1905. Pp. xi + 462.

A Study on Consciousness. A. BESANT. New York, Lane; London, Theosoph. Publ. Co., 1904. Pp. ix + 443.

Fetichism in West Africa. R. H. NASSAU. New York, Scribners, 1904. Pp. xvii + 389. ['Forty years' observations of native customs and superstitions' — subtitle.]

Untersuchungen zur Gegenstandstheorie und Psychologie. A. MEINONG (ed.). Leipzig, Barth, 1904. Pp. x + 634. Mk. 18. [Eleven papers by Meinong and his pupils, published 'zum zehnjährigen Bestande des Psychologischen Laboratoriums der Universität Graz' — the first laboratory in Austria, founded in 1894.]

Psychology. An Introductory Study of the Structure and Function of Human Consciousness. J. R. ANGELL. New York, Holt, 1904. Pp. vii + 402.

The Anatomy of the Brain. J. F. BURKHOLDER. Chicago, G. P. Engelhard & Co., 1904. Pp. 174.

Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States. Washington Gov. Print. Off., 1904. Pp. 677.

Studien zur Blindenpsychologie. THEODOR HELLER. Leipzig, W. ENGELMANN, 1904. Pp. 136.

Le charbon dans le nord de la Belgique. LEENER, WODON and MAXWEILER. Brussels, Misch & Thron, 1904. Pp. vii + 217. (Institut Solvay's publications on Sociology.)

Addresses and Proceedings of the National Educational Association. Forty-third Annual Meeting, St. Louis, Mo., 1904. Winona (Minn.), Publ. by the Association, 1904. Pp. ix + 1003.

Yearbook and List of Active Members of the National Educational Association, 1904-5. Winona (Minn.), Publ. by the Association, 1904. Pp. 258.

The Aseptic Technic of Abdominal Surgery with the Topographical and Visceral Anatomy of Male and Female Abdomen. H.

O. WALKER. Repr. fr. *The Leucocyte*, Nov., 1904. Pp. 12.

Plan d'une physiopathologie clinique des centres psychiques. J.

GRASSET. Montpellier, Impr. Delord-Boehm et Martial, 1904.

Pp. 183.

Our Schools, their Administration and Supervision. WALTER

ESTABROOK CHANCELLOR. Boston, D. C. Heath & Co., 1904.

Pp. xiii + 434.

Pædologisch Jaarboek; 5th year, 1904. M. C. SCHUYTEN (ed.).

Antwerp and Ghent, Nederlandsche Boekh.; Paris, Schleicher,

1904. Pp. 263.

NOTES AND NEWS.

THE twenty-ninth of November was the seventieth anniversary of the birthday of Professor Howison, of the University of California. His colleagues in the University joined with other friends in celebrating the occasion, and a number of his former students scattered throughout the country presented him with a *Festschrift* published in his honor.

WE have received the announcement of the Fifth International Congress of Psychology, to be held at Rome, April 26-30, 1905. The officers of organization are: Honorary President, Luciani; President, Sergi; General Secretary, Tamburini; Vice General Secretary, De Sanctis. There are to be four sections: Experimental (G. Fano), Introspective (Ardigò), Pathological (Morselli), and Criminal (Lombroso). The general secretary may be addressed at 92 Via Depretis, Rome. There are to be general sessions also, at which prominent psychologists are to be asked to speak.

WE regret to record the death at Oxford of Thomas Fowler, President of Corpus Christi, author of well-known works on logic and ethics; also of M. Paul Tannery, the French philosopher and historian, who died on November 27, and of Dr. Karl Ueberhorst, professor of philosophy at the University of Innsbrück.

THE annual meetings of the American Psychological Association and American Philosophical Association, held in Philadelphia December 28-30, and of the Southern Society for Philosophy and Psychology, held at Baltimore and Philadelphia, will be reported in the February issue of the BULLETIN.

The University of Chicago

COURSES IN PSYCHOLOGY

Courses in or bearing directly upon Psychology are given along a variety of lines. Not all of these are given by the department of philosophy, but all are open to suitably prepared students, and all are available as work for an advanced degree—master's or doctor's.

There are two continuous courses of a year each in experimental psychology given by Professor Angell. One is intended for students beginning laboratory methods in psychology. Lectures and readings organize for the student the problems and results already reached in this field, while each member of the class undertakes laboratory work to familiarize himself with the apparatus and technique of experimental inquiry in psychology. The other course presupposes the equivalent of this training, and consists either of further drill work or of special research in new directions. Candidates for a doctor's degree in philosophy may either take experimental psychology in connection with other branches of philosophy (history of philosophy, ethics, etc.), or select it for specialization. The latter class are expected to avail themselves of work in the department of physiology, where there are courses dealing especially with the physiology of nerve-action, or of work in the department of neurology, where six courses are given upon the histology, structure, etc., of the nervous system.

In the more general or theoretical aspects of psychology, attention may be called to a course in advanced psychology by Mr. Angell, dealing with typical standpoints and problems in contemporary psychology; a course, also by Mr. Angell, upon psychology in its relations to philosophy; a course in the theory of mental evolution in relation to organic evolution (comparative psychology), by Assistant Professor Mead; a laboratory course by Mr. Watson in comparative psychology; one by Mr. Mead upon psychology in relation to ethics; one by the same instructor in contemporary social psychology; others by Dr. Young or Dr. Moore in educational psychology, etc. Special attention is also called to the courses of Dr. Thomas, in the department of sociology, upon the development of mind in the race, art, etc., where problems in folk and social psychology are discussed.

The above courses are graduate in character. For information regarding undergraduate and summer quarter courses, not covered by the above; for complete programs in any line indicated; and for information regarding courses in the history of philosophy, logic and metaphysics, ethics and other branches of philosophic work; and for conditions of awarding fellowships, etc., address

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J. MARK BALDWIN, Ph.D., D.Sc., LL.D.

Professor in the Johns Hopkins University.

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"Probably the most important single contribution to the theory of Evolution since Darwin." — *London Daily News*.

"A powerful book. . . . The author appears to have established his position firmly; and if his argument and the argument of his school is sound, he has done much to decide the dispute between the neo-Darwinians and the neo-Lamarckians." — *Manchester Guardian*.

Experimental Psychology

BY

EDWARD B. TITCHENER

Part 1. Qualitative Experiments: Student's Manual, \$1.60.

Part 2. Instructor's Manual, \$2.50.

The author's aim in writing this book is to supply what has hitherto been lacking to the teacher of experimental psychology—a detailed set of rules for the performance of the classical experiments of the science. The book contains instructions for the carrying out of some fifty experiments. The experiments are directed upon the qualitative analysis of mental structure, the exploring of the fields of sense, the dissection of complex perception emotions, associations, etc. The student is given a list of general rules to be followed in laboratory practice; then follow directions for the laying out of apparatus, the division of labor between experimenter and observer, the guidance of introspection, and the recording of results. Finally, a series of cognate problems, the method of whose solution is not indicated, to test the student's capacity of original thought. The second part opens with hints to the instructor upon the conduct of an experimental course in psychology. In conclusion it may be stated that the book is the outcome of seven years' experience of experimental work, including both drill-work and research, in the laboratory of Cornell University.

THE MACMILLAN COMPANY, NEW YORK AND LONDON

THE
PSYCHOLOGICAL BULLETIN

PROCEEDINGS OF THE THIRTEENTH ANNUAL MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, DECEMBER 28, 29 AND 30, 1904.

REPORT OF THE SECRETARY.

The thirteenth annual meeting of the American Psychological Association was held at the University of Pennsylvania, Philadelphia, on Wednesday, Thursday and Friday, December 28, 29 and 30, 1904, in affiliation with the American Association for the Advancement of Science and the American Society of Naturalists. President William James was in the chair at the various sessions. On the morning of Thursday, the twenty-ninth, the Association met in joint session with the American Philosophical Association and in the evening of that day the two societies held a smoker at the Colonnade Hotel. The meeting adjourned on Friday afternoon after a vote of thanks for the courtesy and hospitality shown by the representatives of the University of Pennsylvania.

At the regular business meeting held on December 29, the following was transacted. Election of officers for 1905: *President*, Professor Mary Whiton Calkins, Wellesley College; *Secretary and Treasurer*, Mr. William Harper Davis, Lehigh University; *Members of the Council to serve three years*, Professor Lightner Witmer, University of Pennsylvania, and Professor George M. Stratton, Johns Hopkins University. The following new members were elected: Dr. J. W. Baird, Johns Hopkins University; Professor I. Madison Bentley, Cornell University; Mr. Frank G. Bruner, Columbia University; Mr. C. T. Burnett, Bowdoin College; Mr. G. Cutler Fracker, Columbia University; Mr. V. A. C. Henmon, Columbia University; Dr. Edwin B. Holt, Harvard University; Professor Herbert G. Lord, Columbia University; Professor David R. Major, Ohio State Univer-

sity; Dr. W. P. Montague, Columbia University; Professor George R. Montgomery, Carleton College; Dr. Kathleen Carter Moore, 206 North 33d Street, Philadelphia; Professor Colin A. Scott, Boston Normal School; Mr. Luther A. Weigle, Yale University; Dr. William Morton Wheeler, American Museum of Natural History, New York City; Professor F. J. E. Woodbridge, Columbia University; Dr. Robert M. Yerkes, Harvard University.

Upon recommendation of the Council it was voted to amend Article IV of the Constitution to read as follows: Annual Subscription—The annual subscription shall be one dollar in advance.

Upon recommendation of the Council it was voted that two dollars of the annual subscription of each member for the year 1905 be remitted.

The Council reported an invitation from Harvard University to hold the next annual meeting in Cambridge to signalize the opening of Emerson Hall. Upon recommendation of the Council it was voted that this invitation be accepted, power being given to the Council to arrange otherwise in case circumstances might arise to make a change of plan desirable.

The report of the Committee on Bibliography which was presented at the annual meeting in St. Louis in December, 1903, and laid upon the table, was taken up, discussed and referred back to the Committee for a further report at the annual meeting of 1905.

A vote of thanks to the retiring Secretary was moved and adopted

REPORT OF THE TREASURER FOR 1904.

Dr.

To balance at last meeting.....	\$2,013.02	
Dues of members.....	423.00	
		\$2,436.02

Cr.

By expenditures for

Printing	\$ 25.30	
Postage	20.50	
Stationery	3.70	
Clerical assistance	35.00	
Telegram25	
Exchange.....	1.20	
		85.95

	2,350.07	
Accumulated interest on deposits, approximate.....	320.00	
		\$2,670.07

LIVINGSTON FARRAND,
Secretary and Treasurer.

ABSTRACTS OF PAPERS.

The Experience of Activity. President's Address. By WILLIAM JAMES.

As contrasted with inactivity we have activity whenever we experience anything to happen. The word is here synonymous with process or event. Where a process has a direction and tendency, overcomes resistances, etc., we have activity in the completest sense. The notions of agent, effort, passivity, etc., arise in such experiences. The *nature* of activity is wholly given in the experience of it, just as every other elementary nature is similarly given. An activity-series is defined by its whence and whither. But each activity-situation is a segment in a longer experience-chain; and the more previous activity that gave the push, and the remoter goal that names the whither, are often substituted as defining a *more real* activity for the activity at first supposed. Our conscious activity-experiences are moreover proved to depend on neural activities of which we are unconscious; and these, since their failure will arrest the others, are in turn considered more real. Thus our immediate feeling of an activity going on may be deceptive as to *whose* and *what* the activity really is, and we have to define and locate it elsewhere than where it first appeared. But in its new situation it preserves the old nature, for the word activity can have no other meaning than what experience gives. We place all sorts of other things (as motions, sizes, colors, etc.), wrongly, but our need of translocating them does not expel their natures from the real world; and similarly an activity, to whatever more real source imputed, must either remain in the world as the same *kind* of thing we were originally talking about, or else be talked about under some other name.

The fact that activity-experiences of our own may involve or be involved in more real activities has led some writers to draw a sharp opposition between activity as humanly felt, and activity as an objective fact. They have different natures altogether, we are told, felt activity being an inert resultant and illusion, real activity being an efficacious force. But empiricism should reject this search for a trans-empirical 'activity in-itself.' Whoso feels himself sustaining a tendency against a resistance knows the *what* of activity through and through, and from within. There are other whats in the world, but of other 'activity' we have no right to speak. That activity, moreover, when once rightly located, possesses all the efficaciousness that can anywhere possibly be supposed. A tendency successfully sustained against resistance is the original of what we mean by efficacy. Other idea of efficacy than that we have none.

To seek deeper than all experiences for what makes experience *really so* is thus a fallacy. The problems of activity are practical, not metaphysical. Which activities, and whose, are the more real activities in the actual world?—these are the important questions, leading on the one hand to a forecast of remoter outcomes, and on the other to a more exact study of the relations of our *naïf* human experiences of activity to the short-span activities, whether neural or conscious, for which they seem to be substitutes.

Unperceivable States of Consciousness. By A. H. PIERCE.

The doctrine of unperceivable sensations and sensation-differences has drawn its vitality for the most part from an argument which makes use of the axiom, if two things are equal to a third thing, they are equal to each other. Stumpf and Stout may be taken as representative advocates of this argument. In experimenting with slightly differing sensations, it frequently happens that two qualities or two intensities seem equal to a third whose stimulus lies midway between those of the other two, while the two sensations themselves are clearly distinguishable. This could not happen, the argument claims, unless the three sensations were actually different, for otherwise the above axiom of equality would be violated. Against this argument it may be urged that whenever the equality-axiom is employed outside of mathematics its correct statement should be—two things equal to a third under certain conditions are equal to each other *provided that the same conditions still prevail*. It is this continuance of underlying conditions that we are unable to guarantee when the comparison of sensations is in question. Indeed it seems not unlikely that the cerebral excitations caused by two closely similar stimuli exert upon each other a modifying influence, which is wanting when the difference between the stimuli is increased. Though lacking positive knowledge in the matter, should we not hesitate to base an argument upon the equality-axiom? For it is quite possible that the two sensations are compared with a third under conditions that do not hold good when the two are compared with each other.

A Field for the Study of Temperament. By DICKINSON S. MILLER.

The temperament of authors as traced, not through biographical gossip, but in their writings, proves a fruitful field for study. This is illustrated by the case of two contrasted types of temperament, the classic and the romantic. Five different bases of distinction and consequent definitions have been proposed by literary critics. If we

combine these we see the two types well marked and complete, and, looking closer, the psychological basis of the difference. The romantic temperament is marked by an excitable energy that enjoys its excitement; the classic by evenly inhibited energies.

Another illustration is found in two curiously contrasted individuals, both of the romantic type — who have evinced an antipathy for each other; Carlyle and Mr. Swinburne. Carlyle's imaginations are characterized by a passion for sensation of the kinesthetic order that accompanies the overcoming of resistance; Mr. Swinburne's by a passion for sensation of a diffused dermal and organic type such as accompanies exultant movement through unresisting or but slightly resisting media. This divergence goes far to explain the difference of their attitudes toward the concrete and abstract, toward pleasure, and toward liberty.

Examinations, Grades and Credits. By J. McKEEN CATTELL.

(This paper has appeared in full in the *Popular Science Monthly* for February, 1905.)

Perception of Children. By WILL S. MONROE.

Tests of Growth of Mental Efficiency in Children. By E. A. KIRKPATRICK. (Read by title.)

The six hundred children of the Model and Practical schools are tested every year. The report was upon a perception-motor test of making one hundred marks in fifty squares in which the figures 1, 2 or 3 indicated the number to be made in each square. Very backward children are quickly discovered by the test in the lower grades and there is some reason to believe that the test is valuable as a means of measuring the mental efficiency of younger children at least. Improvement is shown by years and by grades, especially in the lower grades. The effects of the test seem to carry over long intervals, as most of the younger children at least are better in the second and third test given after six months or a year than children of corresponding ages who are taking their first test.

Improvement with special practice is very marked, as was shown by a series of experiments on normal students, a girl of seven and a boy of five, the gain after ten trials being 18 per cent., 20 per cent. and 25 per cent. respectively. By practicing four times a day for a week the time of the little girl of seven was reduced from 64 to 43 seconds (41 is the average for girls of 14). Two weeks more brought it down to 35 and two weeks more to 30. The daily record was more

variable than for adults, indicating that the elements of desire and the power of self-direction are important and variable factors in experiments upon children. It also appears that in the case of children at least errors are more likely to vary inversely than directly with increase in speed. Further tests will be made to determine the relation of this test and improvement with practice in it, to other tests and to general mental efficiency.

Mental and Moral Effects Following the Removal of Adenoids. By
EDWARD A. HUNTINGTON.

Three cases were presented which had been prepared in connection with his psychological clinic conducted by Professor Witmer at the University of Pennsylvania. These cases were offered as a contribution to the clinical psychology of mental and moral retardation and efficiency. In all the cases there was a history of mental and moral retardation and in two cases this was associated with marked physical degeneracy. Naso-pharyngeal adenoids and hypertrophied tonsils were present in each case. The surgical removal of growths and hypertrophied tissues followed by appropriate school training resulted in mental and moral improvement. The most striking case was a boy whose mental status was that of a middle grade imbecile upon entering special school No. 3, of which Mr. Huntington is principal. His pedagogical history showed that for three years in which he had been a pupil in the first grade of an elementary school four different teachers had attempted his instruction and discipline, and each had failed in turn. He was finally expelled and sent to the special school. Here he was accorded medical treatment and adequate school training. One year after the removal of the growths the child was promoted into the work of the second year, and it now seems safe to predict that his future progress will be steady and reasonably rapid.

Emotion and Motor-Sensation in Art. By COLIN A. SCOTT.

The fact that the span of consciousness is limited results in a part only of any whole reaction coming to consciousness at any one time. Every reaction is primarily adaptive, but situations occur in which the stimulus arising directly from the reaction is not sufficient to fill the span of consciousness and maintain the scene of a full and abounding life. Lack of interest, pain or ennui results. At this point, however, play or art may save the situation and fill the remainder of the space of consciousness with either perceptual or ideational elements which

do not increase or aid in the adaptive reaction. These form the esthetic or play component. The esthetic reaction is thus never pure but is always the by-product of some actual adaptive reaction reduced to a minimum.

The exploitation of a figure by the movement of the eyes in painting is a part of the adaptive component and in itself not esthetic. The physical movements in dancing are the reduced minimum of the adaptive movements of walking or running. The sensations of sitting on one's seat and looking at the stage in a theatre represent the adaptive. In all such cases the remainder of the span of consciousness is filled with what is distinctly felt as not aiding or hindering any adaptive reaction. The picture must have no grapes for the birds to pick. Although the drama may stimulate feelings of fear, these must not lead the audience to save themselves by flight. The adaptive component in each case thus acts as an inhibitive agent. This inhibition, however, is confined to action on the environment. Action on one's own body and idea representing the body are fully exploited in the esthetic reaction. In this direction motor elements are stimulated and not inhibited. Since the elements of the esthetic reaction are motor states felt to be internal, a reverberation of past evolutionary instincts comes to be an important and characteristic feature. The breadth of these leads to extension in the form of esthetic logic, representing the trend of the emotion, which is ultimately governed by climax or success.

Knee-Jerks without Stimulation of the Patellar Tendon. By
EDWIN B. TWITMYER.

In normal individuals in whom the knee-jerk is readily obtainable a movement of the opposite limb can usually be observed when only one tendon is tapped. This phenomenon can be satisfactorily explained only as a reflex action. The possibility of eliciting this response when the opposite tendon is struck raised the question whether or not knee-jerks could be elicited without the usual tap on either tendon, *i. e.*, by the activity of some other stimulus. The results of an extended series of experiments upon six subjects were reported. Knee-jerks without taps on the tendons were obtained from all the subjects after a large number of preliminary experiments had been performed in which a bell was struck 150° before the blow fell on the tendons. These responses were not the result of voluntary effort on the part of the subject. Attempts to inhibit these kicks were wholly unsuccessful. The movement displayed the characteris-

tic jerky or explosive appearance of the true knee-jerk. The relation between the extent of the kicks of the right and left legs corresponds with the results obtained when the tendons were struck. The relations between the extent of the initial kick out of the legs and the first secondary swing remain constant for each subject, whether the movement follows the blow on the tendons or whether it follows the sound of the bell alone. Preliminary experiments with both the tap of the bell and the blow on the tendons were necessary before kicks could be obtained with the bell alone; the number varied from 150 to 238 trials. With an increase in the number of experiments performed the regularity of response with the bell alone was greatly increased. The movement in question can be explained only in terms of reflex action. The afferent excitation must reach the cord at the level of the medulla and then passes down to the second or third lumbar segment in which the cell bodies of the afferent conduction paths are located. The repeated association of the functioning of the motor cells of the lumbar segment of the cord upon which the kick immediately depends, with the excitation of centers in the nuclei of the medulla connected with the auditory conduction path, has resulted in the development of an unusual reflex arc. The results of the experiment furnish additional grounds for accepting the view of Erb and his followers as to the nature of the patellar tendon phenomena. No differences whatever are apparent in the character and extent of the movements with and without the blows on the tendons. The two movements differ only in the origin of the excitation and the spinal centers involved.

The Analysis of Reaction Movements. By CHARLES H. JUDD.

This paper reported a qualitative, rather than quantitative study of reactions. By means of a suitable apparatus graphic records were secured of all phases of reaction movements. It was found that no reactor lifts his finger from the key in a simple movement. Sometimes the reaction proper comes at the end of a gradual upward or downward movement. Sometimes sudden movements or rhythmical series of movements precede the reaction movement. Sometimes, as Mr. G. W. Smith has already shown, the reactor makes a sudden downward movement before raising the finger.

Many of these preliminary phases of reaction can be related to conscious processes, not merely or chiefly because they give rise to muscle sensations, but because they express the motor organization in the central nervous system which furnishes the physiological basis

for the processes of attention and rising expectation. These processes of attention and expectation are not forms or phases of consciousness depending upon any sensation factors. Nor do they depend on revived content factors. They belong to the conative side of mental life, and are easily understood when it is shown, as in the results reported in this investigation, that there is a fact of nervous expressive activity paralleling each of the manifold variations of attention and expectation arising in reactions.

Some Experiments on Lifted Weights looking toward a Re-statement of the Psycho-Physical Problem. By LIGHTNER WITMER.

Standard weight 100 grams, comparison weights 100, 102, 104, 106, and 108 grams. Time of stimulation 1 second, 2 seconds interval between the periods of stimulation, no greater interval between two pairs of weights lifted than between the lift of each weight of a pair. Thus there was no chronological grouping. It took six seconds to lift each pair of weights and to give a judgment as to whether the second weight was heavier or lighter than the first. A series, usually of 40 judgments, followed consecutively. The pairs of weights upon which judgment was given were 100:100, 108:100, 100:102, 100:104, 100:106, 102:100, 104:100, 106:100. The subjects were compelled to express a judgment even when the judgment was a mere guess. Equality judgments were not allowed. In case the judgment was a mere guess the subject added "D" meaning doubt. If his judgment was accompanied by a measurable degree of confidence he added "A, B, or C." The following table summarizes the results:

	H or L.	Confidence.		Doubt.	
	Cases.	Cases.	Right.	Cases.	Right.
100:100	65	59	61	41	71
100:102	67	62.5	66	37.5	70
:104	77	66	80	34	75
:106	86	69.5	86	30.5	85
Average	77	66	77	34	77
102:100	50	63	58	37	36
104:	56	62	66	38	41
106:	64	67	74	33	43
108:	66	65.5	69	34.5	53
Average	57	64	66	36	40

Each value in the table is the average result of 200 experiments each upon three different subjects. The table shows opposite each

pair the percentage of the heavier or lighter cases from 600 experiments, also the percentage of cases given with confidence and with doubt; the percentage of confidence cases that were right cases and percentage of doubtful cases that were right cases. Thus with the weights 102, 104, and 106 in the second position in a pair, 77 per cent. of the cases were right, 66 per cent. of all the cases were confident judgments and 34 per cent. were doubtful judgments. Of the confidence judgments 77 per cent. were right, while of the doubtful judgments the same number, 77 per cent., were right. With these comparison weights in the first position but 57 per cent. of the cases were lighter or right cases. Of these cases 64 per cent. were confident judgments, of which 66 per cent. were right; 36 per cent. were doubtful, of which only 40 per cent. were right.

The Order of Tone Sensations. By HUGO MUENSTERBERG.

It seems improbable that a final theory will recognize six light sensations only, but demand ten thousand tone sensations, while to the naive consciousness the manifoldness of the visual and of the acoustical fields seems more or less comparable. This striking difference in the theoretical construction is the result of the historical fact that the visual theory has been developed without any reference to anatomical observations, while the theory of hearing has been brought from the beginning under anatomical categories. If we take introspection as our starting point we must consider as qualitative elements those characteristics of the sound which indicate to us the differences of the various sonorous objects. If I hear one sound, I am interested to know merely whether it is sung or played on a piano, comes from violin, or trumpet, or bell, or whistle. Like a color, such an element can change in intensity and can mix with toneless sounds, the noises. But each sound, just like a color, can change in a distance series where every position has meaning only with reference to another member of the series. The drawing has two such dimensions, right-left and up-down; the violin sonata has also two such dimensions, the time-dimension and the pitch-dimension. As the painting combines a number of colors, each one distributed in both dimensions, so the orchestra combines the variety of timbre elements, each varying in time and pitch. The ten thousand strings of the basilar membrane which give the change of pitch correspond then to the ten thousand or more rods and cones which the light may successively stimulate in going up and down. The objective combination of tones in the simple timbre corresponds to the objective combination of colors in the white light, and the apparent subjective

discrimination of overtones is not a real resolution of the clang into elements. The relation between the two tones of an octave or a fifth would then no more be compared with relations between colors but with relations between the parts of a circle or an ellipse, while the harmony of different instruments would correspond to the harmony of different colors.

Combination Tones. By F. M. URBAN.

In a clang composed of two tones one can observe tones the pitches of which are in certain simple relations to the vibration number of the fundamental tones. One tone, which is called summation tone, corresponds to the sum of the vibrations; besides this there exists a tone with the pitch of the difference of the vibrations, which forms with the other elements of the clang difference tones of higher order. Difference and summation tones are called combinational tones; the name of Tartini's or Sorge's tones is less fitting as these acousticians observed only difference tones of first order, the summation tones being observed first by Helmholtz. A merely physical explanation is sufficient for these combinational tones which can be observed in the air outside the ear. This is always possible for the summation tones — although they are so faint that some observers have not noticed them — but for the difference tones it is only possible when they are produced in the same enclosed space. According to this criterion we distinguish subjective and objective difference tones. Helmholtz has adopted the theory that the subjective difference tones have their origin in the ear and that they must arise whenever the vibrations are so large that the second power of the displacement cannot be neglected besides the first. The mathematical theory shows further that an elastic body can perform such a movement only if it has a form unsymmetrical to the direction of the vibration; the tympanum is considered to fulfil this requirement. This theory explains only difference tones of the first order but not those of higher order. The requirement of the vibration to have a certain magnitude is only partially justified, as difference tones can be heard most distinctly when the intensity of the fundamental tones does not exceed a certain limit, and is certainly not fulfilled for difference tones of higher order, the intensity of which decreases rapidly. The anatomical relation to the tympanum does not agree with the fact that difference tones can be heard after operative destruction of the tympanum and the ossicles. The insufficiency of Helmholtz's explanation is not proof against the resonance hypothesis, but first of all a new theory of hearing would have to consider the problem of difference tones.

The Sense of Hearing in Frogs. By ROBERT M. YERKES.

(1) The green frog seldom gives a locomotor reaction in response to sounds, and thus far no characteristic auditory reflexes have been discovered. (2) That the animal hears is clear from the fact that croaking ceases when an auditory stimulus is suddenly given. (3) Experiments show that the reflex reaction to other stimuli, tactual for example, is modified by sounds. When the two stimuli occur simultaneously the reaction to the tactual stimulus is reinforced by the auditory; when the auditory stimulus precedes the tactual (this is possible because the auditory alone never causes a reaction) by more than three-tenths of a second, the tactual reaction is partially inhibited. (4) The auditory stimulus modifies the tactual reaction whether the frog be in air or in water, but the influence is lessened as the animal is more and more deeply submerged. (5) Thus far experiments indicate that the range of hearing extends from 50 vibrations per second to at least 10,000. (6) Apparently hearing is of less importance in the frog than vision. Sounds may serve as warnings of danger, but they do not bring about locomotor or flight reactions as do visual stimuli. (7) The tympanum is much larger in the male than in the female, and as might be expected there is some evidence that sounds produce more marked effects on the males than on the females.

Some Sex Differences. By R. S. WOODWORTH and FRANK G. BRUNER.

In connection with the anthropometric work of the Department of Anthropology at the St. Louis Exposition, men and women of several races were subjected to sense, motor and mental tests. In the motor tests men surpassed women, though the difference in quickness and in accuracy of movement was much less than in strength. In color perception, on the contrary, women surpassed, and this difference, like that in movement, held good in nearly every race and group examined. In visual acuity there was no uniform sex difference, for while white men saw better than white women, in most other groups the women surpassed. In a 'form test,' which consisted in fitting variously shaped blocks into corresponding holes, and which has proved to be more a test of intelligence than of perception of form, American men and women were about on an equality, whereas in the more primitive peoples the males were distinctly superior to the females.

Motor Correlations. By R. S. WOODWORTH and H. D. MARSH.

American adults were tested in strength of grip, speed of tapping and accuracy of hand movement. A high degree of correlation (Pearson coefficient = 0.5 + to 0.82) obtained between the right and left hands of a person in the same test; but a low correlation (0.08 to 0.34) appeared between the different tests of the same hand. In other words, a person's efficiency with one hand in any motor function is a fair index of how well he can do with the other hand; but a person's efficiency in one motor function is scarcely any index of his efficiency in others. The use of the single term 'motor ability of an individual,' to cover all sorts of motor functions, is therefore misleading.

Wundtian Feeling Analysis and the Genetic Significance of Feeling. By MARGARET FLOY WASHBURN.

The elaborate analysis of feeling which forms the most important part of Wundt's revised system of psychology is incompatible with his doctrine that feeling is purely subjective and based on the reaction of a simple apperception center. In particular, every attempt to explain the relation between a feeling quality and its components, or complex feeling and their partial feelings, results in referring the complexity to the sensational basis of the feeling. Analysis and subjectivity are incompatible notions. The chief source of perplexity in the problem of feeling lies in the failure to recognize intermediate stages between feeling and sensation; processes which while they ordinarily go unanalyzed because there is no need for analyzing them may with practiced introspection be recognized as complexes of organic sensation. To this class belong strain and relaxation, excitement and depression. Subjective is that which resists analysis, qualitative and local; objective that which allows it. Only pleasantness and unpleasantness are ultimately subjective in this sense.

The Isolation of Minds. By DICKINSON S. MILLER.

(1) What is called the subject of consciousness, or consciousness as distinct from its 'contents' or again the unity of consciousness, resolves itself into a relation between 'contents'; a relation which is ultimate, that is, not farther analyzable. It may most simply be called co-experience or empirical conjunction. (2) Contents not bearing this relation to each other are isolated in an ultimate sense, in a sense not further analyzable. A group of co-experience contents which as a whole is isolated is what we call a state or field of con-

sciousness. To it every other state or field is, in Clifford's term, ejective. The consciousness of another is ejective to mine, and my consciousness of yesterday ejective to my present consciousness. (3) The disjunction of experiences is absolute and admits of no degrees. The same may be said of their conjunction. It is the disjunction of experiences that presents the chasm over which, according to current metaphor, knowledge has somehow to pass. A consciousness foreign to my own is for me a 'thing in itself' (or 'for itself'). To say that we can know nothing of things in themselves is to say that we can know nothing of our neighbor's mind. (4) To say that one content can be a part of a larger field without consciousness of the fact, is to contradict oneself; it is to say that the same reality, in the same state, does, and does not, bear a certain relation to another. (5) The absolute discontinuity between fields of consciousness must be recognized by such doctrines of panpsychism as would transfer the continuities of the physical world of science for a world of sentiency. (6) The category of ejectivity or disjunction is of peculiar interest for the theory of knowledge. It cannot be derived from direct experience. Does the mind then possess it *a priori*? It is not necessary to assume this. The value of some conceptions lies not in their content but in their function. Thus the conception of nothing is in the main a certain fixed indisposition to entertain the thought of anything. The conception of infinity is the fixed indisposition to entertain the thought of an end. So the conception of ejectivity is the fixed indisposition to contemplate the content of a conceived foreign field as part of my own conceived field. The necessity is avoided by turning attention alternately to one and the other, and thus, with the aid of time, allowing a real disjunction to divide them. If we conceive nonentity, or infinity, or ejectivity, in a single state of thought we do so with the aid of symbols, generally physical.

The Nature of Consciousness. By FREDERICK J. WOODBRIDGE.

Consciousness cannot be defined in isolation, but only as it is given with a variety of contents as different as ideas and things, as an instance of that type of existence which may be described as the existence of different things together. Space, time and species are other instances of the same type, and afford such striking parallels to consciousness that consciousness may be defined as of the same general nature, namely, as a form of continuum or connection between objects. Such a definition reduces the problem of the relation of consciousness to other things to the problem of the relation of a continuum

to the things contained, and excludes such problems as interaction and parallelism. It forbids the description of contents as states of consciousness. It defines the isolation of individual consciousnesses, and by showing that different consciousnesses can be related only indirectly, clarifies the character of theories of perception. The distinctive feature of the connection of objects in consciousness is that in such connection they become representative, not of things of a totally different nature, but of each other, and thus make knowledge possible. It is to be noted that both the actual contents and limitations of knowledge are determined, not by the relation of consciousness to objects, but by the relation of objects to each other. The *esse* of the content is thus never *percipi*, but knowledge is palpably realistic. The most crucial instance of this realism is the discovery that consciousness has antecedent conditions of existence. These conditions appear to be events of the world which is eventually in consciousness, so that consciousness may be regarded as a special form of continuum or connection in which the events of the world may exist. When the world becomes known it has not been transformed into ideas, but has simply been connected in a new way. For the clarifying of this connection the idea of a continuum is suggestive.

A Suggestive Case of Nerve Anastomosis. By GEORGE TRUMBULL LADD.

This particular case of nerve anastomosis was performed by Dr. Harvey Cushing, of Baltimore, in the spring of 1902. It consisted of uniting the distal end of the facial nerve, which had been completely severed by a bullet wound, with the accessory end of the central nerve of the shoulder. On the tenth day after the operation the patient was sent home, provided with a small galvanic battery for electrical treatment, and required to exercise his facial muscles daily before a mirror. By persistent efforts at voluntary control during 287 days, at the end of this period the action of the individual groups of muscles of the face had quite completely returned, and could be effected without associated muscles of the shoulder or contraction in the facial muscles; and the emotional expression had considerably improved, although not to the same extent. An analysis of the phenomena seems to show that under the stimulus of will the cortical center of the accessory nerve had assumed new and more complicated functions. The higher visual, emotional and voluntary centers had somehow established new connections with this lower center; and the cortical center of the facial nerve had found the way to control the facial muscles by the round-

about path of the center of the accessory nerve. Some evidence also exists to induce the belief that these intra-cerebral readjustments had resulted in stimulating hitherto undeveloped nerve fibers. Such astonishing results from persistent volitional efforts seem to add their testimony to scores of other facts in discrediting both the idealistic and the psycho-physical parallelistic theories of the relations of body and mind.

The System of Values. By HUGO MUENSTERBERG.

The aim is to classify our absolute values, those experiences, that is, which we appreciate for their own sake and which are therefore ends in themselves, and secondly to examine whether one common principle controls the whole system. If we seek absolute values, we must take the standpoint of immediate experience and not the standpoint of causal science, which is itself the product of valuation inasmuch as it has transformed reality in the service of certain valuable logical purposes. We find values in four spheres, firstly in related experiences, secondly in isolated experiences, thirdly in the changes of experience and fourthly in the supplementations to experience. Each time we have to separate the given and the created values. In the related experiences we find the value of validity to which we submit ; it is given as existential knowledge and created as scientific knowledge. In isolated experiences we find the value of perfection which is given in harmony and created in beauty of art which we enjoy. In the changes or transformations of experience we find the value of achievement which we approve ; it is given as development and created as civilization. In the supplements to experience we find the value of completeness in which we believe ; it is given as religious conviction and created as philosophical conviction. Each of these eight values refers either to the outer world or to fellowmen or to the self. We have accordingly existential knowledge of objects, of subjects and of obligations ; scientific knowledge of causal truth, historical truth and logical truth ; harmony in natural beauty, sympathy, happiness ; beauty of arts in fine arts, poetry, music ; development in natural progress, social progress, self-realization ; civilization in technique, law, morality ; religious convictions in belief in God, belief in immortality, belief in providence ; philosophical convictions in epistemology, practical philosophy, and metaphysics. There is one category common to these twenty-four classes of values : the category of identity. As the same simple principle of attraction controls the changes of the physical world from the falling apple to

the moving star : the same principle of identity determines value in the world of subjects from the beauty of a circle or the truth of arithmetic to the highest human value of morality and philosophy and religion. It is impossible to demonstrate this in a short abstract of a paper which is itself a short abstract of a forthcoming book.

The Time of Perception as a Measure of Difference in Sensations.

By VIVIAN A. C. HENMON.

Differences in sensations are equal if they are discriminated with equal ease. A measure of the time necessary to perceive differences in sensations is therefore a measure of the differences themselves. In this way it is possible to discover with what differences for consciousness either relatively or absolutely equal objective differences in quality or intensity are correlated. Experiments on qualitative differences in color, equal intermediate steps between orange and red, show that with the equal decrease in differences between two pairs of stimuli goes a markedly greater increase in the differences in the time of perception. The curve of increase agrees very well with that obtained by the usual psycho-physical methods. Experiments on the time of perceiving differences in lengths of lines, in which field Weber's law holds within certain limits, show on the application of Fechner's formula of difference that the differences in the times of perception increase inversely as the logarithms of the quotients of the magnitudes of the stimuli. Individual differences in sensibility and sense deficiencies can be determined by this method. If, for instance, a person be color-blind, it will take him a longer time to distinguish the reds and greens than the blues and the yellows. To measure this cards were prepared on one set of which blues and yellows in various shades and tints were mounted, on the other reds and greens, and the time of distribution taken. The person of normal color-vision takes no longer to distribute the reds and greens than the blues and yellows, one deficient in color-sense takes much longer and thus discloses his defect.

Additional Experiments on the Photography of the Eye. By G. M. STRATTON.

The experiments here reported were made with the eye viewing a great variety of figures, and the eye's action was mechanically recorded by photographing the movements of a beam of light reflected from the cornea. In addition to the fact that our enjoyment of linear gracefulness cannot be attributed to any ease or grace in the eye's own

motion, — a result already reported in the Wundt *Festschrift* — the present experiments indicate: (1) That the Wundt-Lamansky law of eye-movements is by no means a universally valid formula. While horizontal movements are frequently along lines that are approximately straight, yet vertical movements are much less commonly straight. Diagonal movements frequently approximate the Wundt-Lamansky description, but straight diagonals are by no means rare. (2) The linear illusions of Müller-Lyer, Zöllner and Poggendorff frequently occur with exactly such eye-movements as have been supposed to be their cause. But the illusions also occur in the absence of such movements, and indeed when the very opposite kind of movement is being performed. So that any special form of eye-movement is evidently not a necessary condition of the rise of these illusions. (3) In viewing symmetrical figures, the eye's movements are usually unsymmetrical, at least when such figures are most enjoyed. The more symmetrical movements were called out when the observer was in doubt whether the figure was exactly symmetrical. Our enjoyment of symmetry accordingly cannot be explained by the balance or pleasure in the eye movements which symmetry invites.

Intermittence of Vision. By EDWIN B. HOLT.

The periodically spaced bandings observable on the after-image streak produced by a luminous image travelling on the retina cannot be explained by the theory of retinal undulations advanced by Professor Auguste Charpentier. Professor Charpentier's observation, on which he bases his theory, that these bands become narrower and lie nearer together as the image moves more rapidly, is incorrect. The bands follow precisely the opposite law. Neither are these bands due, as has often been said, to the same mechanism as the recurring after-images seen after a momentary exposure of the eye to a stimulus that is not moving; for if they were they would necessarily travel after the moving stimulus, keeping at constant distances behind it. Whereas the bands do not move at all, although the system of bands, as a whole, moves because the rear band is always disappearing, while a new band is being deposited on the front of the system, by the moving stimulus. The bands are due to some intermittence of the visual mechanism, whereby the nervous process set up by the moving stimulus is periodically inhibited, so that the stimulus instead of leaving behind it in consciousness a continuous after-image streak, leaves a discontinuous succession of after-images each one of which is of approximately its own size and shape. These several images behave

like ordinary after-images; for an instant after their generation they become larger than the retinal image of the object should seem to warrant, and then grow gradually smaller in all dimensions and feebler in intensity, until they fade away. There is no reason for supposing this intermittence to be a function of the retina. Like the many other cases of periodic sensory inhibition it is more probably due to some process in the central nervous centers.

The Effect of Eccentric Visual Stimulation on Fixation. By
RAYMOND DODGE.

Replying to certain criticisms of his method of photographic registration of the eye movements, Mr. Dodge described the records of a photographic ophthalmometer. Besides constituting data of the most accurate sort for determining the shape of the cornea, these records indicated the importance of certain precautions in the photographic registration of the eye movements by means of the corneal reflection. Since at the extreme periphery the cornea is quite irregular, altogether the most favorable position for the corneal reflection is the optical axis of the cornea or points symmetrically disposed about it. A source of error which menaces alike all exact studies of the eye movements and many apparently unrelated fields of optics is given in the minute but almost continuous involuntary movements of the eyes during so-called fixation. Photographic registration of these errors of fixation shows that, notwithstanding the most elaborate precautions, movements of the head had not been entirely eliminated. Besides the actual displacement of the eyes with the head, the recorded errors showed distinct coördinate compensatory eye movements, more or less exaggerated by the mechanical interference with the head movements. Abstracting from the influence of the head movements there remain marked irregularities in fixation. In one subject involuntary eye movements of unusual amplitude were found in the place of a hitherto undiagnosed astigmatism. The best known effects of eccentric stimulation constitute further disturbances of fixation. Notwithstanding the conviction, based on introspective data, that an eccentric point of interest may be maintained without occasioning actual eye movement, photographic registration showed in every case distinct and characteristic eye movements. Even when not attended to, eccentric stimuli increase the general instability of fixation whenever they notably diminish the clearness of the fixation mark. They may on the other hand serve a very different function. In certain definite relations to the point of fixation they reduce the amplitude of the involuntary eye movements. For all

three subjects studied a dot was the most unsatisfactory fixation mark, permitting eye movements of the greatest amplitude with the conviction of accurate fixation. Equally unanimous was the effect of eccentric stimuli in the form of radiating lines. A line diminished the amplitude of transverse involuntary eye movement. The fixation of a line as a whole was less irregular than the attempt to fixate a definite point on the line. The results unequivocally condemn the usual point-like fixation mark, whenever even approximate fixation is required. They also furnish the clearest evidence that normal fixation is not a simple mechanical fact but a relatively complex functional process dependent primarily on the clearness of the visual image.

The Fixation of Points in the Visual Field. By CLOYD N. McALLISTER.

This paper was a report on work done for the purpose of determining the behavior of the eye while fixating points. The observer was required to fixate a simple point for a short time, then move the eyes to the right through an angle of about ten degrees, to another simple point or to a point from which lines were drawn. Several movements from the simple point to the point on the right and back to the simple point again were recorded for each observer. The records were made with an Edison kinetoscope camera, at the rate of nine exposures per second. During any period of 'fixation' there was a rapid change of position of the eye over a considerable area about the point. The point to be fixated seldom if ever fell upon the exact *fovea centralis*. In moving from one point of fixation to the other, when both points were simple, the distances were not well taken at first and a corrective movement was required; such a movement was not required after the second or third excursion. When the point on the right was surrounded by lines, the fixation was changed in character, the estimation of the distance between the points very uncertain, the direction of the movements between the points disturbed. When a horizontal line cut by three perpendicular lines was fixated at the points of intersection the character of the fixation periods did not differ apparently from the fixation of a simple point, the distance from one intersection to another was correctly taken after two or three trials, and the eye followed the horizontal line very closely in making the movements. The two eyes do not move with perfect symmetry. During any period of fixation the small eye movements, which apparently are muscular tremors, may be in opposite directions, or the lines showing the paths of the movements may be at any angle. The lack

of coördination of the movements of the two eyes is emphasized by one record which showed that the right eye had moved through an arc of about ten degrees to the second fixation point, while the left eye was still at the first point.

The Fixation Pauses of the Eye in Reading. By WALTER F. DEARBORN.

Photographs made with a modification of the Dodge photographic apparatus of the movements of the eye of different individuals and of the same individual in different readings of the same page, show considerable variation in the number, duration, and relative position within the line of fixation pauses and in the character of the connecting movements. The differences between children and adults were found to be in the general unsteadiness of fixation and inaccuracy of movement of the former. In the speed of movement, and in the number of fixations they did not differ materially from adults. It appears probable from various irregularities and movements of the eyes even in the case of adults, that fixation is not always a matter of a distinct resting or pause even with several millimeters or letters of the line, but that in successive fixations of the same object any one of the several retinal points lying close to the fovea will satisfy equally well the requirements of what is objectively the same fixation, and that there are also movements of the eyes within these limits which do not denote changes in objective fixation. Secondly, there are more or less distinct pauses or breaks in the movement of the eye which are probably periods of significant stimulation, and finally, a shifting of the position of the eye due to various causes shows that our conception of what we mean in general by fixation will need to be modified.

Psychology of Æsthetics:—I. Experimental Prospecting in the Field of the Comic. By LILLIEN J. MARTIN.

This investigation was undertaken for the purpose of becoming directly and personally acquainted with some of the problems involved in that which is termed 'the comic,' and to ascertain by actual trial the possibility of applying satisfactorily certain well known psychological methods to the solution of such problems. In this work of orientation the following methods were employed:

A. *Undirected Introspection.*—Here only workers of long experience in the psychological laboratory participated. Three series of experiments were made—*Series a*, serial method—the comic pictures were shown in turn to the reagent and he recorded his introspec-

tions. *Series b*, paired method — two comic pictures were presented simultaneously to the reagent for the same purpose. *Series c*, in which a single comic picture was placed before the reagent for five minutes to observe and report on the course of the comic impression.

B. *Experiment*. — Six series of experiments were made in which the various psychophysical methods were applied to investigating the comic: *Series 1*, in which the *method of impression with serial judgments* was used to ascertain: (1) the constancy of the comic impression, *a*, from day to day, *b*, from moment to moment; (2) whether the comic impression was renewed, increased, or decreased through interspersing pictures not before seen, through forced or spontaneous laughter, through drinking coffee, through sickness and low spirits, through the rigid holding of the body or through laying aside the pictures that had ceased to be funny for several months and then reëxamining them. *Series 2*, in which the *method of constant differences* was employed to learn whether time and space differences ('errors') were present in the experiments with comic pictures. *Series 3*; here the *method of averages* (suggested by methods of 'average error') was used (1) to find in what direction a preceding comic or sad picture affected the judgment of the succeeding comic picture and (2) to investigate the relation of smiling and laughter or a tendency in that direction to the judgment given regarding the degree of funniness. *Series 4* was a mass experiment in which the *method of choice* was applied to ascertaining (1) the influence of smiling and sober faces upon the comic impression, (2) the effect of the size of a picture upon the strength of the comic impression, (3) in this connection experiments were also made to find out the effect of movement upon the comic impression. *Series 5*. The *method of gradual variation* (suggested by the method of 'minimal changes') was used for the purpose of determining whether there is, in the case of a single individual or of individuals as a whole, any particular degree of exaggeration which makes a given thing most comical. *Series 6*. The *method of expression* was applied to ascertain the peculiarities of the pneumographic and sphygmographic curves when the stimuli were comic pictures.

Summary of Results. — The experimental results show (1) that the comic impression from a picture decreases in the same experiment from moment to moment and in successive experiments from day to day, and that the rapidity with which this occurs depends partly at least upon the complexity of the details; (2) interspersing new pictures between the old, forced or spontaneous laughter, drinking coffee,

good physical condition and high spirits, a non-rigid holding of the body and a longer period between the exposures of a given set of pictures, help the comic effect; (3) that time differences may exist when two pictures are successively examined and compared, that is, differences growing out of the fact that one picture is seen before the other; also time influences, that is, differences arising from the unequal loss or gain of fun in the norm and the comparison at the same sitting and successive sittings; (4) that space differences which depend on whether a picture is at a reagent's right or left also exist when two pictures are compared; (5) that a sad or comic fore-picture affects the comic impression received from a given picture; (6) that the direction of the judgments of the degree of funniness and of the tendency to smile and laugh take a similar course; (7) that the presence of a smiling and doleful face in a picture increases its funniness; (8) that increasing the size of a picture and moving it help its funniness; (9) that the method of gradual variations is particularly adapted to investigating the particular degree of exaggeration which is most comic; (10) looking at comic and other pictures and listening to jokes increased both the rapidity of the breathing and of the pulse.

C. Directed Introspection.—The introspection was directed by means of a questionnaire. Since all previous investigation of the comic has been equivalent to using a questionnaire and one person answering the questions, it has seemed desirable to employ this method also, in spite of the fact that suggestion must play an important rôle in using it. Moreover, an attempt was made to give this method in some slight degree the character of a psychophysical measurement method through the introduction of judgment categories and a comparison of the introspections regarding the phenomena observed with the judgments given. In one case, that of imitation, the conclusions drawn from the questionnaire have been put to the test of experiment, in which persons who had had experience in the psychological laboratory took part. The material used in the experiments was largely composed of pictures taken from comic papers. A full account of this research appears in the January number of the *American Journal of Psychology*.

The Synthetic Factor in Tactual Space Perception. By THOMAS H. HAINES.

An investigation in tactual localization by Weber's second method is reported. The observers were six with normal vision and seven blind. The object of the experiments was to show the function of the

visual image in tactual localization. This is shown by a comparison of average errors in 24 points on the volar surface of the forearm for the normals and for the blind, and for the normal with natural attention and the same with a special effort at visualization. It is assumed in common with a goodly number of psychologists that the visual factor will show itself in the better localization (smaller error) on the sides of the arm. This effect is manifest in only four of the six normal observers, and in some of these the excess error in the middle is so small as to be attributable to accidental causes. One of the blind observers gives the same result. The normal observers with special effort at visualization also reverse themselves and give the smallest average error in the middle. The blind observers, with the exception of two, give the smallest error on the *radial* (far) side of the arm. The direction of error is predominantly peripheral and *radial* for the blind, while it varies greatly in the normal, and some of them show different tendencies on different parts of the arm. This coördination of least error on radial side and dominance of radial errors seems to indicate, in a preliminary way, the typical reaction of the blind where the visual image is surely excluded. This is probably due to the greater tactual functional significance of the radial side of the arm. Local signs and inner tactual sensations are thus better coördinated. The introduction of the visual image evens all parts up to this. But the importance of the visual image has been overestimated. It does not have the influence in better localization which has been attributed to it. Introspections of both the blind and seeing observers indicate that the inner tactual sensations of the touching and the touched member play a much more considerable part than has been attributed to them. But the question as to what that part is—an important question not only in tactual space perception, but also in individual psychology—is not answered here. The function of this paper was rather to get the question definitely raised.

The Plot Interest. By WILLARD C. GORE.

Recent discussions of philosophic method, particularly those involving the so-called pragmatic method, have incidentally brought to light wide differences in standpoint, so temperamental, so individual, as to arouse a psychological interest. Philosophy in the making is clearly psychical. It was not the object of this paper to discuss these individual differences in philosophy, but to raise the more general and preliminary problem as to what is the psychical character, the 'mental pattern' of the philosophic interest. For the purpose of raising and

to some extent defining this problem the following hypothesis was stated: The type of interest known as philosophic assimilates to that fundamental and familiar type of interest known as plot interest. Philosophic interest and plot interest are related as species and genus. Within the plot interest two types of interest are discriminated. (1) Interest in following, or rather inactively pursuing the course of the plot; interest in a conflict, in suspense, in whatever challenges speculation; in a word, the æsthetic interest. (2) Interest in constructing, in weaving the plot; in working it out to a consistent whole; in a word, the artistic interest. These two types are normally alternating and correlative. The isolation of either gives rise respectively to æstheticism and to formalism. The æsthetic and artistic types of interest pre-figure the two limits within which philosophic activity falls; namely, the speculative and the systematizing limits. The speculative, Platonizing interest in philosophy corresponds to the æsthetic interest in plot. The systematizing, organizing Aristotelian interest in philosophy corresponds to the artist's interest in plot. The two interests in philosophy are normally correlative and alternating, within the experience of the individual. The isolation of either gives rise respectively to some form of Neo-Platonism or mysticism, on the one hand, and to some form of scholasticism on the other. The affinity of the philosophic interest for the plot interest rests upon the inherent nature of all thinking to be dramatic, in the sense of being the reflection, the rehearsal, of situations involving conflict and readjustment.

Recent Theories of Genius. By I. WOODBRIDGE RILEY.

The literature of genius during the last two years presents two tendencies: Negative against the Lombrosian or pathological school; positive toward the explanation of genius as a superb synthesis of normal functioning. There is also a popular attempt to make genius a manifestation of the unconscious. The results of these investigations are apparently contradictory. (1) The pathological school (Lombroso, Nordau, Nisbet) makes genius a neurosis of an epileptoid nature and like insanity a phase of a morbid susceptibility; its opponents say there is here no necessary lack of balance in the cerebro-spinal system (Stanley Hall, Moebius, Flechsig). (2) The physiological school conceives a genius as a higher faculty depending upon a given physical endowment (Allara, Renda), others say there are certain mysteries of endowment not open to analysis (Jastrow, Nazzari). (3) The social school considers the great man the essence, the index, or the initiator of social progress (Séailles, Joly, Baldwin); against this some hold that

the causes of production of great men lie in a sphere wholly inaccessible to the social philosopher (James, Spiller). (4) The subliminal school postulates an extra, subconscious personality with superior memory, imagination and inductive powers (von Hartmann); on the contrary others assert that such a consciousness is not an inner light, not a peculiar supernormal activity (Fullerton, Jastrow). But the subliminal considered as the minimal consciousness offers the best explanation of the apparent neuropathic or psychopathic characteristics of genius. Recent experiments in the discrimination of auditory and visual stimuli just above the threshold of consciousness might explain, for example, hyperæsthesias of genius.

The Three Types of Religious Consciousness. By F. C. DOAN.

Recent investigations of religious consciousness have exhibited two rather different methods of approach to the field at large. The most popular of these is of course the questionnaire method. There begins to recommend itself, however, another method of approach, namely, that which proposes to exhibit the motives underlying comparatively large religio-social groups. This method insists that the data supplied by the large sect, church, tribe, race and world movements are the really significant deposits of spiritual purposes. Both these methods are essentially pragmatic. Reality is held to be religiously significant only in those spots where it has been mellowed by the persistent rappings of spiritual impulses. On the basis of the second of these methods we may say there are three types of normal religious consciousness: the rational, the emotional, and the active or pragmatic. The first of these seeks to fill in the gaps of an otherwise self-contradictory reality with the solid masonry of an unyielding dialect. The emotional or mystic temperament floats over these gaps by sheer force of good feeling. The pragmatic type avoids the gaps altogether and follows the well beaten paths of its practical experience of the ultimate. It experiments with its gods. In some cases it retains an assortment of gods each a specialist in his proper field. Sometimes it adopts a surreptitiously deified man of the tribe; sometimes it accepts a becoming god whose affinity is moral rather than ontological. The history of religions is really a record of the almost uninterrupted triumph of the practical over the speculative and emotional in the religious consciousness of the race. Moreover, the religious culture of to-day is more intensely practical than ever before in the history of the race. The paper closed with, (1) A classification of great religious movements according to these three types, and (2) some suggestions as to the probable physiology of the types.

An Historic Note on Hypnotism. By BROTHER CHRYSOSTOM.
(Read by title.)

A. So far as the present writer knows the word *hypnotic* occurs for the first time in English in a curious passage to be found in a book of the seventeenth century. It is entitled "*A Ternary of Paradoxes: The Magnetic Cure of Wounds; The Nativity of Tartar in Wine; The Image of God in Man.*" Written originally by Joh. Bapt. Van Helmont, and translated, illustrated, and amplified by Walter Charleton, Doctor in Physick, and Physician to the late King. London. Printed by James Flesher for William Lee, dwelling in Fleetstreet, at the sign of the Turkshead, 1650." This is the *second* impression. The passage in question occurs in § 154 of the tract on the 'Magnetic Cure of Wounds' and reads: 'To this series belongs the subductive virtue of Cathartic or Purgative, the somniferous faculty of *Hypnotick* or dormative *medicaments*, etc.' I have been unable to find a copy of the Latin original of Van Helmont, and therefore I do not know whether the term was coined by Dr. Charleton.

B. In Harper's *Metaphysics of the School*, Vol. III., Pt. I., pp. 350, 351, and footnote, occurs an interesting application of Baron von Reichenbach's theory of the *od* to the question of indistancy, with corollaries referring to the 'evil eye,' animal magnetism, hypnotism, etc. As a relaxation one may then take up Gantier's 'La Jettatura,' which is capitally written.

C. The relation of hypnotism to fundamental principles of philosophy and theology is probably best treated by the Dominican professor Coconnier in his thoughtful book, '*L'hypnotisme franc.*'

FOURTH ANNUAL MEETING OF THE AMERICAN PHILOSOPHICAL ASSOCIATION.

The fourth meeting of the American Philosophical Association was held in Philadelphia, December 28-30, 1904, about sixty members attending. There were five sessions besides the evening meeting for the president's address on the twenty-ninth. Twenty-four papers were read, six others were read by title. The social features included the annual dinner of the Naturalists and the affiliated societies and a joint smoker with the American Psychological Association. The following officers were elected: *President*, Professor John Dewey (Columbia); *Vice-President*, Professor J. A. Leighton (Hobart); *Secretary-Treasurer*, Professor J. G. Hibben (Princeton); *Members of the Executive Committee for two years*, Professor H. N. Gardiner (Smith), Dr. R. B. Perry (Harvard). It was voted to hold the next meeting in Cambridge, the association accepting the invitation of the Philosophical Department of Harvard University to take part in the inauguration of the new Emerson Hall of Philosophy. It was also voted to invite the Western Philosophical Association and the Southern Society for Philosophy and Psychology to meet with the association at that place and time.

ABSTRACTS OF PAPERS.

President's Address: *The Mission of Philosophy*. GEORGE TRUMBULL LADD.

This address will be printed in full in the March number of the *Philosophical Review*.

Morning Session, Dec. 28.

Knowledge as the Subject of Epistemology. WALTER T. MARVIN.

The subject of epistemology is not knowledge in the concrete, but completely rationalized knowledge. This is an idealized abstraction. No such knowledge exists as a concrete psychosis; it exists as an element in some psychoses. Its office is to narrow the field of risk in the non-rational processes involved, *e. g.*, in discovery, invention and the practical conduct of life. It itself deals only with present data; it does not predict. In its extreme form it would block all venturesomeness on the part of knowledge. It is the struggle of the mind

towards complete rationality which forms the true subject of epistemology.

The Something in Thought besides Idea. EDWARD S. STEELE.

A vindication of the judgment as the unit of thought rather than the idea. We find in thought besides ideas meaningful elements (constituting logical form) significant for the thought process only, and not reducible to idea.

The Growth of Concepts. GEORGE R. MONTGOMERY.

Concepts are to be regarded as variable functions one of another, as calculus uses the word function. Notions of calculus, therefore, are best fitted to represent the mobility of concepts. With this representation we can see that in the analytic-synthetic processes the whole depends for its meaning on the parts and shares in their changes. The epistemological unit, therefore, is not the sensation, nor the term, nor the proposition with the copula, but the analytic-synthetic triad. The proposition with the copula is merely one leg of the analysis.

The Metaphysical Status of Universals. WILMON H. SHELDON.

The universal or general concept can be fully defined in functional or dynamic terms as a particular image or response plus a suggestion of further possible similar images or responses. The suggestion is due, not to our mind, but to the nature of the particular content; it is a concrete fringe of the image or response. Thus a universal is quite concrete and as real as any individual fact or event.

Truth and Practice. A. E. TAYLOR. (Read by title.)

Afternoon Session, December 28: Commemorative of the Centenary of the Death of Kant, the Southern Society for Philosophy and Psychology Coöperating.

Kant's Doctrine of the Basis of Mathematics. JOSIAH ROYCE.

Kant's theory of the basis of mathematics has been in one respect wholly abandoned, and properly so, by the modern logic of mathematics; the certainty of mathematical science is no longer regarded as depending on the necessity of constitutionally predetermined forms of perception. In another respect, so far, namely, as he declared that constructive synthesis and observation of its ideal results are both necessary for mathematics, Kant was unquestionably right. And as nobody before him had so clearly seen this fact, and as the progress

of mathematical logic since has been profoundly influenced by his criticisms, we owe to him an enormous advance in our reflective insight in this field.

Kant's Attitude towards Idealism and Realism. EDWARD FRANKLIN BUCHNER.

By collecting and classifying chronologically Kant's various expressions of his conception of idealism and realism, the paper offered a new point of view for estimating the idealistic or the realistic outcome of the Critical Philosophy.

The Present Significance of Kant's Ethics. W. CALDWELL.

This significance is due to Kant's spiritual philosophy of human nature. This spiritual philosophy is implied in all recent attempts to treat moral judgment as one of valuation; in recent epistemological assumptions about personality; in the theory of sovereignty or autonomy in the ethics of Social Democracy. The independence of ethics both of metaphysics and of naturalism is an important part of Kant's teaching. Again, his emphasis on the standard as the law of personal dealing in a social realm frees us from many of the difficulties of the teleological moral philosophy of the present. Kant's version of the standard is also the one most consonant with a true theory of moral progress.

The Significant and the Non-Essential in Kant's Æsthetics. JAMES H. TUFTS.

The more significant doctrines or suggestions are those of the social implications in the æsthetic judgment, of the freedom and enhancement of life in the æsthetic attitude, and of the organic relation of æsthetics to philosophy.

The Influence of Kant on Theology. GEORGE WILLIAM KNOX.

The effect of the Kantian criticism was three-fold: (1) The doctrine that God was unknowable led some theologians to regard theology as impossible, while others had recourse to revelation, the conception of God being retained in its pre-Kantian form; (2) a larger and more influential body of theologians attempted a reconstruction, rejecting the notion of God's transcendence and seeking to find Him immanent in the processes of the mind, either in feeling, with Schleiermacher, or in thought, with Hegel; (3) a movement which may be classed as Neo-Kantian and which is practical and professes to be scientific — the theology of the school of Ritschl.

Kant and Aquinas. BROTHER CHRYSOSTOM. (Read by title.)

In spite of marked differences in point of view, Kant and Aquinas have many points of contact. Both go back of the oppositions given to each respectively to find a common principle, Aquinas for the construction of a synthetic, Kant for the construction of an analytic philosophy. Kant was prevented by his excessive distrust of the principle of authority, by his solitary life and by his mental rigidity from giving to his system a solid foundation in the real order. Aquinas, on the other hand, joined to exceptional natural gifts the advantages of travel and of instruction under one of the most learned men of the day (Albertus Magnus), and to the precision of the logician the skill of the poet; he was therefore the possessor of sympathy and insight. A detailed comparison of the views of both thinkers regarding the limitations of our cognitive powers brings out many more points of contact.

Morning Session, December 29: Joint Session of the Philosophical and Psychological Associations.

Wundtian Feeling Analysis and the Genetic Significance of Feeling. MARGARET FLOY WASHBURN.

The Isolation of Minds. D. S. MILLER.

The Nature of Consciousness. FREDERICK J. E. WOODBRIDGE.

A Suggestive Case of Nerve Anastomosis. GEORGE TRUMBULL LADD.

The System of Values. HUGO MÜNSTERBERG.

[For abstracts of these papers, see pp. 49-53.]

Afternoon Session, December 29.

Consciousness in the Brutes. GEORGE V. N. DEARBORN.

The presumption that the nervous system is the physical basis of consciousness is unwarranted, because the metabolism of the nervous system is inadequate to the empirical nature of the mental process. On the other hand, the unique complexity of the structure and the metabolism of protoplasm in general corresponds more nearly to the extensivity and intensity of empirical consciousness. The nearly perfect analogy between the anatomy and the physiology of man and those of the most complex brutes amounts to a demonstration of the latter's consciousness, while the principle of continuity warrants a belief that

all animals are conscious, the simplest experiencing little but sensation and 'will,' while cognition develops probably with the comprehending functions of the nervous system.

The Psychological Self and the Actual Personality. JOHN ALEXANDER LEIGHTON.

The aim of this paper was to show that psychology neither in its structural nor in its functional analysis does justice to the actual personality. The latter was shown to be manifested and realized in the teleological constructions of historical culture, and the ultimate condition of human culture systems was asserted to be a transcendent and rational dynamic unity manifested in empirical, historically conditioned individualities.

The Relational Theory of Consciousness. W. P. MONTAGUE.
(Read by title.)

The theory that consciousness is a form of relation between objects is compared on the one hand with the Cartesian and Berkeleyan conception of consciousness as an entity or substance, and on the other with the Spinozistic and Huxleyan conception of consciousness as an epiphenomenal series of secondary qualities, parallel to the physical series of primary qualities.

An Interpretation of Aristotle, de anima, III., 7, 431 a 16-b 1.
W. R. NEWBOLD. (Read by title).

The passage is not, as commonly supposed, a repetition of the theory of simultaneous perception of concretes by the common sense. It is an application of that theory to the simultaneous perception of a concrete (*αἴσθημα* or *φάντασμα*) and the corresponding intuition (*νόημα*, *τι ἦν εἶναι*). So in the second of the propositions Γ and Δ stand for the *νόηματα* of white and black, *e. g.*, color analytic of the eye and color synthetic of the eye. The sentence *καὶ ταῦτα ἐν τῷ ἀνάλογον* shows that the consciousness of that wherein two presentations differ (*τί*, not *ὅτι*) consists in grasping simultaneously the presentation in question and the *νόημα* of the other.

Primary and Secondary Phases of Causality—Natural Science Founded on the Latter and Theology on the Former. WILLIAM T. HARRIS.

A chain of secondary causality cannot be thought by itself as without the need of a first cause. Any link which originated causality would in so far have to be a first or primordial cause. All secondary

causes belong to the pole of the effect. The larger the sphere of the effect the more influence and power in the cause producing such an effect. If therefore the chain of secondary causes be supposed infinite, there must be presupposed an infinite causal influence. If this is denied, all of the links of the chain transmit, and no link originates. But in that case there is no causality to transmit. The denial of a first cause is the denial of all secondary causes and consequently the denial of the entire sphere of causality in experience, and the supposed pole of experience, which notes things and events as derivative, is all an illusion.

The Agnosticism of Herbert Spencer. GABRIEL CAMPBELL. (Read by title.)

Spencer, by heredity a non-conformist, displayed an impulsive antipathy to authority, political as well as religious. Bodily infirmity prevented him from attending school and devoting himself to books, thus debarring him from being a scholar in philosophy or an expert in science. Mentally a castle-builder, with the ambition of a reformer, his copious writings are sagely devised, but impractical. Early championing evolutionism, he aims to displace a supreme ruler; the absolute reality is characterized as unknowable. Freedom of will is excluded by irreversible law. His absolute morality would be intermediary between empiricism and idealism. He finds religion indispensable, but his theistic ideas are incoherent.

Morning Session, December 30.

Deism in America. I. WOODBRIDGE RILEY.

Confining itself to the rise of deism in Yale College, the paper discussed the deistic influences in the writings of Bishop Berkeley, Dr. Samuel Johnson, Rector Clap and President Stiles. The latter's reading of Shaftesbury, Leland, Middleton, Hume and Lord Kames was shown to have incited Stiles' remarkable appeal for freedom of thought, now first given in its entirety from hitherto unpublished documents.

Philosophy and Immortality. FRANK S. HOFFMAN.

Recognizing that human immortality is a matter of high or low degree of probability, the author attempts to establish it from the three standpoints of the origin and nature of man, the rationality of the universe and the moral perfection of God.

Gambling as Play: its Nature and the Moral Character of it.

HERBERT G. LORD.

This paper was an endeavor to determine with some degree of precision the nature of gambling in general and of gambling as play in particular. The second part of the paper was a search for some solid basis for the moral judgment of gambling as play. After an examination of the various objections to it, no justification of its almost universal condemnation was found.

Remarks on Ethical Method. H. W. WRIGHT.

This paper suggests an evolutionary interpretation of morality. Moral development is treated as a process of organization in which purposive activity is the principle of unity and the different virtues are necessary stages.

Stages in the Discussion of Evolutionary Ethics. THEODORE DE LAGUNA.

The stages are severally concerned with a supposed conflict between ethics and evolution; with the setting up of evolutionary laws as a standard for morality; with the treatment of ethical problems in terms derived from the theory of organic evolution; with the assertion of the distinctive nature of social and of specifically moral evolution; and with questions of method.

Is there a Distinct Logic of Historical Construction? PERCY HUGHES.

A clear perception of action as the concept of historical construction would bring about important results: adequate instruction in history in the schools; the inclusion in the work of the practical historian of the progressive realization of truth and of beauty; and the definition and evaluation of the economic, social and other lines of historical development.

Methods of Studying the History of Philosophy. J. MACBRIDE STERRETT. (Read by title.)

The methods described and criticized from the point of view of the 'organic' theory of the history of philosophy, namely, that it is the work of one mind through the ages on the same problem of the most universal concrete principle back of, in and constitutive of the whole of experience, were the biographical, the merely historical or

learned, the merely sceptical, the eclectic, the *tendenz*, the modern historical, the critical and the philosophical, or method of Hegel. The last was the one commended.

[For the fuller report of the meeting, see the 'Proceedings' of the Association in the March (1905) number of the *Philosophical Review*.]

H. N. GARDINER.

PROCEEDINGS OF THE FIRST ANNUAL MEETING OF
THE SOUTHERN SOCIETY FOR PHILOSOPHY
AND PSYCHOLOGY, BALTIMORE, MD., AND
PHILADELPHIA, PA., DECEMBER 27 AND
28, 1904.

REPORT OF THE SECRETARY.

The first annual meeting of the Southern Society for Philosophy and Psychology comprised two sessions. The first session was held in the Philosophical Seminary room of McCoy Hall at the Johns Hopkins University, Baltimore, Md., on Tuesday, December 27, at which the papers by the members, mentioned below, were read before the Society. The second session was held in College Hall at the University of Pennsylvania, Philadelphia, Pa., on Wednesday, December 28, in connection with the American Philosophical Association, the occasion being in commemoration of Immanuel Kant. About fifteen members were present.

The Society was organized to stimulate interest in philosophy and psychology in the academic institutions in the southern portion of the United States, which have for the most part hitherto lain outside the field of the active influence of the two older American associations.

Special features of the Baltimore session were the entertainment of the Society at luncheon by Professor and Mrs. J. Mark Baldwin, and the cordial welcome on behalf of the Johns Hopkins University by President Ira Remsen.

At the business meeting, held on December 27, the constitution was adopted, the membership elections made by the organizing Council ratified, and the officers for 1905 elected as follows: *President*, Professor J. Mark Baldwin, Johns Hopkins University; *Vice-President*, Professor Edward A. Pace, Catholic University of America; *Secretary-Treasurer*, Professor Edward Franklin Buchner, University of Alabama; *Members of the Council*: to serve one year, Professor J. A. Quarles, Washington and Lee University, and Mr. Reuben Post Halleck, Louisville, Ky.; to serve two years, Professor J. MacB. Sterrett, George Washington University, and Professor A. C. Ellis, University of Texas; to serve three years, Dr. William T. Harris, Washington, D. C., and President D. B. Purinton, West Virginia University.

The president and the vice-president were appointed a committee to determine in consultation with similar committees of the American Philosophical Association and the American Psychological Association the conditions of common membership on the part of those who belong to two or more of these organizations, and to consider the matter of affiliation in general.

The Society adopted an arrangement with the PSYCHOLOGICAL REVIEW, whereby subscription to this journal was offered to members in consideration of the payment of the annual dues of three dollars, except in the case of those who already subscribe to the journal, for whom the membership fee is to be one dollar. The Society, in accepting this plan, agreed not to misuse this privilege to the impairment of the present subscription list to the journal.

ABSTRACTS OF PAPERS.

Baltimore Session.

The Poggendorff Illusion. By W. M. STEELE. (Read by title.)

Influence of Secondary Stimuli in Certain Complex Perceptions.

By HAYWOOD J. PEARCE.

This paper dealt with the results of some experiments recently conducted in the psychological laboratory of Brenau College. It was shown that if a single line (8, 10 or 12 centimeters in length) be taken as primary stimulus and other lines varying in length from 2 cm. to 18.0 cm. be taken as secondary stimuli, the presence of the secondary stimulus in the complex perception causes an apparent increase in the length of the primary stimulus so long as the secondary lines are shorter than the primary. The maximum effect is produced when the secondary is one half the length of the primary, and there is no apparent change in the length of the primary when it is equal to the secondary. When the secondary becomes longer than the primary the latter is made to appear shorter than it does when not accompanied by secondary stimuli.

The second group of experiments showed the effect upon the position in the visual field of a dot, 2 mm. in diameter, produced by the presence of a second dot, 5 mm. in diameter, and at varying distances. It was shown that the first dot or primary stimulus was displaced in the direction of the second or secondary stimulus.

In all of these experiments the author found evidence to corroborate the results of experiments previously reported,¹ and in harmony

¹ The method of conducting these experiments as well as the arrangements of primary and secondary stimuli was described in the PSYCHOLOGICAL REVIEW, Vol. XI., No. 3.

with the hypothesis that the effect of the secondary upon the primary stimulus varies directly as the product of their masses or lengths, and inversely as the square of the distance between the two.

The author cited references to experiments made by himself upon tactual space perception, and, in general, the phenomena of illusion, visual and tactual, as the basis for the following generalization:

Whenever consciousness becomes spatial in character the laws which operate between bodies in space as a whole also operate between the elements of that portion of space which is represented in consciousness. When any portion of space is isolated in consciousness as conscious phenomenon there must take place a readjustment of the elements of this ideal space world or microcosmos. In the process of readjustment the laws of the microcosmos prevail.

The author does not attempt, for the present, to decide whether the interaction between primary and secondary stimuli is a direct one or whether it is indirect and mediated by the attention.

Some Oddities of Sensory Discrimination and Memory. By G. M. STRATTON.

The experiments here reported were made for the purpose of gathering material for a comparison of the different senses with respect to their retention of intensities. With this idea in mind, two sorts of determinations were made for each person experimented upon, namely: (1) The person's power of discrimination when but a brief interval (2 seconds) elapsed between two impressions to be compared, and (2) the change which occurs in his power of discrimination when the interval is lengthened many times (120 seconds). Experiments were made in passive pressure, active strain, hearing and sight; and, to make the comparison just, identical methods were employed in all these fields.

The main result obtained is that the rank of the senses in their ability to retain a given intensity is about the reverse of their rank for the general purposes of knowledge. The best of the senses as regards intensive memory is active strain, next comes passive pressure, and lowest in order come the 'higher' senses, hearing and sight—sight being poorest of all. But though this ranking is quite a departure from what common sense would have given beforehand, yet upon reflection it is seen to be in keeping with the different degrees of usefulness which the retention of intensity possesses in these different sensory fields.

In addition to the answer thus obtained to the main problem of

the investigation, it is interesting to note that very many of the observers in certain of their senses made considerably finer discriminations with the longer interval of time than with the shorter. And, finally, the curious fact comes out that the intensity which after an interval is subjectively identified with the intensity originally given, takes such different courses in the different senses, and in the same sense according as the interval is long or short. Distortion is apparently a universal trait of memory. And in general the 'higher' senses of hearing and sight are those in which this tendency to distortion is most strong.

The Meaning of Analysis in Psychology. By EDWARD A. PACE.
(Read by title.)

Dualism. By JAS. A. QUARLES.

The monistic instinct has shown itself in the speculations of the philosophers of all ages. Dualism, the rival, is seen in all the sciences; throughout every realm of thought and thing we see it more or less absolute and irreducible. Moreover, the dualistic principle has been generally recognized in all the philosophic theories of ancient and modern times.

These dualisms are not all of the same kind or degree; some may be bridged by continuity, others are cases of correlation; but some are of kind, and are irreducible.

There are three fields where we find this last class. In ethics we have the antithesis of right and wrong. In theology a similar distinction of the radically and eternally good gods and evil gods has been held; but here there is a more important dualism of opinion as to the simplicity or complexity of the Divine Nature. In ontology we have its most contested sphere.

In the world of being, complexity is confessedly apparent, but is it real? So the unsophisticated mind persistently believes. The apparent diversity must be accounted for; if not in the noumenon, how did it come in the phenomenon? The dualism of the infinite and finite can neither be bridged nor denied. Materialism and idealism refute each other, and by their positive teachings confirm dualism. The absolute monisms agree only in denying the reality of the apparently dual, while they antagonize each other as to what the primary monad is.

But are monism and dualism irreconcilable? May it not be that God is the primitive, unitary being, the single, complex source of all existence, by whose omnipotent fiat the diversified universe has come

to be? A God of infinite power can have produced any kind of a universe: all matter, all mind, both, or neither, or merely phenomenal. Has He made a dual, plural, complex world? The ablest and most extreme monists have not been able to rid their theories of the dualism of mind and matter.

Moreover, facts show the reality of this dualism. Matter and mind are forces which have distinct modes of action. Matter always acts under the law of unreasoning necessity, while mind as regularly moves with the freedom of reasoning liberty. Again, matter, in all its forms and in all its forces, is divisible and exclusively appropriable; while mind, in its truths, thoughts, feelings, and purposes, is neither divisible nor exclusively appropriable. Only one person can eat any one apple in its entirety; but unnumbered millions can at the same moment possess the same truth in its integrity.

So mind and matter are a differentiated duad. Matter is extension: divisible, limited, exclusively appropriable, forced. Mind is thought: indivisible, infinite, the common property of all, free. The law of continuity does not bridge the chasm. The true ontology is a primary, original monism—variously styled Substance, the Absolute, the Logos, the intelligent and moral Will, but preferably God, the cause of all complexity—and, along with this primary monism, a secondary, derivative dualism of infinite and finite, creator and creature, right and wrong, matter and mind.

The Introspective Method. By J. W. BAIRD.

A Comparative Study of Religious Systems. By D. B. PURINTON.

Religion is universal. It is the human differential, found wherever man is. Its developments are Protean in variety, from the simplest to the most complex forms. Such students of religious systems as Max Müller, Brinton, Clark, Fairbairn, Renan, Whitney and others have offered divergent methods of classifying them. Among these suggested classes are the following: true and false religions, revealed and natural, individual and national, Biblical and non-Biblical, monotheistic, ditheistic and polytheistic. Perhaps the best division is, tribal, ethnic and catholic religions.

All these faiths, even the lowest type called fetichism or animism, have certain important spiritual doctrines in common. Witness the following: (1) Belief in a superior spirit; (2) conviction of the right and duty of worship; (3) belief in the independent existence of the human soul; (4) conviction of sin and of consequent guilt; (5) belief in immortality; (6) expectation that righteousness shall be rewarded

and wickedness punished after death; besides this common ground each great religion has an area of useful truth peculiar to itself. In Egypt the immanence of God in nature was emphasized. And particularly in the 'human form divine.' This is the secret of pyramid, sarcophagus, hieroglyph and embalming. Every mummy is 'on a Pilgrim's Progress to Paradise.' Brahminism is a spiritual religion, all for the next world, nothing for this. Buddhism is altruistic, brotherly, virtuous, but unfortunately atheistic. Confucius taught purity of life, but did not know much about God. The ancient Persian faith is a persistent dualism between good and evil. Ormuzd and Ahriman are everlastingly striving for supremacy. In the Pantheon of Scandinavia there are two similar gods, Odin and Loki. The Elysian fields of Valhalla are reserved for the brave, the damp of Nifelheim for the cowards. The ancient Greek was esthetic, humanitarian. He loved beauty and pleasure, and never took his religion very seriously. The Roman was a man of affairs. He put the state first, respected military might, worshiped the emperor. Mohammed taught a pure monotheism, but deified omnipotent will and degraded love. A survey of all religions discovers something good and true in each of them.

Christianity includes all the good in other faiths, and much more peculiar to itself. And this latter element is incomparably most vital of all. Witness the following beliefs found nowhere outside the Christian faith: (1) Holiness of God, (2) love of God, (3) spiritual helplessness of man, (4) divine redeemer of men, (5) union of faith and reason in religion, (6) union of masculine and feminine virtues in human character and life. Christianity is immeasurably superior to all other religions in that it leads to holiness of heart and virtue of life, unites the deepest thought of the mind with the loftiest aspiration of the soul and lays upon both the enduring blessing of heaven.

Philosophy as Developed according to the Tendencies of the American Mind. By GEORGE L. RAYMOND.

Professor Raymond noted certain characteristics in art, politics and religion, of the English mind from which, through lineage or literature, our countrymen mainly derive their tendencies, in connection with which he spoke of insight and invention as those which we had chiefly developed. He contrasted the representation of stories in an English picture with the French conception that they should not be represented, also the representation of principles in English political parties with that of classes in French parties, and the agitation of

religious reform in England through dissenting churches with the adherence of the French, notwithstanding much skepticism, to a single church. He recalled also how the American's neglect of form, even when apparently necessary, had given rise to the term 'shirt-sleeve diplomacy,' and how the opposite trait in the Frenchman had caused him to be caricatured on the stage as always dancing attendance upon trivial surroundings. From such data he drew the conclusion that the American had a natural tendency to be interested in what was underneath the form, which, in philosophy, would mean idealism. He pointed out, too, that a philosopher, to have permanent influence in a country, ought to have a system in harmony with the mental bias of his countrymen. He thought it pertinent, therefore, to ask in what way the physiological investigations of the day, with their undoubted tendency toward materialism, might, with no detriment to their legitimate influence, be accommodated to idealistic requirements. He thought that this might be done in the recognition of the duality of consciousness. The body, he argued, was part of the non-self, by being conscious of which, through using memory and reasoning, exercised in experience and experiment, we attained to what in science is termed knowledge. But, he said, we are besides this conscious of a self which, while connected with the body, differs from it. As the consciousness of the non-self leads, through reasoning, to a conception of the environment of the non-self; so a consciousness of the self, through the same process of reasoning, leads to a conception of the environment of the self. The first conceptions that we get through the non-self are of space and time; the first conceptions that we get through the self are of infinity and eternity, and so on. From the testimony of the non-self we advance, through processes of memory, reasoning and experiment toward what is termed knowledge; from the testimony of the self we advance, in the same way, toward what is termed faith. As men are as much governed by faith as by knowledge, we have here not a theory but a fact, which philosophy should explain. Faith, though of supreme importance in religion only, is as necessary to science as knowledge, though of supreme importance in science only, is to religion. In conclusion, the philosophic relation of this subject to psychic research was pointed out. The interest of the philosopher in this is connected with the question whether, in certain hypnotic or trance states, an intelligent self can leave or enter a body, or whether all the phenomena can be attributed to telepathic or subconscious influence.

Address of the President: *Sketch of the History of Psychology.* By J. MARK BALDWIN.

An interpretation based on the development of self-consciousness in the individual. (The address is to appear in full in the March-May issue of the PSYCHOLOGICAL REVIEW.)

Philadelphia Session.

The program commemorative of Immanuel Kant, in conjunction with the American Philosophical Association, at which the Society was represented by Professor Edward Franklin Buchner, is reported in full in the Proceedings of that Association, see pp. 65-67.

LIST OF MEMBERS.

- Arnett, Professor L. D., Epworth University, Oklahoma, Okla.
 Baird, Dr. J. W., Johns Hopkins University, Baltimore, Md.
 Baldwin, Professor J. Mark, Johns Hopkins University, Baltimore, Md.
 Bierly, Professor H. E., Grant University, Chattanooga, Tenn.
 Buchner, Professor E. F., University of Ala., University, Ala.
 Cranford, Professor W. I., Trinity College, Durham, N. C.
 Davis, Professor N. K., University of Va., Charlottesville, Va.
 Denny, Professor C., Vanderbilt University, Nashville, Tenn.
 Ellis, Professor A. C., University of Texas, Austin, Tex.
 Farrar, Dr. C. B., Sheppard-Pratt Hospital, Baltimore, Md.
 Flinn, Professor J. W., South Carolina College, Columbia, S. C.
 Franklin, Mrs. C. Ladd, 220 W. Monument St., Baltimore, Md.
 Furry, Mr. W. D., Johns Hopkins University, Baltimore, Md.
 Griffin, Professor E. H., Johns Hopkins Univ., Baltimore, Md.
 Halleck, Mr. Reuben Post, Boys' High School, Louisville, Ky.
 Harris, Dr. W. T., 1360 Yale St., N. W., Washington, D. C.
 Lane, Professor W. B., Randolph-Macon Woman's College, Lynchburg, Va.
 Laws, Dr. S. S., 1733 Q St., N. W., Washington, D. C.
 Lefevre, Professor A., Tulane University, New Orleans, La.
 Lodge, President L. D., Limestone College, Gaffney, S. C.
 Meyer, Professor Max, University of Missouri, Columbia, Mo.
 Pace, Professor E. A., Catholic University of America, Washington, D. C.
 Parrish, Miss S. C., State Normal School, Athens, Ga.
 Pearce, Professor H. J., Brenau College, Gainesville, Ga.

Purinton, President D. B., West Virginia University, Morgantown, W. Va.

Quarles, Professor J. A., Washington and Lee University, Lexington, Va.

Raymond, Dr. G. L., 1810 N St., Washington, D. C.

Roark, Professor R. N., Kentucky State College, Lexington, Ky.

Rose, Professor W., Peabody Normal College, Nashville, Tenn.

Steele, Professor W. M., Furman University, Greenville, S. C.

Sterrett, Professor J. MacB., George Washington University, Washington, D. C.

Stratton, Professor G. M., Johns Hopkins Univ., Baltimore, Md.

Swift, Professor E. J., Washington University, St. Louis, Mo.

Weir, Professor E. E., Cumberland University, Lebanon, Tenn.

Williams, Professor H. H., University of North Carolina, Chapel Hill, N. C.

Williams, Mr. R. D., Johns Hopkins University, Baltimore, Md.

PROCEEDINGS OF THE FIRST CONGRESS OF EXPERIMENTAL PSYCHOLOGY, AT GIESSEN, APRIL, 1904.¹

The association of experimental psychologists which held its first meeting at Giessen in April last started out under most favorable auspices. Its membership of 85 includes the most prominent experimentalists of Germany, France and Switzerland, together with a scattered representation from several other countries. The forty papers which constituted the program of the initial meeting covered a wide range of topics. The secretary's report of the proceedings is prefaced by a sketch of the movement which led up to the organization, a statement of the constitution of the congress and a list of its members; the bulk of the volume is however devoted to a summary of the papers read and the discussions aroused. In numerous instances reference is made to the publications in which the papers will be found *in extenso*.

A comparison of the topics discussed with those treated in previous congresses of somewhat similar character, seems to indicate that the psychologists of to-day are disposed to push their investigations more and more into the fields of the 'higher' mental processes, — a tendency which is no less marked in the recent literature. If this can be taken to mean that psychologists are now even moderately satisfied that their foundations are securely laid and that they now feel themselves sufficiently well equipped to grapple with the more complex problems, it is a welcome and hopeful sign.

It is impossible within the compass of a review, to do justice to all of the papers which were read at the congress. The *Bericht* presents them in extremely condensed form — in some instances at the expense of clearness — and yet they cover 127 pages. This review will be obliged to content itself with an enumeration of the subsections and titles, and with such brief comments as will, it is hoped, enable the reader to understand the general character of the treatment accorded to each topic.

¹ *Bericht über den ersten Kongress für experimentelle Psychologie, in Gießen, 1904.* F. SCHUMANN. Leipzig, Barth, 1904. Pp. xxv + 127.

I. INDIVIDUALPSYCHOLOGIE, pp. 1-3.

V. HENRI: *Ueber die Methoden der Individualpsychologie*. The questionnaire and the biography methods are of little value; even the more thorough-going methods have so far failed to furnish an adequate characterization of individual differences.

II. PSYCHOPHYSIOLOGIE DER SINNE, pp. 4-45.

G. E. MÜLLER: *Die Theorie der Gegenfarben und die Farbenblindheit*. Proposes several modifications of the Hering theory, to enable it to give a more satisfactory account of color blindness. F. SCHUMANN: *Ein ungewöhnlicher Fall von Farbenblindheit*. Green is seen as gray, but the red-process is present. Contrast and color-equation experiments are described. A. GUTTMAN: *Untersuchungen an sogenannten Farbenschwachen*. Describes the characteristics of two types of weak color-sense; ascribes the abnormality to a central origin. V. BENUSSI: *Ein neuer Beweis für die spezifische Helligkeit der Farben*. Change of brightness may arise without changed condition of retinal adaptation; specific brightness cannot therefore be referred to a different accumulation of retinal substance. H. EBBINGHAUS: *Die geometrisch-optischen Täuschungen*. The results of experiments in which familiar forms of illusions were presented to touch, and to vision with unmoved regard, show that the movement factor does not furnish an adequate explanation. A. TSCHERMAK: *Neue Untersuchungen über Tiefenwahrnehmung mit besonderer Rücksicht auf derer angeborene Grundlage*. Binocular localization in depth is universally associated with disparation; double-images are an essential factor. S. EXNER: *Ueber die Wirkung mehrfacher Rindenoperationen auf den Sehakt*. An explanation of certain hitherto unexplained results of cortical extirpation on the assumption that sense-impressions normally arouse excitation-complexes, which spread out over the cortex and finally act upon the motor centers through the association fibers. F. SCHUMANN: *Die Erkennung von Buchstaben und Worten bei momentaner Beleuchtung*. The various types of imagery coöperate in the reproduction of the image of the stimulus, but this reproduction does not itself constitute cognition. STRUYCKEN: *Bestimmung der Hörschärfe in Mikromillimetern*. Intensity of sound stimulus must be calculated in terms of energy; methods and results of determining auditory acuity. S. ALRUTZ: *Neue Untersuchungen über Hautsinnesempfindungen*. Describes a method of arousing paradoxical sensations of cold, sensa-

tions (?) of moisture, of smoothness and of itching. G. HEYMANS: *Intensitätskontrast und psychische Hemmung*. Suggests an interpretation which correlates contrast with psychical inhibition.

III. GEDÄCHTNIS, pp. 46-55.

G. E. MÜLLER: *Bericht über Untersuchungen an einem ungewöhnlichen Gedächtnis*. Demonstrates a remarkable memory (visual type) and describes the process of acquisition. A. WRESCHNER: *Experimentelles über die Association von Vorstellungen*. Reports quantitative results showing the influence of age, sex and education upon association times of various sorts. K. GORDON: *Ueber das Gedächtnis für affektiv bestimmte Eindrücke*. Reproduction and recollection are not influenced by the pleasant-unpleasant character of stimuli. P. RANSCHBURG: *Ueber die Bedeutung der Aehnlichkeit für das Erlernen, Behalten und die Reproduction*. Memory is more rapid, more tenacious and more comprehensive for dissimilar than for similar contents; the homogeneity or heterogeneity of previously and subsequently presented contents is also of influence. The fusion of identical contents — simultaneous or successive — is a fundamental characteristic of mind. R. MÜLLER: *Ueber das Wesen des Reproductionsvorganges*. The anticipation of result is of primary, and the conative-affective processes of secondary significance in voluntary movement.

IV. VERSTANDESTÄTIGKEIT, pp. 56-71.

O. KÜLPE: *Versuche über Abstraktion*. Experiments with variously different groups of nonsense-syllables show that a given complex is apprehended differently when one is interested in its form, or in the color, the number or the nature of its components. Certain partial contents (form and color) are more readily abstracted from the complex than are others (number and nature), *i. e.*, it is least easy to determine how many and which letters are presented. Külpe concludes that psychical processes must be distinguished from our consciousness of them, and pleads for a rehabilitation of the old doctrine which recognizes an internal sense set over against consciousness. He defines abstraction as that process by means of which the logically or psychologically effective (*Wirksame*) is separated off from that which is logically or psychologically non-effective (*Unwirksame*). C. SPEARMAN: *Die experimentelle Untersuchungen psychischer Korrelationen*. Deduces formulæ whose employment has led the author to the significant conclusion that constant correlations may be established between the different mental capacities of the individual, and

that these latter depend upon a single common factor. ELSENHANS: *Die Aufgabe einer Psychologie der Deutung als Vorarbeit für die Geisteswissenschaften*. Our knowledge of the mental life of others is reached through an interpretation of their expressions and products. The author discusses points which must be considered in a theory of interpretation.

V. BEWUSSTSEIN UND SCHLAF, pp. 72-79.

W. WIRTH: *Zur Frage des Bewusstseins- und Aufmerksamkeitsumfanges*. The reproduction method (tachistoscope experiments) of measuring the compass of consciousness takes cognizance of only the maximal degrees of consciousness. The comparison methods give more complete determinations. Preliminary report of experiments. W. WEYGANDT: *Beiträge zur Psychologie des Schlafes*. Determination of mental capacity before sleep and after sleep of different durations; tests in addition and in memorization yielded different results. E. CLAPARÈDE: *Biologische Theorie des Schlafes*. Proposes to supplant the toxic theory by an instinctive theory.

VI. AUSDRUCKSBEWEGUNGEN UND WILLENSTÄTIGKEIT, pp. 80-90.

N. ACH: *Experimentelles über die Willenstätigkeit*. Introspective reactions show that the idea of the goal to be reached arouses determining tendencies which effect a realization of intention and also establish new associations. These tendencies make it difficult to discover what factors are operative in giving rise to intention or decision. G. MARTIUS: *Zur Untersuchung des Einflusses psychischer Vorgänge auf Puls und Atmung*. Discusses reasons for the contradictory character of the results yielded in the investigation of this problem. R. SOMMER: Demonstrated apparatus for transposing pulse movements into tones, and for representing expressive movements in the form of light and color. M. ETTLINGER: *Einige Bemerkungen über Nachahmung*. The association explanation of imitation is preferable to the instinct theory. V. HENRI: *Ueber die Koordination von Bewegungen*. This paper is not summarized in the *Bericht*.

VII. GEFÜHLE UND AESTHETIK, pp. 91-97.

ELSENHANS: *Bemerkungen über die Generalization der Gefühle*. Discusses two ways in which the feelings may become generalized. K. GROOS: *Die Anfänge der Kunst und die Theorie Darwins*. The theory that art owes its origin to courtship seems

plausible in the case of birds, but it breaks down when applied to the higher animals. The character of the facial adornment employed by primitive man, and the relatively non-sexual character of primitive poetry and dancing testify against the Darwinian hypothesis. SIEBECK: *Ueber musikalische Einfühlung*. A discussion of the affective and objective factors in *Stimmung* and *Einfühlung*. K. MARBE: *Ueber den Rhythmus der Prosa*. Marbe finds German prose compositions — literary and scientific — to be characterized by certain rhythms which contribute to their æsthetic effect.

VIII. KINDERPSYCHOLOGIE UND PÄDAGOGIK, pp. 98-114.

W. AMENT: *Das psychologische Experiment an Kindern*. The incomplete development of the mind of the child is a chief obstacle in the path of the investigator, since it renders reasoning by analogy precarious. Ament enters a plea for the method of pure observation. W. A. LAY: *Ueber das Wesen und die Bedeutung der experimentellen Didaktik*. Points out differences between psychological and paidological investigation, and insists upon the importance of the study of pedagogy. W. STERN: *Die Sprachentwicklung eines Kindes, insbesondere in grammatischer und logischer Hinsicht*. The linguistic material acquired through imitation is worked over spontaneously by the child; the principle of analogy is followed; compounds and derivatives are formed in a novel and ingenuous manner. Ease of pronunciation is a chief factor in the determination of what material shall be selected. The course of the acquisition of language is from the affective to the objective. Those time-words (verbs and adverbs) which refer to the immediate future, are the first to be employed. In sentence building, the child progresses from the 'word sentence' to the group of words, and subsequently to the chain of sentences. Subordinate clauses are a relatively late acquisition.

IX. KRIMINALPSYCHOLOGIE, pp. 115-120.

MARIE BORST: *Zur Psychologie der Aussage*. Pictures were exposed and after an interval (three to nine days) the observers testified to what they had seen. The results show that women excel men both in fidelity and comprehensiveness of testimony; that reliability of testimony decreases with increase of time intervening between experience and report, but that subjective assurance does not decrease; objects and persons are most fully and faithfully described, colors least so; the capacity to testify can be improved by training.

X. PSYCHOPATHOLOGIE, pp. 121-122.

R. SOMMER: *Objective Psychopathologie*. Sommer has been engaged for years in an attempt to lay the foundations for an objective science of psychopathology, by the introduction of appropriate methods of experimentation. His investigations have been concerned chiefly with the motor symptoms of pathological conditions of mind. His method consists essentially in the registration of the expressive movements, and in plotting his results in such form as will represent the progressive stages of disease, and the comparative symptoms of different diseases.

XI. REAKTIONSVERSUCHE, pp. 123-127.

N. ACH: *Ueber das Hippsche Chronoskop*. A discussion of the latent time of the chronoscope. H. T. WATT: *Mitteilungen über Reaktionsversuche*. A report on the rapidity of various sorts of associations. E. BECHER: *Ueber den Chronographen und das Tachistoskop von Erdmann und Dodge*. A demonstration of a chronograph and a tachistoscope.

J. W. BAIRD.

JOHNS HOPKINS UNIVERSITY.

FACIAL VISION.

Facial Vision: A Supplementary Report with Criticism. R. MACDOUGALL. Amer. J. of Psychol., 1904, XV., 383-390.

Professor MacDougall has reëxamined a brief research made by Dresslar in 1893 on facial vision — 'the capacity to perceive the presence, and with more or less exactness to discern the character, of the objects in proximity to the blindfolded subject.' Mr. Dresslar concluded that facial vision is a real process of perception which is strictly auditory and mediated by the ear. But Professor MacDougall is convinced that other than auditory factors were significant. So he repeated the experiments with slight differences and also found that 'a true perceptual process is involved in the phenomena.' But in addition to hearing, the sense of temperature may play an important part; either factor may be the prevalent one in different individuals.

DANIEL STARCH.

UNIVERSITY OF IOWA.

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BOOKS RECEIVED FROM JANUARY 5 TO FEBRUARY 5.

- Soziologie.* R. EISLER. Weber's illustr. Katechismen. Leipzig, Weber, 1903. Pp. viii + 305. 12mo. M. 4.
- Analytic Interest, Psychology and Synthetic Philosophy.* J. S. ENGLE. Baltimore, King Bros., 1904. Pp. xvi + 295.
- Theosophy and the New Psychology.* A. BESANT. New York, Lane, 1904. Pp. 135. 12mo.
- Suggestion und Hypnotismus in der Völkerpsychologie.* O. STOLL. 2. Ausg. Leipzig, Veit, 1904. Pp. x + 738. M. 16.
- Twenty-first Annual Report of the Bureau of American Ethnology (1899-1900). Twenty-second Annual Report, etc. Parts I and II (1900-1901).* J. W. POWELL, Director. Washington, Gov. Print. Office, 1903 and 1904. Pp. lx + 360, and xlv + 320, 372.
- Principles of Physiological Psychology.* W. WUNDT. Vol. I. Trans. by E. B. TITCHENER. London, Sonnenschein; New York, Macmillan, 1904. Pp. xvi + 347. \$3.00. [Contains the 'Introduction,' and Part I., 'On the Bodily Substrate of the Mental Life'.]
- Art in Theory.* G. L. RAYMOND. 2d ed. New York and London, Putnams, 1904. Pp. li + 286.
- Sociological Papers, 1904.* GALTON, WESTERMARCK, AND OTHERS: with Introduction by JAMES BRYCE. Vol. I. of Publications of the Sociological Society of London. London, Macmillan & Co., Lim., 1905. Pp. xviii + 292.
- Hypnotismus und Suggestivtherapie.* M. HIRSCH. New ed., edited by L. HIRSCHLAFF. Leipzig, Barth, 1905. Pp. viii + 269. Mk. 4.50.
- Wissenschaftliche Beilage zum siebzehnten Jahresbericht (1904) der philosophischen Gesellschaft an der Universität zu Wien.* Papers by E. MÜLLER, S. EXNER, R. GOLDSCHIED, R. EISLER. Leipzig, Barth, 1904. Pp. 79. Mk. 2.
- Cranio-muscular Origins of Brain and Mind.* P. H. ERBÉS. Chicago, Promethean Publ.-Co., 1904. Pp. 240.

NOTES AND NEWS.

DR. I. WOODBRIDGE RILEY, PH.D. (Yale), author of *The Founders of Mormonism*, has been appointed to one of the new Johnston Research Scholarships in the Johns Hopkins University. The two other scholarships on the same foundation were taken by candidates in Chemistry and Physiology. Dr. Riley will devote himself to the preparation of a work on 'The History of Reflective Thought in America.'

AT the recent Centennial celebration of the College of South Carolina the honorary degree of LL.D. was conferred upon Professor Lefevre, of Tulane University, and Professor Baldwin, of Johns Hopkins.

THE gift of \$50,000 by Edward D. Adams, in memory of his son, Ernest K. Adams, to Columbia University for the foundation of a psychical research fellowship was announced at the meeting of the university trustees.

THE
PSYCHOLOGICAL BULLETIN

PSYCHOLOGICAL PROGRESS IN 1904.

BY PROFESSOR EDWARD FRANKLIN BUCHNER,
University of Alabama.

Invoicing things may serve as a convenient pattern for invoicing ideas. But the former is a radically and vastly different operation from the latter. The holder of goods can fix his own calendar in accordance with private interests, and his review merely seeks to remind him of the marketable value of his wares. The invoice does not determine whether economic survival is truly qualitative as well as quantitative.

When ideas replace things, the entire operation loses color and limits. Its chief value must reside in the determination of the fitness or the unfitness of survival on the part of the ideas. Its calendar is limited neither by personal convenience nor by solar revolutions. And the goods? They are not the unsold or the unsalable leave-overs, continuing their undisturbed repose in the respective niches in the shop or warehouse. For the inventory of ideas can countenance only those 'wares' which have survived by circulation and not by remaining on hand. It is telling what has *gone*, and not what *remains*, that gives a truer picture of the state of affairs in matters of mind. But enough of the illustration. Any résumé of a short period of time cannot observe a specified limit; for the psychological year is more an aggregate of overlapping than of adjoining units of time. And surely, none of us would have the hardihood to declare what psychological products (other than those of one's own manufacture) are really fit to survive. The impersonal logic of history, both of the little and of the big, knows naught of the personal emotion which is equated in the declaration that 'my thought, my classification, my theory is the only fit thing for survival, at least as long as I can think.' Perhaps the prime intention of an historical résumé is to aid us a step or two

towards an appreciation of that impersonal logic — contradictory though it may be to psychological affairs.

Our psychological year has been full of interest, activity, results, and surprises. It has yielded one or two permanently distinguishing events in the external fortunes of the science, and must chronicle a few profound intimations regarding its internal welfare. It has not been an erratic year; for it progressively exhibited a continuance of that relation of fact and conception to the advance of the science which was presented a year ago.¹ It can still be said that the lines of advance center about new facts and their explanation on the one hand, and the development of theory on the other. 1904, with much of 1903 (both together make a convenient 'psychological year'), has probably emphasized temporarily the greater importance of theory. If one must find a single term descriptive of these complex movements, then it is to be said that the period has been one of *readjustment* with vigorous efforts looking towards a more acceptable *synthesis* of the contents. Probably this year does not duplicate the chief features of any single preceding year in the last twenty-five. It thus permits psychologists to indulge in that sort of satisfaction which accompanies doing 'something new'; but it does not guarantee that there has been 'progress,' at least in the direction of direct advance.

Is psychology becoming more organized, more systematic — or is it becoming disorderly, a mere aggregate, an *Unding*? That experience (used in any possible sense) is *not* an aggregate, not a mere jumble of events, is one of the most stubborn facts with which we meet. It is not enough that ideas, or any or all other 'elements' or 'aspects' of consciousness simply occur together. And every psychologist is intent upon making plain in a scientific and logical way what factor it is that is fundamentally implied in such a negative declaration.

This is most emphatically declared in the most astounding feature of 1903-04. This period is chiefly marked by a sudden and widespread reëxamination of the aims, methods, and fundamental conceptions of psychology. It has taken on the form of a social reaction to the earlier teachings of the science. This movement has had its predecessors; but the attacks upon, and subsequent justifications of introspection thirty years ago, and the *pros* and *cons* of psychology as a natural science fifteen years ago were movements noticeably different from that of to-day. *Then* the psychologists were mostly put upon the defensive; *now* the movement originates among the *Fachmänner*

¹ 'Psychological Progress,' PSYCHOLOGICAL BULLETIN, I., No. 3, February 15, 1904, p. 57 f.

themselves and has developed in the interest of the expansion of psychology. The situation is complex as to details, which do not readily resolve themselves. It would be rather hazardous to cite any particular contribution to psychological thinking as the historic spring calling forth the varied amount of energy which has been concentrated on this issue, making it truly the storm-center. Perhaps the phenomenon has arisen solely as a *cosmic* sort of thing—to relieve a universal ‘tension’—and incidentally to make us more conscious of our experience (*à la* Pragmatism). Witness Ward’s ‘On the Definition of Psychology’ and ‘The Problems of Psychology,’ Dewey’s (*et al.*) ‘Studies in Logical Theory,’ Royce’s ‘The Eternal and the Practical,’ Baldwin’s ‘The Limits of Pragmatism,’ James’s ‘Does Consciousness Exist,’ Cattell’s ‘The Conceptions and Methods of Psychology,’ Bawden’s ‘The Meaning of the Psychical from the Standpoint of the Functional Psychology,’ Busse’s ‘Geist und Körper, u. s. w.,’ Ostwald’s ‘The Philosophical Meaning of Energy,’ and so on.

We might take as extremely symptomatic of this movement—not as its origin or its culmination, however,—Professor Royce’s measured and consistent rejection of the ‘elements’ of consciousness, and his declaration that consciousness is not analyzable.¹ The culmination reads most clearly in another and later avowal from Harvard, namely, that consciousness does not ‘exist,’ and is to be blotted out.² Professor James confesses that he has been uneasy, as early as ‘twenty years ago,’ about consciousness as a thing, a biographical item which must hereafter give permanent and perhaps reversed coloring to the two magnificent volumes which gave us our great English classic in 1890. No one can now mistake the urgent timeliness of the activity of the lexicographers, who may, perhaps, give us the needed new terms for the old thoughts which in our vocable poverty must be still presented in their old literary rags.

At first blush it would seem that all the fine results of physiological and experimental analysis of human experience acquired during the last generation are thus to be swept away at a single sweep of negations. To the experimentally fed minds these generic doctrines of a non-analyzable, and a non-existent consciousness, if ‘sound,’ mean an abrupt end to psychology, which, in recent years has persistently and consistently labored to know the constitution of minds which exist without the pale of the trained psychologists. On the other hand, the

¹ *Outlines of Psychology*, 1903.

² Professor James, ‘Does Consciousness Exist?’ *Journ. of Phil., Psych. and Sci. Methods*, September 1, 1904.

necessity which Professor Royce feels constraining him to deal death-blows to the old-time 'elements' is evidence enough that such analysis is not the direction the science must now take in constructing its theory of mind. In fact, it may be construed as a belated reaction against the completeness of the earlier analyses, and a gentle hint that bids us look forward to an inspection and exhibition of the constructing processes which chance to make us what we happen to be. It is belated because no child is satisfied with stopping at a mere knowledge of the alphabet, albeit the twenty-six 'elements' enter into the structure of our language, and because the genetic mode of approach, instituted long since, tore away the abstractness originally adhering to every theory of elements, and later has spread over the entire field of psychological thinking.

In these recent discussions the assumptions of psychology, as a scientific inquiry, are left in a more stable condition than they were during the two earlier historic movements mentioned above. The present revision indicates that psychology is slowly but surely gaining a restoration of her once constructive influence upon a total view of experience, which usually goes by the name 'philosophy.' This comes out unequivocally in the recent widespread acceptance and defense of the 'functional' as over against the earlier 'structural' view of the science. It is not irrational to anticipate the early time when there will be a wholesome 'reconciliation' between these present warring factions. It would be utterly unbecoming to indulge in *dicta* and declare what this *aufgehobene* psychology is to be. And, finally, we need not be disturbed by the present revision of principles. It is the intensive rebound from the extensive reach of psychological method and adaptation which had so rapidly perfected its technique as to enter all possible fields of scientific exploitation, such as race, child, animal, and abnormal psychology attest. In beginning its work 'all over again,' the devotees rather naïvely begin at the first chapter of the new psychology that is to be. That this limitation to revision must not be construed too literally may be seen in the gradual perfection of two divergent psychological theories which flourish genetically in the hands of Professor Baldwin and President Hall. The value of genetic modes, on the one hand, and atavistic redintegrations, on the other, for the sum total of psychological presupposition and method must be left for treatment at another time.

Psychological method, to remark further, has also been subjected to fresh treatment and the results have shifted ground not a little. Instead of the older naïve realism or dualism which, it is now charged,

gave coloring to introspection and observation as modes of approach, there is now a ready inclination to agree that the two supposedly differing methods of science really and simply deal with one and the same object of experience. Whether a content of experience is objective or subjective, observed or introspected, depends only upon the attitude of the mind for the time being, which must always be either one or the other. Any mention of progress in method must include explicit reference to the extreme insistence upon accurate data and development of formulæ for specific parts of experience which has been made by Professor Thorndike.¹ Eschewing speculative opinion, he calls for the employment of the methods of 'exact' science, a call which, as followed by himself, amounts to doing all the work over again. In fact this counter tendency is quite as revolutionary as that noted above.

A novel, and what may be a fruitful, addition to our psychological stock-in-trade in the matter of the classification of mental processes appears in Professor Royce's 'Outlines.' As against the old tripartite division of cognition, feeling, and volition, he presents 'sensitivity, docility, and initiative.' It should be noted that docility and initiative are not the equivalents of feeling and volition. His terms and their meanings have large biological import. Sensitiveness involves present environment, docility the acquisitions from past conditions, and initiative the variations which are spontaneous.

In the domain of the physiological conditions of experience two pieces of work, while tentative and limited, are among the most suggestive and important contributions appearing within our period. The electric theory of nerve commotion, so long a convenient mode of speech, now has to share some ground at least with the hydraulic theory of Professor Motora.² This view, in attempting to replace some of the defects in the old-time theory, suggests that neural discharge is 'the transmission of a wave produced in a liquid contained in a nerve fibre.' The theory of the hydraulic wave allows of a number of possibilities, as experimentally determined, and its author applies it in the explanation of attention and inhibition. It may in time come to upset our old law of specific neural function, which has been not infrequently disputed by facts hitherto.

Rieger's study of the muscles in action³ suggests new possibilities which await the theory of motor consciousness, and particularly the

¹ *Educational Psychology*, 1903, and *An Introduction to the Theory of Mental and Social Measurements*, 1904.

² 'A study on the Conductivity of the Nervous System,' *Am. Journ. of Psych.*, July-October, 1903, pp. 329 ff.

³ 'Ueber Muskelzustände,' *Zeitschr. f. Psych.*, 1903, vols. 31 and 32.

interest in work and fatigue. He is led to regard the muscles as 'elastic bands whose contractile force is a function alone of their length and temperature.'

If we turn to the experimental division of psychological territory, it is found that the 'year' continues to teach us that we cannot construct our psychology by the mere enumeration of mental data, but that here we must also think. Theory continues to be as important as ever, in spite of the laboratory — and the questionnaire. One of the best indications of the steady growth of the science, particularly in America, where there is a frank willingness to give a thorough test to anything new that 'sounds good' and promises well, along the line of persistent acquisition of first hand data, is the extensive statistical inquiry of Professor Cattell.¹ From it is to be gathered unmistakably that experimental achievements constitute the dominant lines of interest. With this there stands also the descriptive record of the improvements current in laboratory psychology among American institutions, made for 1904 by Dr. Miner.²

Two significant productions born in the laboratory and appearing within our period possess qualities which will doubtless give them vitality for some time to come. And, oddly enough, each expresses the extremes of perfected technique and finished results which can characterize the aims of exactness and the longings for speculative interpretation. Professor Stratton's book³ is one of the most idealistically flavored productions of the times. Strong and helpful in its fundamental field, it also changes the spirit and direction of meaning in all experimentation and tends to unify the complex interests of the science. It is almost equivalent to a restoration, and ought to elevate the dignity of the laboratory inasmuch as it is probably the first conclusive and consistent reply from the laboratory to the earlier objections made against the introduction of such methods by the armchairists. Educationally it would be a fair question if one inquired seriously whether the grace and scholarship of this work are themselves direct resultants of psychological experimentation. Müller's timely manual⁴ for psychophysics is also timely in convincing us that a greater synthetic, as well as a more pronounced simplifying activity is prevalent among those whose mastery to-day is giving direction for the morrow.

¹ 'Statistics of American Psychologists,' *Amer. Jour. of Psych.*, July-Oct., 1903, p. 310 ff.

² 'The Changing Attitude of American Universities toward Psychology,' *Science*, Sept. 2, 1904, p. 299 f.

³ *Experimental Psychology and its Bearing upon Culture*, 1903.

⁴ *Die Gesichtspunkte und die Thatsachen d. psychophysischen Methode*, 1904

This excellent work appearing at a time when there is a critical disposition towards the 'questionary' and the 'test' as definite methods of inquiry is indicative of general progress. This is also marked in the contributive systematic work Professor Titchener continues in the better pedagogy of experimentation.¹ The new investigations, according to the best indications, which fall short of definite counting, center about visual sensations and ocular movements, with illusions tending to occupy the center of interest. That there is much gain to be derived from more extensive reinvestigations in experimental topics is conclusively shown in the newer measurement of the threshold of sensibility of contact made by Binet.²

Interest in the higher mental processes has centered upon 'judgment' or 'thinking,' concerning which many reconstructive theories are in the air. This movement is identical with that mentioned above with respect to the revision of the aims and conceptions of the science. Its tangible asset is found in the conclusion which reduces all 'consciousness' to the logical relationship expressed by the copula, which is identical with the 'feelings of resistance and tension,' or the teleological import of ideas, namely action. This movement, which reinvests the mechanics of Hegelian dialectic and the statics of Herbartian psychology, historically speaking, is more of an episode in psychology but vital in logic and philosophy, as appears in part in Professor Dewey's 'Notes upon Logical Topics: I.'³ Another episode touching the modification of psychological content adjusted to a determinate interpretation of method appeared in Losskij's work,⁴ which restricts itself to the central principle adopted by Wundt, for example. With him the material of the science consists, not of the given states of consciousness, but only of such experiences as can be and are recognized as 'mine.' And all such events are regarded as acts of will. This apparently arbitrarily restricted material might, perchance, replace the void left by 'blotting out consciousness' as demanded by Professor James. At least Losskij's attempt reminds one of Rehmke's work a few years ago, both of which show how consistent psychological thinking may become when restricted to a specified content.

In the psychology of feeling there is a current disposition to call in question Wundt's tri-dimensional analysis into 'pleasure-displeasure,'

¹ 'Class Experiments and Demonstration Apparatus,' *Amer. Journ. of Psych.*, July-October, 1903, p. 175 ff.

² *L'Année psychologique*, 1903, pp. 79-252.

³ *Journ. of Phil., Psych. and Sci. Methods*, February 4, 1904, p. 57.

⁴ *Die Grundlehren der Psychologie vom Standpunkte des Voluntarismus.* (Uebers.) 1904.

'excitement-depression,' and 'tension-relief.' This appears in Royce's novel theory which presents only two rudimentary forms of feeling: 'pleasure-displeasure,' 'restlessness-quietness.' Æsthetic psychology is not only receiving additional attention, but it is enjoying in our period the satisfaction of being massively systematized by its chief master, Lipps, whose first volume¹ has been at hand for a short time only. The theory of *Einfühlung* continues to be advocated advantageously — and beauty is extended over both form and content. That his general theory is central is partly indicated by Külpe's negative results experimentally determined. Witasek² has also contributed to this æsthetical reconstruction by his final identification of æsthetics with psychology, placing his emphasis upon the constant necessity of causal explanation.

The momentum acquired some years since by social and genetic psychology carries these interests forward to one of the commanding positions in our year. Among those psychologists who are more inclined to social phenomena, there is a marked tendency to agree that a so-called 'social mind' does not exist, and that social phenomena do not exist apart from the individual. Social psychology now tends to devote itself to a study of the individual mind in so far as it presents what is known as 'group consciousness.' When this theory is carried over to the child or to the race, social psychology readily falls into the keeping of a genetic psychology in so far as the later becomes more than a mere method. There is danger in a tendency of the systematic psychologists to play too freely into the hands of the social relationship for explanatory factors, as, for example, Royce (p. 295), who interprets the development of reasoning as due solely to the *socius*. On the other hand, that there continues a steady widening of the psychological point of view, hesitating not before the needs of a cool dissection of our practical living, is evidenced by Veblen³ and Scott.⁴ In the region of individual psychology the year has, through the final completion of President Hall's task,⁵ been instructive in showing how a new theory of mind can ultimately flourish on an originally restricted method, and also in illustrating how psychology may become 'applied' by resting in close relation to other points of view. Synthesis and theoretical reconstruction continue to dominate even in this remarkable contribution to our current literature.

¹ *Grundlegung der Aesthetik*, I. Tl., 1903.

² *Grundzüge der allgemeinen Aesthetik*, 1904.

³ *Theory of Business Enterprises*, 1904.

⁴ *The Theory of Advertising*, 1904.

⁵ *Adolescence: Its Psychology, etc.*, 1904.

In abnormal psychology, besides the steady reconstruction of psychiatry under the influence of a sound and generous psychology, ably exhibited by Professor Meyer,¹ there has appeared what promises to be a final emancipation from the Lombrosian theory of genius. At any rate, Nazzari² presents a significant reaction against that view which placed the genius and the insane in the same group relative to the productive conditions. For him, genius continues to be abnormal, but not the exceptional.

We should be carried too far afield to specify, further than has been indicated once or twice above, the renewed bearings of psychology upon those bantering philosophical novelties which are current under such terms as 'radical empiricism,' 'humanism,' 'pragmatism,' 'instrumentalism.' Instead of this, our selective account ought to render a true count of 'how many' works our science has presented. This is impracticable, further than the following resort to numbers indicates.

The Psychological Index is an 'index' in more ways than one. And, in the present connection, it is readily useful in giving a good measurement of the annual variation of the intensity of interest (measured extensively *only*) in the generic topics with which the psychologists are engaged. A comparison of the output of 1902 with that of 1903³ (excepting the few belated entries, of which account need not be taken), is presented in the following table. It cites the number of entries under the rubrics adopted by the *Index*, arranged in ranking order according to the volume of interest.

1902.		1903.	
No. of Titles.	Rubric.	No. of Titles.	Rubric.
448	Genetic, individual and social psychology.	384	Higher manifestations of mind.
404	Anatomy and physiology of the nervous system.	373	Genetic, individual and social psychology.
385	Higher manifestations of mind.	337	Sensation.
355	Sleep, trance and pathology.	271	Anatomy and physiology of the nervous system.
346	Sensation.	219	Sleep, trance and pathology.
203	General.	174	General.
184	Conation and movement.	118	Cognition.
180	Cognition.	102	Conation and movement.
78	Characters of consciousness.	66	Characters of consciousness.
45	Affection.	38	Affection.

Aside from the shifting which appears among the first five rubrics, the table needs no specific comment. It will be interesting to learn

¹ In the PSYCH. BULL., Nos. 7-8, June 15, 1904.

² *Le Moderne Teorie del Genio*, 1904.

³ *The Psych. Index*, Nos. 9, 1903, and 10, 1904.

later what the measurement of interest is to be for 1904. On another occasion, space may be afforded for a detailed study of psychological 'currents and under-currents' gauged by the chronicles of the *Index*.

There remains for brief recall a mention of the excellent external aspects presented by the science during the year. Readjustment is here also the characteristic term to be applied. In the matter of congresses and other forms of association more or less permanent, psychology has fared well during the year. The St. Louis 'International Congress of Arts and Science,' was designed to be synthetic of human knowledge, and stands accredited to psychology, being largely the expression of the persistent idea of one of our psychological leaders. The experimentalists have indicated their adhesiveness probably for the first time during 1904. On April 4, the American experimentalists got together informally at the Laboratory in Ithaca, and on April 18, the new 'German Association for Experimental Psychology' was held in Giessen. The year also saw the organization of the 'Southern Society for Philosophy and Psychology' designed to quicken the newer movements in the southern section of the United States.

A better index of the fruitful activity among psychologists is to be found in the readjustment of old and the establishment of new periodicals. This journal adjusted itself to newer needs by dividing into the *Psychological Review* proper and the PSYCHOLOGICAL BULLETIN. The old *Journal of Comparative Neurology* became the new *Journal of Comparative Neurology and Psychology*. The *Journal of Philosophy, Psychology and Scientific Methods* was instituted and offers a program highly suggestive of a reaction against over-specialization. Psychology is the gainer, doubtless, thus bulwarked between the end and the means of human knowledge. The *British Journal of Psychology*, also new, indicates a healthful growth into specialization across the seas. France added to her periodical list the new *Journal de Psychologie Normale et Pathologique*. To this list also properly belongs the earlier change of the old *Philosophische Studien* into the *Archiv für die gesamte Psychologie*.

1904 also showed that psychology is more and more mindful of its indebtedness to the past. The February commemorations of Kant and the November commemorations of Locke called attention to the solid historic piers upon which the science rests and taught the world anew that no science can live by itself alone. Another event of the year, which, by contrast, is turning its face to the future, was the installation of the new department of philosophy and psychology, with a promising laboratory complement, at the Johns Hopkins University.

PSYCHOLOGICAL LITERATURE.

THEORY AND PROBLEMS OF PSYCHOLOGY.

Does 'Consciousness' Exist? WILLIAM JAMES. *Journal of Philosophy, Psychology and Scientific Methods*, no. 18.

A World of Pure Experience. WILLIAM JAMES. *Ibid.*, nos. 20, 21.

Taking occasion of the 'curious unrest in the philosophic atmosphere of the time,' Professor James has made in these three articles a notable contribution to that unrest. It is an all too brief description of his own *Weltanschauung*, which he calls radical empiricism—the adjective connoting the absolute, thorough-going character of its fidelity to an empirical basis. "To be radical," he says, "an empiricism must neither admit into its constructions any element that is not directly experienced, nor exclude from them any element that is directly experienced. For such a philosophy, the relations that connect experiences must themselves be experienced relations, and any kind of relation experienced must be accounted as real as anything else in the system." It is a philosophy, like every other, of terms and relations; the peculiar thing is that it takes account of both in strictest fidelity to experience. Take, for example, an act of perception, involving a self, a thing, and the cognitive relation. We certainly can affirm nothing of the self save what it is experienced to be; it is, then, a group or context of bits of experience, connected by a certain experienced relation. So too is the thing a group or context of bits of experience, connected by some experienced relation—the difference of the relation within the thing-group from the relation intrinsic to the self-group being for the moment left out of account. Finally, the cognitive relation itself is one given in experience. The whole matter, then, is to be described in experiential terms, and there is nothing supernal or trans-experiential about it.

What saves this from the atomistic particularism of ordinary empiricism is its radicalness. "Ordinary empiricism, in spite of the fact that conjunctive and disjunctive relations present themselves as being fully coördinate parts of experience, has always shown a tendency to do away with the connections of things, and to insist most on the disjunctions." The consequence of this arbitrary rejection of some of

the relations given in experience, has been rationalism's effort at correction by the addition of new terms, not experiential, as substances, intellectual categories and powers, or selves, to bridge the gaps thus made. But correlative with radical empiricism's view of terms as experiential only, is its treatment of relations as given in experience; it takes conjunctive as well as disjunctive relations, each at its face value, and thus has need of no trans-experiential terms. By doing full justice to the 'plain conjunctive experience,' it opposes both rationalists and ordinary empiricists. Relations, of course, are of 'different degrees of intimacy,' standing for different 'grades of unity' in the universe of experience. From mere 'withness,' conjunctive relations ascend in order of intimacy and inclusiveness through time-relations and space-relations, similarity and difference, relations of activity and the causal order generally, to the most intimate of relations, that of continuous, co-conscious transition experienced between the bits of experience that go to make up the life of a self.

Our world, then, is a world of pure experience; and by pure experience James always means 'the instant field of the present.' Pure experiences are the 'bits' that make up selves, things, the whole world — though we must take care that words do not mislead us here. There is no particular bit, no sharply defined field of the present, that needs to be joined to others in some external way. "In actual experience the more substantive and more transitive parts run into each other continuously. * * * One moment of experience proliferates into the next by transitions which, whether conjunctive or disjunctive, continue the experiential tissue." Bearing this qualification in mind, we may speak of particular experiences, or bits of experience. We see, at any rate, that from one point of view, it may be affirmed that there is no other stuff or material out of which everything, selves and things alike, is composed, than pure experience.

"The first great pitfall from which such a radical standing by experience will save us is an artificial conception of the *relations between knower and known*." Throughout the history of philosophy, representative theories with their idea, common-sense theories with their leap, and transcendentalist theories with their Absolute, have alike proceeded upon the assumption that the subject and its object are absolutely discontinuous entities. "All the while, in the very bosom of the finite experience, every conjunction required to make the relation intelligible is given in full. Either the knower and the known are (1) the self-same piece of experience taken twice over in different contexts; or they are (2) two pieces of *actual* experience belonging

to the same subject, with definite tracts of conjunctive transitional experience between them ; or (3) the known is a *possible* experience either of that subject or of another, to which the said conjunctive transitions *would* lead, if sufficiently prolonged."

Professor James takes up these types in some detail. Type 1 is perceptual knowledge, and is discussed in the first article, together with general considerations touching the dualism which this philosophy is to replace. Experience has no such inner duplicity as is maintained by the naïve dualism of matter and spirit, or signalized by the conception of 'consciousness' in such philosophy as that of the neo-Kantians, for whom consciousness means no more than that object-plus-subject is the minimum that can actually be. The dualism is not within, but without, the single bit of experience ; it is a matter of its context, an affair of relations between particular pieces of an absolute experience. "A given undivided portion of experience, taken in one context of associates, plays the part of a knower, of a state of mind, of consciousness ; while in a different context the same undivided bit of experience plays the part of a thing known, of an objective content. In a word, in one group it figures as a thought, in another group as a thing. And since it can figure in both groups simultaneously we have every right to speak of it as subjective and objective both at once." Perception is the intersection of the group which forms an individual life with the group which forms the history of a thing ; and at the intersection the same undivided bit of experience is in both contexts, just as one identical point is in two lines which intersect. It must be carefully remembered, however, that "no dualism of being represented and representing resides in the experience per se. In its pure state, or when isolated, there is no self-splitting of it into consciousness and what consciousness is of. Its subjectivity and objectivity are function attributes solely, realized only when the experience is 'taken,' *i. e.*, talked-of, twice, considered along with its two differing contexts respectively, by a new retrospective experience, of which that whole past complication now forms the fresh content." In answer to the objection that in the two takings, as thought and as thing, the attributes of the bit of experience differ fundamentally, James shows that this difference between objective and subjective qualities is one of relation to a context solely.

Types 2 and 3, since the latter can always be hypothetically reduced to the former, are considered together in the latter two articles, with the more formal statement of the theory as a whole. The intrinsic quality of an image does not make it cognitive ; extrinsic

experiences of conjunction are what impart to it its knowing office. Conceptional cognition is *made* by 'intermediary experiences (possible, if not actual) of continuously developing progress, and, finally, of fulfillment, when the sensible percept, which is the object, is reached.' In itself, the concept is but a 'flat piece of substantive experience like any other, with no self-transcendency about it'; but when the intermediary process is fulfilled, it becomes a knower, and the object reached is seen to be what it meant or knew. "The object here not only *verifies* the idea, proves its function of knowing that object to be true, but the object's existence as the terminus of the chain of intermediaries *creates* the function."

Until actually established by the end of the process, then, conceptual knowing is virtual; it can be doubted, but the fulfillment reacts to show that it was knowing all the time. The greater part of our knowledge never gets beyond this virtual stage, yet is the substitute, in all practical operations, for what it means or would know absolutely if the transitional progress to the object were completely carried out. This is all that there is in 'objective reference'; it is 'a mere incident of the fact that so much of our experience comes as an insufficient and is of process and transition.' And this is all that we need for living and acting; self-transcendency in knowledge, if it were true, could do no more for us. Pure experience, the immediate present, is always practical truth, something to act on. The morrow, looking back at it, may reduce it to 'opinion'; but the transcendentalist in all his particular knowledges is just as liable to this reduction.

In conclusion, Professor James points out how, through the 'continuouslyness of different minds' which this theory makes possible, it has more affinities with natural realism than with the idealism of the English school; and indicates briefly the sense in which it involves a pluralism. "In my own mind," he says, "such a philosophy harmonizes best with a radical pluralism, with novelty and indeterminism, moralism and theism, and with the 'humanism' lately sprung upon us by the Oxford and the Chicago schools."

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The Conception of Experience in its Relation to the Development of English Philosophy. T. M. FORSYTH. *Mind*, N. S., 1904, XIII., 394-409.

This paper takes up the philosophies of Locke, Berkeley, Hume, Reid, Hamilton, Mill, Ferrier and Grote, and considers them just in

so far as they bear on the nature and source of experience. There pervades them all, despite the various forms of its expressions, the theory that all true philosophy must be based on experience.

Locke divided the source of experiences into sensation and reflection. The first was, however, the more fundamental of the two. The mind could be engaged only on or about objects which had previously come into impressional contact with the senses.

While Berkeley had questioned the propriety of asserting that the data of sense were the sources of knowledge, he drifted into such phraseology in the *Principles*. Later, however, in the *Siris*, he returns to his earlier view and opposes Locke's plan of mixing the ideas of reflection and those of perception. This he does by distinguishing between them. He calls the first 'notions'; the last 'ideas.' His 'notions' were peculiarly active.

Hume, while differing in detail, makes his 'impressions,' like Locke's 'ideas,' entirely passive in nature. This is all a result, more or less direct, of the sharp line distinction which Locke and Hume endeavored to draw between mind and matter.

Hume identified idea with existence. Reid asserted such a conclusion to be too far from common sense to be true. But he was compelled to pronounce just the deduction of such conclusion from the premises they asserted. Hence, his only means of refutation was an attack on their premises. Reid denied that 'to have an idea of anything and to have an idea of its existence were one and the same.' He claims that even when the object of knowledge is an idea, the difference still exists.

Hamilton differed from Reid in one point: viz., that objects other than states of consciousness were not objects of experience. This statement he would never admit, for he steadfastly maintained that all ideas were abstractions from what he believed to be the primary act of the mind; viz., judgment.

The associational philosophy, best expounded by the younger Mill, endeavored to merge the views of the systems of Locke and Reid. Mill denies the mediacy of states of consciousness. Not as to the validity of these states, but to a knowledge of their nature, Mill asserted attention should be directed.

Ferrier, while quite antagonistic in spirit, really supplements the work of Hamilton and Reid. To him experience seemed to originate, not in some impression from without, nor yet in mediate knowledge of facts of consciousness, but in an apprehended something, which, while distinguishable, was yet inseparable from its apprehension.

It was Grote, however, who presented most clearly the conception which underlies present-day philosophical discussions. He did not begin with assumptions. Experience was to be described, not defined. It was a notice of facts, or facts presenting themselves to our notice. The distinction subject and object are all right and good. But they have not part in the sources of our experience, but are determinations of it.

Experience, then, looked at in the light of English philosophical history, is not to be explained by definition; but can only be gradually characterized by the progressive coincidence of notice, or apprehension, with immediacy.

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The Present Problems of General Psychology. JAMES WARD.
Philos. Review, 1904, XIII., 603-621.

The definition of psychology is one of the present problems.

Next to that is the problem of subject activity, in regard to which two views have been held. The objective psychologists or presentationists, of which the Herbartian psychology is the classic example, claim that things given are combined according to mechanical laws. The subjective psychologists, followers of Descartes, Locke and Berkeley, 'recognize the necessity of a subject from the outset whenever we talk of experience.' The criticism of the latter is that 'such bare unity of the subject will not suffice to explain the unity of experience.' The former is incomplete; impersonal, unowned experience is a contradiction. A mediating view between these antitheses which is similar to Wundt's actuality theory is developed by Ward. Subject and object are counterparts, and experience is the interaction between them. But subject activity itself is a problem to which these solutions have been propounded: "(1) Subject activity is a fact of experience, but psychology cannot deal with it, because it is neither describable nor explicable. (2) Subject activity is not a fact of experience, but it is a transcendent reality without which psychology would be impossible. (3) Subject activity is neither phenomenal nor real: the apparent 'originality' or 'spontaneity' of the individual mind is, for psychology at any rate, but the biologist's 'tropisms.'" Ward expresses sympathy with the second view.

The third problem centers about the atomistic theory. Its prevalence in psychology is due to the invasion or imitation of the physical and chemical sciences. The main criticism of it is that the functional unity of the brain or of the mind is never deduced from a mere aggre-

gate or manifold of particulars. 'The categories of mechanism and chemism are inadequate and inappropriate to the living world.' Simple sensations are not given in a disorderly way; hence, there is no need of atomism to construct a systematic order among them. 'Presentations have none of the essential characteristics of atoms.' Associations are formed not by any inherent adhesion in the sensations associated, but by the fact of being attended to together. This involves the problems of memory and subconsciousness.

At the end other less important problems are mentioned: the genesis of spatial and temporal perception, the psychology of language, and the psychology of intellection.

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A Study in Consciousness. A Contribution to the Science of Psychology. ANNIE BESANT. New York, Lane, 1904. Pp. x + 443.

"This book, which, the author says in her preface, does not pretend to be a complete exposition, but rather, as its subtitle says, a contribution to the science of psychology, gives a comprehensive survey of the evolution of consciousness in the planes and subplanes of its unfoldment. As an introduction to the subject, Mrs. Besant has set forth the theory of creation of our solar system; and with some description of the origin of monads, she goes on to a discussion of the field of their evolution; the peopling of the field by the monadic life; the properties of the atom as a psychological unit; the mechanism of consciousness, its development into human states, and the nature of memory. This comprehensive presentation of the subject, which is of the greatest importance to all theosophical and psychological students, has been awaited with great interest, and though the author speaks of it modestly as a forerunner in a field which will yield more promising results when the materials for such study are better known and digested, is of itself a book that will be found essential to all who desire to keep abreast of the newest and best considered philosophical thought." [Publisher's Note.]

On Truth and Practice. F. H. BRADLEY. Mind, N. S., XIII., July, 1904.

The pragmatism which Mr. Bradley combats is not the pragmatism of philosophy but of life. Unfortunately the representative of pragmatism whom Mr. Bradley chiefly answers has vitiated his argument by being neither calm nor judicious in his advocacy of the new gospel.

In his eagerness to establish the new he has gone out of his way to rail at the old and has in so far forfeited his credentials. Fortunately, however, there are those who are more conservative—even to the extent of questioning the qualitative capacity of the term pragmatism to satisfactorily characterize this new phase of philosophic insight.

The argument of the paper is largely confined to a justification of the denial that 'truth essentially consists in the mere practical working of an idea,' and involves a statement, first, 'of the reason why the ultimate criterion cannot be merely practical; second, of some objections to any gospel of practice for the sake of practice; and third, of the senses in which all truth may be regarded as practical.' In brief, the argument may be summarized by the statement that truth is intellectually and not practically derived. In a preliminary remark Mr. Bradley challenges the 'Pragmatist' to silence or dispel the prejudice of intellectualism. Regarding this intellectualism, while he agrees that 'there is no such existing thing as pure thought,' yet he adds: 'If in the end there is to be no such thing as independent thought, thought, that is, which in its actual exercise takes no account of the psychological situation, I am myself in the end led inevitably to scepticism.' Here, repugnance to scepticism seems to be the reason for the conservation of intellectualism.

1. *It is maintained that truth does not consist essentially in the mere practical working of an idea.*

"At an early and unreflecting stage of mind no idea will be retained unless it works practically, * * * but that truth's essence even here lies wholly in such working * * * seems not permissible." "Everywhere in conation and will," says Mr. Bradley, "there is an idea which is opposed to existence, and this existence nowhere is characterless, but it is a determinate being. And the character of this being is an element in the whole situation, and dictates to the idea as well as submits to dictation." The essence of truth consists in the correspondence between the idea and the determinate being. This he proceeds to show, first, on the positive side, then on the negative, where in failure and in falsehood we meet the opposite truth, experience being considered at a stage where reflection is possible. His contention is that in suffering and death the idea meets the situation theoretically and not practically. The instrumentalist would, of course, reply that the situation admits of only the theoretical activity. Thinking is doing. The situation is rationalized by the specific sort of reaction to it which we denominate thinking. An attitude is the outcome of the thinking and the attitude is the essence of the truth in the situation for the organism.

2. "*The gospel of practice for the sake of practice and everything else for the sake of practice.*"

"My practice," Mr. Bradley says, "may be called in general the alteration by me of existence inward and outward, and 'existence' we may understand as what happens or as the series of events." He further defines it as a 'mere quantity of being and change,' 'mere increase of being apart from quality' and adds: 'Unless I am to take mere quantity of doing as my end, I can myself find in the end no sense in the cry of practice for practice sake.'

If by pragmatism as a world-view is to be understood the advocacy of a mere increase in the momentum of a dizzy whirl, the sooner a halt is called the better for both philosophy and life. Doubtless some expressions may be so interpreted if conservatism can find no more in the term practical than its usual connotation in the market-place. But we do not apprehend that it is to be so understood or is so used by such writers as James, Dewey, Bawden, *et al.* And Mr. Bradley himself is not unaware of a legitimate distinction which involves another meaning, for he recognizes 'a failure to use words on each side with a common meaning.' And this we believe to be the vital point of the whole discussion. It is a legitimate undertaking — this reinterpretation of a term which has suffered violence in the market-place. But Mr. Bradley clings to the latter use of it and so finds no sense in this 'new gospel.'

"'Beauty,' as well as 'truth,' are realizations in the attitudes of *mere*¹ theory and of *mere* apprehension and are not, therefore, practical."

"Beauty is from one side independent of our wills. It is an end, the specific nature of which is not subject to our choice and cannot consist in a relation to anything else which is so subject; if truth and beauty have this character and if they are human ends, then clearly we have ends which are not practical."

"They are practical incidentally, but not in their essence."

Theoretically, then, for Mr. Bradley, 'theory and practice,' as he says in his caveat, 'are one.' But practically they cannot be conjoined, for he finds place for *mere* theory and *mere* apprehension on the one side, and *mere* practice on the other.

Is it not legitimate to ask Mr. Bradley if there is not a discrepancy in the position in which, on the one side, he can affirm that theory and practice are one, and on the other that there is such a thing as *mere* theory and *mere* apprehension, distinguishable from, and diametrically opposed to, *mere* practice?

¹ Italics ours.

If theory and practice are one, surely it is possible to show how they are one, and this is the essence of the recent logical studies. Theorizing is the ultimate form of practice, without which all practice would be reduced to the chaotic procedure typified by a dizzy whirl.

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Mind and Body in Recent Psychology. A. E. TAYLOR. *Mind*, N. S., 1904, XIII., 476-508.

"The aim of this paper may be stated in a sentence: it is a defence and a modified restatement of the old doctrine of interaction as, at present, the most satisfactory theory of the connection between body and mind." The interaction theory presents difficulties, but these are the difficulties of understanding the nature of any transeunt action, and not, like those of the theory of parallelism, due to gratuitous metaphysical assumptions.

Interactionism, on the one hand, is explicitly put forward as working hypothesis and not as ultimate metaphysical truth. On the other hand, it purports to harmonize this working hypothesis with all that is true in the parallelistic and identity hypotheses.

The argument proceeds on the lines familiar to students of Mr. Bradley and Professor Ward, but claims to give an independent formulation. It is supplemented by a critical examination of the parallelistic views of Stout, Ebbinghaus and Münsterberg.

The author sets out from the standpoint of Avenarius, that 'this distinction between mind and body, whether as two things or as two aspects of one thing, cannot arise so long as we are engaged exclusively in the interpretation of our own individual experience.' "It is only when I come to describe my social environment, my fellow-men and my animal congeners, that I feel any need to split up the individual center of experiences into two parts or into two aspects, and when I ascribe the resulting duality of parts or aspects to my own self I am reinterpreting my direct experience in terms derived from my theories about my fellows." The necessity of intercommunication in organizing our scientific view of the world requires the abstraction from the immediate and concrete whole of our experience of the aspect which is capable of being shared in by more than one individual. Thus arises the conception of the external world or physical order. Whatever elements or aspects of a concrete individual experience refuse to admit of this analysis belong to a different order—the psychical.

Our fellow-men are obviously members of this physical order. But they differ from other physical objects in being also more than this. For they coöperate with me and with other humans in building up what we call experience. "Hence over and above their existence as * * * members of the physical order, my fellow men must have another kind of existence of the same sort as that of which I am directly aware in my own experience of myself as a center of immediate feelings, cravings and purposes. On this side of their existence they belong not to the physical order, but to a social * * * and therefore, essentially non-physical."

"And the result won originally from analysis of the existence of my fellow men is necessarily read back into my own interpretation of my own existence. As I directly experience myself, there is * * * no duality of factors. * * * But with the need of mutual intercourse * * * I need to describe myself in terms equally intelligible to all the members of my social group." "Hence I too come to be thought of as having a double existence. For my fellows' senses and for my own, I am a member of the physical order; * * * for my own direct experience I am a striving, feeling being of an essentially non-physical type. With the development of human coöperation and the systematic description it necessitates, the original unity of direct self-experience is replaced by the dualism of myself as an object of description, my body, and myself as sentient and purposive, my mind. Now arises the question, how the two sundered aspects of the original unity are for science itself to be once more reunited, and this question constitutes our psychophysical problem of the connection between body and mind."

"When once we have come * * * to conceive thus of the bodies of our fellows and ourselves as physical objects capable of direct description in general terms, it inevitably follows that all that is unique and individual in our experienced life, *i. e.*, all initiation of *fresh* purposive reactions, has to be relegated to a psychical order falling outside the physical. And as practical experience shows us that all real life involves the element of fresh purposive reaction at every instant, we are inevitably compelled to translate the purposiveness of concrete experience, for our scientific objects, into a *connection* between two distinct things, a physical and a non-physical or psychical system. There is no logical contradiction in thus treating for the special purposes of our science as *two* things what from another point of view must be regarded as *one* thing; for * * * the same reality is rightly regarded as one or as many according to the nature of the special interests with which we approach it" (p. 482).

This is the conclusion of the constructive part of the author's discussion. He next turns to a consideration of the respective arguments for interaction and parallelism, and gives his reasons in more detail for preferring the former. These reasons, in brief, are, first, Mr. Bradley's logical contention that a cause or an effect is always a complex of the psychical and physical factors; secondly, Mr. Ward's argument that a strict parallelism throws one back logically upon a psychological atomism; thirdly, that there are 'forms or, at least, aspects of mental function to which there is in strictness no physical counterpart.' Against all this, parallelism opposes three main considerations which are also refuted in detail: (1) "There can be no interaction between absolutely disparate realities. The reply is obvious. If the realities are really absolutely disparate, neither can there be exact correspondence." (2) "It is said that interaction between the mental and the physical must from its supposed character be ultimately unintelligible. But this neither refutes nor supports parallelism or interaction: it simply says that we do not know how it takes place." (3) That if interaction is admitted 'it involves a breach with the purely mechanical theories of natural process.' But interaction is inconsistent with the doctrine of conservation of energy only for a mechanical philosophy which mistakes the abstractions of its descriptive method for the concrete realities of experience.

In his recently published '*Elements of Metaphysics*,' the author brings out with even more clearness the methodological character of the distinction, as when he says (pp. 331-332) that interaction is "no statement of actual experienced fact, but a working hypothesis for the convenient correlation of two scientific constructions, neither of which directly corresponds to the actualities of experience. This means, of course, that interaction cannot possibly be the final truth for metaphysics. It cannot ultimately be the 'fact' that 'mind' and 'body' are things which react upon each other, because, as we have seen, neither 'mind' nor 'body' is an actual datum of experience; for direct experience and its social relations, the duality subsequently created by the construction of a physical order simply has no existence." "The proposition that the psychophysical theory of the 'connection' of 'body' and 'mind' is an artificial transformation, due to the needs of empirical science, of the actual teleological unity of human experience, is sometimes expressed by the statement that mind and body are really one and the same thing." Yet the author adds that, "though 'mind' and 'body' in a sense mean the same actual thing, the one stands for a fuller and clearer view of its true nature than the other," thus adopting

essentially the same position as that of Mr. Stout, in the first edition of his *Manual of Psychology*.

This one-sided spiritualistic interpretation of the methodological distinction is the chief point which comes up for criticism in the reviewer's mind. In the first place may be questioned the asserted fact that 'for my own direct experience I am a striving, feeling being of an essentially non-physical type' (italics mine). It seems truer to the naïve point of view, and also more consistent with the author's own words in other passages, to say that if we take experience *before* this distinction between mind and matter has been set up, it is both or neither psychical or physical, and not one of these to the exclusion of the other. The 'original unity of direct experience' is no more psychical than it is physical, and the one is no more immediate than the other. The same confusion runs through Mr. Ward's treatment of the subject and that of Mr. Stout until he corrected it in the second edition of his *Manual*.

To be more explicit, Professor Taylor says that 'for my own direct experience I am a striving, feeling being of an essentially non-physical type.' But how can that be if, as he likewise says, 'I, as I am for myself in direct self-experience, am neither body nor mind'? If the duality is a methodological one merely, then is he entitled to exalt one abstraction over the other when he comes to reinterpret the concrete experience in terms of these abstractions? If we have arrived at the point at which we can speak of the '*purposiveness* of concrete experience' (italics mine), then that experience is no longer 'concrete' in the sense indicated in those passages in which the author says that the distinction has not yet been set up, and certainly, after this distinction has been set up, the psychical (or the purposive, which the author uses interchangeably with it) cannot be set up as a 'connection' between itself and the physical, as it is in the passage quoted above from p. 482. Professor Taylor frankly identifies the psychical and the teleological or purposive, but does not seem to realize that this, on his own theory, precludes him from regarding it as synonymous with naïve concrete experience.

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On Mechanical Explanation. EDGAR A. SINGER, JR. *Phil. Rev.*, 1904, XIII., 265-283.

This article is a discussion of the hypothesis that all the phenomena of the world are susceptible of mechanical explanation. The discussion is divided into two parts: first, there is set forth the defini-

tion of the mechanical ideal; second, the possibility of such an ideal is discussed.

In a vague sense the mechanical ideal is fairly well understood. But an exact statement of the conditions to which it must comply is not forthcoming. To begin such a task, the suggestion which is at once the most natural and most in accord with historical development would view this ideal as a series of subsumptions. These subsumptions must be of such a nature as to make possible the reduction of each science to the one just below it. And the last science must of course be a science the phenomena of which need no explanation. This science, as the phrase implies, would be a science of mechanics.

The task, then, is to determine whether the sciences can be arranged in such a series of subsumptions; and to define mechanics according to the above limitations. After these questions are properly disposed of, the second phase of the question, that of the possibility of such an ideal, may be taken up.

Since the first question is conditioned on the last, first, a definition of mechanics is given. But how can a science be defined? Certainly best by its 'dimensions.' By 'dimensions' is meant the data necessary to derive a formula by which calculation can be made concerning things which are governed by the laws of that science. An illustration may clarify this definition. The four dimensions necessary to calculations regarding the Laplacean system are called its dimensions. They are time, length, mass and velocity. These, however, may be reduced to three: time, length and mass; velocity being a combination of length and time. By this reduction simply the dimensions of the science of mechanics are given.

The arrangement of the sciences in a series of subsumptions is very easy so long as we confine ourselves to branches of physics, such as thermodynamics, electrostatics, and electrodynamics. Even chemistry, since the recognized division of a compound into additive elements is considered, can be more or less readily reduced to a science of mechanics. Greater difficulty, however, arises when we undertake to reduce to mechanics sciences like biology, psychology and sociology. This difficulty is met, however, by the fact that all of these sciences can be reduced to the science just below, and thus on down the scale to mechanics.

As to the other part of the discussion, the possibility of the ideal, it has been urged that such an ideal is self-contradictory; and that, even if it were consistent, it would be untrue to nature.

The ground upon which the first objection is based is that it is

impossible to define the dimensions, length, time and mass, in any definite and absolute way. In reply it might be said that, though definition has been and is yet faulty, no inadequacy has been discovered which has been beyond remedy.

The second objection is advanced by heirs to the Aristotelian doctrine that 'everything in nature takes place for an end.' The science of biology is the most representative science bearing out the Aristotelian point of view. It will, therefore, be taken to represent this objection. While this science is most remote from explanation by the mechanical ideal, it nevertheless uses the descriptions and analogies of mechanics to describe its own phenomena. The very same style of description, except for the substitution of the 'existence' of the atom for the 'life' of a cell, would have served Newton in depicting the anatomy and physiology of physical bodies. The descriptions used to illustrate the life of the organ are borrowed from chemistry. True the cell is called 'living,' but the 'living' is as yet merely assumed.

A quite lengthy quotation from Driesch shows that in biology there are many things which cannot be explained without the aid of non-mechanical devices. But, while this is true, it remains to be proved that the use of these aids is permanently essential. It may be they are valuable while we await a better mechanical insight; or, even if permanent, their value may consist in the fact that they serve as mechanical devices.

Then, if biology fails to demonstrate the inadequacy of the mechanical ideal, it is certain that no fear need be had from the other sciences. The entire discussion has been relative to one alternative; viz., that of order under another kind of law than mechanical law. And it is shown more or less accurately that there is no justification for predicting the failure of the mechanical ideal in explaining the phenomena of the world.

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The Psychological Meaning of Clearness. F. M. BENTLEY. *Mind*, N. S., 1904, XIII., 242-253.

The author reviews first the various conceptions of clearness in modern systems of psychology. Wundt's explanation of variations of clearness by intensity, expectation, and association coincides with Ebbinghaus' factors of intensity, presence of similar processes, and repetition; only the term 'feeling-tone' is new with the latter. Münsterberg emphasizes 'the relation of clearness to the qualitative nature of

mental contents.' Kuelpe intimates the possibility of a quantitative measurement of clearness and of fixing a lower limit for obscurity. With Stumpf analysis affects distinctness. Finally, Lipps', James', and Stout's views do not allow any degree of clearness within a given state of consciousness.

The second part treats the relation of clearness to mental complexes and to attention. Spatial, or extensive, and temporal formations of mental complexes, or 'incorporations,' possess both definition and unity, and, therefore, are distinct, while qualitative incorporations, such as auditory fusion or taste-smell complexes, have unity and 'interpenetration,' and, therefore, are clear. "Definition and aloofness [interpenetration] depend, primarily, upon the spatial, temporal and qualitative peculiarities of stimulus; unity and variety, primarily, upon central dispositions and the resulting associations, feelings and habitual reactions."

Clearness must, like quality and intensity, be regarded as an attribute of simple sensations.

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SOCIAL PSYCHOLOGY.

The Individual and his Relation to Society as reflected in the British Ethics of the Eighteenth Century. JAMES HAYDEN TUFTS. Monograph Supplement, No. 25 of THE PSYCHOLOGICAL REVIEW, May, 1904.

This monograph continues a study of the conceptions of the individual and his relations to society, of which an earlier essay had considered the British ethics of the seventeenth century, and to which the writer hopes to make further contributions. The point of view is that of social psychology rather than that of ethics. The aim is not so much to note what the writers may say explicitly concerning the individual, as rather to uncover the underlying conceptions of the individual which find expression in theories of motive, or criterion, of honor or moral sense, of conscience or sympathy.

It is noted that the concept of a moral sense is found in certain divines prior to Shaftesbury. The latter author is compared with Descartes in that he founds ethics on the inner self of feeling as Descartes had found certainty in self consciousness. The individual of Shaftesbury is constituted by instincts and feelings and is essentially 'given': Mandeville with all his exaggerations deserves credit for his attempt at a genetic account of the moral and social individual, and also for bringing out the conflicting ideals which were finding expres-

sion in the moral and social life of the time. In the case of Hutcheson, it is pointed out that the 'moral sense' is not primarily a criterion for judging right and wrong, but rather an enlargement of the individual by allowing him a new avenue for receiving pleasure—an enlargement on the appreciative side analogous to the capacity for disinterested benevolence on the active side.

Butler adds one factor of a similar sort to that added by Hutcheson, when he distinguishes sharply the economic category of Interest from the moral and social, but his greater contribution is perhaps to be found in the place which he gives to reason as a unifying principle in the self, and in the dignifying of the individual by making him a source of moral authority. Just as Milton and Locke had treated the individual as 'born to command' in the political sphere, so Butler gives him the dignity of sovereignty in the moral life.

With Butler the various claims of the various factors which go to the make-up of the moral individual reach a tentative expression and adjustment. The work of the following writers was directed mainly to a psychological explanation of the moral individual which Butler had set up. Three different lines of explanation are traced: First, the explanation through association and imitation which was offered by Gay and Hartley is briefly noted. A more detailed study is given to the explanation offered by Hume's principle of sympathy. It is maintained that in the case of Hume it is not fair to assume a single dominating theory as is assumed in T. H. Green's analysis. A fair weighing of all the passages not only in the *Enquiry* but also in the *Treatise*, justifies rather the view that we have a twofold Hume, resulting from a conflict between the analytic method which he brought to his task and the actual material which he was too good an observer to pass over. This conflict between method and material is brought out (1) in the account of good and virtue, (2) in the account of sympathy, (3) in the account of justice, and (4) in the account of benevolence.

Adam Smith portrays the individual as the creation of social forces. He brings out the social factor in moral judgments and the rational elements in the moral individual. But in his explanation of the socializing agency, sympathy as he employs it is inadequate, nor is his psychology able to explain how an individual can become 'an impartial spectator.' The impartial spectator as Smith describes him is really the impartial spectator of an economic rather than of a moral situation, and in his psychology Smith, therefore, reflects remarkably the actual individual of his time.

THE AUTHOR.

MENTAL CONTAGION.

La Contagion Mentale. A. VIGOUROUX et P. JUQUELIER. Paris, Octave Doin. 1905.

Under the title of mental contagion it is proposed to study the contagion of reflex actions, of emotions, feelings, perceptions, voluntary movements, ideas and beliefs, *i. e.*, of all the manifestations of the activity of the cerebro-spinal cord. Mental is taken in this large sense because the higher functions of the cortex depend by slight gradations upon the lower functions of the medulla. Mental contagion implies the existence of a passive subject liable to be influenced, and also of an active subject exercising that influence. The first is unconscious of the influence he exerts, the second of the influence which he undergoes. Contagion can thus be considered as a variety of imitation, but the latter is involuntary. Imitation is differentiated from suggestion by spontaneity. There is imitation, if the initiative of the repetition comes from the subject who repeats that manifestation; there is suggestion if the same comes from the subject by whom the manifestation is repeated. The majority of the voluntary acts consists in the appropriation of a reaction upon the perception of an object without express deliberation. In mimetism the influences exerted are solely physical; in contagion there is a psychic element, although the initiative of the repetition is unconscious. Contagion is characterized by unconsciousness and irresistibility.

All the manifestations of psychic life are contagious; reflex actions, simple or complex, have a tendency to be reproduced by perception; affective actions are contagious by means of organic manifestations. Ideas are contagious in so far as they have an affective value; so also are the most of our actions called voluntary, because they are nothing but the resultant of affective states whereby the contagion can make its influence perceived. But contagion differs from such suggestion as is exemplified in hypnotism, in so far as the latter is willed by another and is called out by a conventional process. Yet this unconscious communication, so sudden and irresistible, is not a large distance intercerebral activity, a psychological electrization (Tarde). Every such psychic activity has a motor equivalent, and is transferred outwardly by muscular movements; it is, in a word, psycho-motor induction (Féré). In the contagion of movements and acts, the voluntary becomes rapidly reflex; habit and memory are nothing but the faculty of accomplishing, in a reflex fashion, acts primarily voluntary. Thus many of our motor reactions are conscious and provoked

by a sensation, without being properly called voluntary, *e. g.*, the imperfect contagion in the rhythmic imitations of dancers.

As to the mechanism of contagion in affective states, the means of expression by which the affective states of one subject become irresistably those of another are not those of magnetic action, of neural fluid, but of psychic automatism. The organic state is the basis of the emotion (James); organic sympathy conduces to the receptivity of imitative movement (Ribot); while the imitation is a sensorial excitation having the particular characteristic of being a cyclic activity, the muscular reaction reproducing its stimulus (Baldwin). Voluntary activity is inhibitive, and generally prevents contagion. On the contrary all the conditions which favor the disaggregation of personality, which leave to themselves the automatic centers, favor mental contagion; such are distraction, agglomeration, certain sociological conditions, and pathological conditions acquired or hereditary (intoxication, neurosis, degeneration). All the organic modifications which accompany the state of desire and the affective state resulting from the satisfaction or non-satisfaction of a desire are contagious. This includes the four groups of emotions, religious, moral, æsthetic and intellectual. Here normal persons, with sufficient powers of inhibition, are not generally subject to contagion, are not exposed to reproducing the pathological manifestations of cerebral activity; whereas the neuropathic, intoxicated, and degenerate are subject to the contagion of convulsions, of impulsive acts, of obsessions and manias of all kinds.

In the contagion of ideas there must be a motor element; hence, pure abstractions are the least contagious, while the ideas and thoughts of the mob form a bundle of psychic contagions essentially produced by physical points of contact. Thus masses of the public may undergo contagion, as in the recent Dreyfus case, or in race hatreds. As to the contagion of acts considered as voluntary, between the perception and the motor reaction is intercalated the volition, the idea of the ego as cause of the act performed. Yet in these conscious acts there is a substratum of the unconscious or an ancestral residue or various secret reasons, justifying the expressions epidemics of murder, of duelling, of suicide. When the reaction is aroused by symbols such as newspapers or books, the contagion is indirect, and its appearance depends upon a disaggregation of the personality, more or less pronounced. There are three cases: (1) The normal individual may find himself momentarily and accidentally in a state of disaggregation caused by distraction (psychological condition). (2) The same may be caused by

the environment, exterior circumstances, or in particular by a real or purely psychic contact, *e. g.*, crowds, or newspapers (sociological condition). (3) Acquired organic modifications, especially under the influence of intoxication and alcoholism, independent of exterior circumstances, render the individual liable to undergo with great ease a momentary or lasting psychic disaggregation. This is especially true of organic congenital conditions such as neurosis and degeneration (physio-pathological, abnormal organic condition).

The contagion of morbid movements is exhibited in the symptomatology of certain nervous affections and especially in the neuroses of morbid motor reactions, the convulsive crises of hysterics and epileptics, the choreas and tics of the neuropathic. Among children the convulsive epidemic is propagated with the greatest rapidity, while the view of a spasm of one afflicted with chorea is especially contagious. So also perverted instincts and appetites may be contagious, *e. g.*, sitiophobia and dipsomania. In the contagion of morbid forms of fear and of ideas of melancholia, in hallucinations of persecution, in hypochondria and the like, there must be a predisposition of heredity or of morbid organic conditions. Morbid anger is contagious like the state of mania. Both are manifest in criminals who imitate either other criminals or those who are unbalanced. Morbid contagion of tenderness is seen in excessive fondness for animals and in nostalgia. Among the anomalies of personal sentiment, self-feeling has two forms, the positive in pride and vanity, whether collective or professional, the negative in suicide. The latter may be the result of reflection, committed after a struggle against the instinct of self-preservation, or it may be a morbid act consequent on maniacal thoughts, committed by one weary of struggling against an obsession. Impulsive suicide, prepared for by melancholy, hypochondria or lowering of the vital functions, is extremely contagious, and relatively frequent with children.

The perversions of moral sense may be either passive and apathetic or active and impulsive. The causes of the loss of moral feeling are epilepsy, hysteria, apoplexy, dementia, and traumatic lesions. Heredity renders further subjects a fit soil upon which the influences of education, example, and excitement, in a word, contagion, may produce the maximum effect. It is under the influence of such contagion that the timid, the discontented, the neurotic and especially the hysterical commit acts legally reprehensible. Such acts, together with the morbid forms of the religious sentiment, imply a neuropsychopathic predisposition; that being given, the mechanism of

involuntary imitation does not differ from that found in affective states and non-pathological ideas. In religious mania there are forms of elevation or depression, the latter depending on primitive emotions of fear or on the lowering of self feeling. Demonopathia has been succeeded by spiritualism, visual and auditory mediums by mysticism; in all these, psychic automatism plays its part.

Æsthetic feelings are contagious among normal individuals; it is for this reason that every great artist has his fanatical admirers and detractors. Among literary decadents and seekers after subtle virtuosity mental equilibrium is unstable. According to Lombroso they are the mattoids who group themselves by a sympathy of interest, and especially by a hatred of the common enemy, the man of genius. Contrasted with this is what Ribot calls scientific mysticism, a systematic doubt which would substitute demonstration for belief. This is essentially a malady of the understanding, but the truly pathological doubt which concerns itself not only with ideas, but with perceptions and acts, the state of mind in which a subject comes to discuss the reality of his organism, of his existence, of his activity, need not be considered as actually contagious.

This last statement of the joint authors exposes their failure to take account of recent investigations in the psychology of morbid religious movements. Otherwise they point out the probable trend of investigation in their closing statement that it is in the study of the phenomena of the unconscious and of psychological automatism that it is possible to explain the transmission or contagion between individuals of reflex movements, affective states and ideas.

I. WOODBRIDGE RILEY.

JOHNS HOPKINS UNIVERSITY.

BOOKS RECEIVED FROM FEBRUARY 5 TO MARCH 5.

La vie personnelle: étude sur quelques illusions de la perception intérieure. A. BAZAILLAS. Paris, Alcan, 1905. Pp. iii + 305.

The Exploration of Jacobs Cavern, McDonald Co., Mo. CH. PEABODY and W. K. MOOREHEAD. Printed for the Phillips Academy, Andover, Mass. (Dept. of Archaeology, Bull. I.), by the Norwood Press, 1904. Pp. 29. [With map and plates showing 'finds.']

La Philosophie naturelle intégrale et les Rudiments des sciences exactes. A. RIST. 1^{re} Partie. Paris, Hermann, 1904. Pp. vi + 181.

The Life of Reason: Vol. I., Reason in Common Sense. Vol. II., Reason in Society. G. SANTAYANA. New York, Scribners, 1905. Pp. ix + 291, and viii + 205.

University of California Publications, Philosophy. Volume I. Studies in Philosophy prepared in commemoration of the Seventieth Birthday of George Holmes Howison. Berkeley, Univ. Press, 1904. Pp. 262. [Beautiful in its execution, a volume well adapted to its high topic and the noble purpose of its dedication.]

The Limits of Evolution and other Essays. G. H. HOWISON. 2d ed. revised and enlarged. New York, Macmillans, 1905. Pp. lvii + 450.

The Story of Art throughout the Ages. S. REINACH. Trans. by F. SIMMONDS. New York, Scribners, 1904. Pp. xi + 316. [A remarkably compact and profusely illustrated manual of the history of Sculpture, Architecture and Painting, ancient and modern.]

Species and Varieties, their Origin by Mutation. H. DE VRIES, Ed. by D. T. MACDOUGAL. Chicago, Open Court Co.; London, Kegan Paul, 1905. Pp. xviii + 847. [Lectures delivered in the University of California Summer School, 1904.]

Die Probleme der Romantik als Grundfrage der Gegenwart. O. EWALD. Berlin, Hofmann, 1905.

Studies in General Physiology. JACQUES LOEB. Decennial Publications of the University of Chicago. 2 vols. Chicago, University Press, 1905. Pp. xiii + 423, and xi + 425-782. \$7.50. [A collection of papers, mostly translated from the German.]

Historia del Alma. J. M. BALDWIN. Span. Trans. and Introduction by J. BESTEIRO. Madrid, Jorro, 1905. Pp. xvi + 342. 4 pes.

NOTES AND NEWS.

WE note the foundation of a new journal, the *Rivista di Psicologia applicata alla Pedagogia ed alla Psicopatologia*, to be edited by Professor G. C. Ferrari, of Bertalia (Bologna, bimonthly, 8 L.; foreign, 10 L.).

DR. LIVINGSTON FARRAND, professor of anthropology at Columbia University, and until recently secretary of the American Psychological Association, has been placed in charge of the work of the National Association for the Study and Prevention of Tuberculosis.

THE PSYCHOLOGICAL BULLETIN

ADOLESCENCE.¹

BY PROFESSOR M. V. O'SHEA,
University of Wisconsin.

During the past decade educators everywhere have been expressing the earnest wish that some man competent to do the work should organize the vast amount of material already accumulated relating to human ontogeny, and interpret it for a theory of education. To accomplish this herculean task one should have considerable familiarity with the methods of investigation and with the more important principles of a number of sciences, especially of biology, palæontology, pathology, psychology, anthropology, physiology, sociology; and to these there should be added an intimate acquaintance with education, in its historical, theoretical, and practical aspects, and with the history of philosophy, religion, and what has come to be known as child-study. In the effort to meet this pressing popular demand there have been a number of attempts within the past half dozen years to organize and evaluate the data in hand concerning special phases of ontogeny, as motor development, linguistic development, and the like. In addition we have been given a few books which have dealt, the majority of them in a very general and quite elementary way, with development as a whole. In method, some have confined themselves very largely to tables and graphs and surfaces of frequency, while others have left statistics aside altogether, and have presented us with generalizations and educational interpretations. These efforts, meritorious as they may be, singly and collectively, still most of them seem preliminary and fragmentary in comparison with Hall's *Adolescence*. In this book we get the broadest view that has yet been taken, so far as I know, in discussing ontogenetic problems.

¹ *Adolescence: Its Psychology and its Relation to Physiology, Anthropology, Sociology, Crime, Sex, Religion and Education.* By G. Stanley Hall. New York, D. Appleton & Co. 1904. Two vols., pp. 589 and 784.

One naturally compares *Adolescence* as a whole and in particular parts with Baldwin's work; and he finds that there are fundamental points of likeness, but there are many points of difference. Hall's range is far greater, but Baldwin goes much more deeply into his specific problem, — the development of mind in the individual, including his intellectual, social, and ethical activities and relations. The latter is systematic, logical, and psychological throughout, while the former covers in great detail many phases of development, but makes no attempt to be systematic or logical in the strict sense. Both are alike in certain basal characteristics, however. For one thing, their work is permeated throughout with modern evolutionary and biological doctrine. Both reject the methods and most of the conclusions of metaphysical and epistemological speculation. Both have the same large aim in view, — to give an account, in the spirit of contemporary biological science, of the natural history of the individual human mind. Both base their story upon the fundamental conception that ontogenesis epitomizes phylogenesis; but Baldwin uses the conception only occasionally, while Hall uses it constantly. Baldwin's discussion of mind is concerned very largely with a description of the developmental phenomena of the individual's conscious utilization of experience to secure adjustment; while Hall regards consciousness as of relatively slight importance in the life of the individual. Nine tenths of mind is submerged; it is neither intellect nor emotion; it is impulsion, instinct, the generalization of ancestral experience running away back into the dim geologic past. Consciousness may be only "a wart raised by the sting of sin, a product of alienation or a remedial process. * * * The moving phantasmagoria of images and conscious objects are not the chief facts of mind, as are the many-voiced comments, the sense of assent and dissent, pleasure and pain, the elation of strength or the æsthetic responses, the play of intuitions, the impulses to do or not to do, automatic tensions or contractions. These are not epiphenomenal, but noumenal in soul life, its palmary facts and experiences."¹

Baldwin's attitude toward his theme is essentially an intellectual and scientific one; he observes, organizes, systematizes, traces causal relations. Hall's attitude is more largely emotional, poetic, ethical, and perhaps hortative. These differences in attitude explain in part differences in temper and tone and style of writing. Baldwin's aim is best realized by means of a comparatively direct, unemotional style, with only a mild use of rhetorical aids; but in all philosophical,

¹ Vol. II., p. 67.

biological, psychological, and educational writing, so far as the reviewer's knowledge goes, there is no verbal architect and artist equal to Hall; none who can approach him in the fervor, the stateliness, the impassionateness, the at times well-nigh overwhelming effect of his rhetoric. This style is, though, well suited to his point of view and his purposes. His vision sweeps from one mountain peak to another, and he must tell what he sees in words and phrases that befit the great scenes which he beholds, and that will stir his listeners to action. To influence the conduct of men, not to convince their intellects, is after all, as I see it, the fundamental motive and *raison d'être* of Hall's work. He has more faith anyway in the impulses of feeling than in the formulæ of mechanical reason. He does not believe that the highest type of truth about human nature can come from the psychological laboratory. Modern culture represses feeling and 'intellect saps its roots.' The psychologist of the study does not concern himself with the deepest and most characteristic things in soul life — with 'hate that makes men mad or bestial'; with 'love * * * that is stronger than life'; with 'fear that shakes the pulses'; with 'courage that faces death in its cruelest forms unflinchingly'; and with 'torture, and joy that threatens sanity.'¹

But I must turn now to some details of the book in hand. The author shows extraordinary acquaintance with the different sciences which he makes tributary to his subject; and for many years he has himself been amassing data in hitherto unexplored fields of mental development. There is wide difference of opinion to-day among students of psychology and allied subjects respecting the scientific value of these data; but the present reviewer believes that they are on the whole of much worth, as they are employed in *Adolescence*. The author freely acknowledges the difficulty of getting absolutely reliable information by the questionnaire method, and he uses the results therefrom very sparingly and always with caution and qualification, and mainly as *suggestive* rather than conclusive. The evidence bearing upon questions of development and gained from this source is never, as I remember, left to stand alone to prove or disprove anything; it is introduced always in connection with a large body of data gained from other sources. Of late years certain persons have been so disturbed about the questionnaire method of research employed so conspicuously at Clark University, and they have been relieving their feelings so uninterruptedly in the public prints, that several men who had not read *Adolescence* have said to me that they supposed it was a sum-

¹ Vol. II., p. 59.

mary of the articles in the *Pedagogical Seminary* and the *American Journal of Psychology*. Even if it was just this, no apology would need to be made for it; but as a matter of fact these articles occupy a very subordinate place in the book. It is filled with materials drawn mainly from other fields.

These two volumes contain above 600,000 words presented in eighteen chapters, each of which would make a respectable treatise in itself. The first two chapters give the results of a great deal of detailed study by many investigators in many countries of somatic development, both in the large — height and weight — and in respect of individual parts and organs. While we are led to expect from the title of the book that the period from eleven or twelve to maturity will alone be considered, still in these chapters (and in a number of the others) the author sets out with the germ cell, and treats of its natural history during the entire course of development. The pre-adolescent period often receives as much attention as the adolescent period proper. This is, however, very much more satisfactory than if the years before puberty had been ignored altogether.

In the first chapter we are introduced to the doctrine of recapitulation, which is the most prominent thing in the entire book. The evidence upon which the theory is founded is not given in any detail; it is assumed that students are quite generally familiar with this evidence, at least so far as somatic recapitulation is concerned. When it comes to mental recapitulation, treated in later chapters, the author realizes that he is often breaking new ground, and he goes in deeper and turns everything up to view. He appreciates the danger of relying too largely upon this theory, for it is still, even in the biologic field, in a very undeveloped and tentative form; but he has firm faith in the soundness of its fundamental implications, embracing every phase of ontogenetic development. It is apparent, at least to the reviewer, that when the author indicates, with hesitation and caution, a phyletic explanation of some aspect of ontogenetic development, he himself thoroughly believes in his explanation, but his belief is grounded upon insight, shall I say? and not upon evidence that will pass muster in every, or even in any, scientific camp. The statistical type of scientist, who will admit to the rank of science nothing but propositions of a mathematical character derived from his numerical tables, will be certain to think that there is a deal of airy, fact-free speculation in this book, especially pertaining to phylogenetic and ontogenetic relations. It is useless to try to make peace between President Hall and the arithmetician in human development. The former

views any particular expression of human nature in its setting in a great whole of biologic, psychologic and evolutionary construction, while the latter views it simply as one instance of a happening standing apart, unilluminated from any source. It is to the latter simply a mathematical fact, not a fact of life having relations, near or remote, with all phases of the organic universe. Hall does not have many enthusiastic words for the super-refinements of present-day experimental psychology; exact mechanical measurements can never give us the basal and vital truths of the child soul, according to his notion.

Nevertheless, Hall gives us tables and charts very plentifully; but it must be said that he does not make much use of them himself. Take, for instance, his statistics relating to somatic development (especially chapter I., pp. 6-22, and most of chapter II.). Figures are presented in bewildering richness. We are shown the tables of almost every investigator of any repute who has made measurements on the organism as a whole or on any of its parts, but these tables once presented are left to organize and interpret themselves. There is practically no attempt made to account for the differences in the results of different investigators working at the same subject. There is little organization or coördination of these tables; the various tables bearing upon any special phase of growth are not even gathered into an assembling table so that they may be easily compared. When the reader completes these chapters he cannot tell whether or not all these figures establish any law of somatic development. There is a vast amount of material given; and while it impresses one as having been gathered most thoroughly, yet it still remains to be treated so as to show the relations between the work of different investigators, and especially to show the relation between somatic development, as revealed in the tables, and the many other phases of development considered in later chapters. The data need to be treated critically by some one with respect particularly to the precise way in which the data were gained by different investigators, whether they are typical in all cases or of a special class, whether an average gives a faithful estimate of the species studied, or whether to be made of any service we must not know how the phenomena were distributed among individuals examined, and so on. As it is, we are simply given unrelated tables of averages. Not infrequently the statistical results of experimental study dealing with a topic are given in minute detail, and then the author frees himself altogether from his tables and ascends to the heights from which he can get an all-comprehensive view. It is as though his scientific conscience compelled him to give all the figures he could get relating to the theme in hand,

and this done he would be at liberty to engage in more congenial tasks. The discussion of various questions concerning the growth of the body—delay and compensation in growth, the last stages of growth, the advantages of size, differences in nationalities, the view of current genetic science regarding retardation in growth and later accelerated growth, the desirability of maximal growth, the epochal character of somatic development in the light of ontogenetic repetition of phylogenesis, the changes in proportions in growth, harmonious development and its meaning—these themes are handled in a thoroughly original and most interesting and comprehensive manner; but the treatment of them would have been quite as satisfactory and conclusive if no tables had been given.

The educational inferences, as pertaining to somatic development, are drawn with caution, and are unhappily exceedingly limited. But the author has gone as far as the present state of our knowledge will allow. As he says (pp. 28–29), the complexity of the processes occurring in somatic growth is beyond comprehension, so that we really know but little of what actually goes on in the body. Investigations have not yet shown us in any fullness what environmental conditions will help or hinder growth, so that educators must continue to pray in vain for light on this dark problem. The variability of individuals renders the task of the educationist a well-nigh hopelessly complex one. Then the question of nascent periods for the various organs is still far from being answered. President Hall indicates what a stupendous amount of work remains still to be done in the study of growth when he says (p. 128): “The law of nascent periods or the age curve of growth of each organ or faculty is one of the first desiderata of genetic psychology; how to apply it, by what means and to what degree to stimulate each part in its stage of least and most rapid growth, and how to apportion training of mind and body between developing the powers that excel to a degree of specialized culture that corresponds to their hereditary possibilities, or educating the weakest parts and powers in order to improve proportion and symmetry, is one of the chief problems of individual pedagogy.”

In chapter III. the ‘Growth of Motor Power and Function’ is discussed in a large and at the same time penetrating manner. The author attaches supreme importance to muscle culture in the development of mind and morals. The discussion of industrial training, manual training, gymnastics, and play and sport must prove of large theoretic and practical value. Mental and motor activity have been inseparable in the evolution of the race, and they must be inseparable

in the development of the child. Prevent motor action and you arrest mental development. Mind grows just in the measure that impressions, ideas, feelings are appropriately realized in motor action. In education, then, we must provide for the child an environment where a motor life will not only be possible but will be compulsory. Present-day urban schools have gone far astray; they have put books in the place of birds and bees and flowers and fields. They have compelled the child to remain static in hard and fast seats, conning words, when he ought to be out in the open dealing at first hand with concrete, vital situations, in which all the fundamental muscles of his organism are called into play and strengthened and coördinated. President Hall's strictures on the modern school for its neglect of the motor life of the child, and especially of the fundamental muscular activities, have become quite familiar to teachers through his educational addresses, and they have already exerted a tremendous influence for good on school practice.

In chapter IV. we have a very valuable treatise on the 'Diseases of Body and Mind in Adolescence.' This discussion is, however, altogether too technical for one unfamiliar with the terminology and the literature of anatomy, physiology, and especially of pathology. President Hall's interest in psychology makes his treatment of the mental disturbances in adolescence of particular service, though the reviewer has a suspicion that some readers will get an exaggerated notion of the prevalence of mental aberration of various sorts in adolescence. It is highly probable that a good percentage of boys and girls pass through this critical epoch without losing their mental health and balance at any point, so a highly accomplished specialist of large experience in Philadelphia assures me, and my own observation is in full accord with this.

Following the discussion of disease comes a review of 'Juvenile Faults, Immoralities and Crimes' (chapter V.), in which is brought together a vast amount of exceedingly interesting material, especially for the psychologist, the penologist, and the educator. As in other chapters, so here the statistics of all important special investigations are given; and these show conclusively that adolescence is a crucial period for the moral and social life. The author's extraordinary ability in taking account of all the varied manifestations of any phenomenon he is studying is shown here as elsewhere; and it is useless to attempt to even indicate the ground that is covered. It may be added, though, that the therapeutic suggestions in this chapter are especially rich, though some persons will protest against a number of the positions

taken. Many good people to-day would hesitate to put Captain Kidd, Dick Turpin and 'other gory tales' (I., 408) into the hands of their children. Much less would they employ 'judicious and incisive scolding' as a 'moral tonic' (*ibid.*). But the reviewer feels that many of our current pedagogical maxims are grounded upon very insecure foundations, and modern science is certain to destroy them. A pedagogy with its roots in modern biological and evolutionary psychology must give us points of view often quite at variance with the dogmas handed down by theology, metaphysics and 'common sense,' whatever this may be. Whether or not all or even most of the author's educational propositions will stand the test of time, it seems certain at any rate that he is leading us along the right routes; he is indicating the mode of attack upon educational problems that will give us the most satisfactory results. The weakest and shallowest of all criticisms (so prominent in our day) of the teachings of men like Hall is that they are new and unsafe, and we had best cling to what has been tried and 'proven.' If anything has been proven about some of these dogmas we cling to, it is that they are inadequate to our present educational needs and ought to be abandoned.

This leads me to say that in the minds of many educators one of the most doubtful of President Hall's educational doctrines is that concerning his view of the cathartic method of dealing with juvenile errancy. If a boy has a disposition to fight, give him an opportunity to indulge his inclination, and this will relieve him; it will relax his fighting muscles, as it were, and so release his combative feelings. The traditional view of moral defect and deficiency is that the will is lethargic or erratic, and it needs to be quickened or corrected by pains and penalties. If you wish to cure a boy of fighting, then, make it unprofitable for him, in terms of pleasure and pain, to fight. Modern psychology maintains that one's action is always determined by the outcome; if it is pleasurable it will be repeated, if painful it will be abandoned; and it would appear as if the Mosaic law and psychology were in accord in the treatment of human frailties. But still we see that pain does not always prevent misconduct; boys will fight even though the master's rod hangs over their backs. It is shown, too, that boys who have been let alone to work out their own destiny do grow through their anti-social traits and leave them permanently behind. There is reason to believe that the boys who are most repressed in their instinctive tendencies do not most readily and completely get these instincts under control; and as between the primitive and the cathartic methods, the latter seems to have the most in its favor. But

in reality President Hall favors the middle course, the method of transmutation, if I may so name it—exercising instincts in ways not at variance with modern social institutions. Thus we release the mental and motor tensions without indulging the original anti-social motive of the instinct. Our great racial games and plays furnish material for training according to this latter method.

I imagine that the chapters on 'Sexual Development and Hygiene in Boys,' and 'Periodicity in Girls' will be read with greatest profit by physicians and perhaps an occasional parent; though it would prove of immense value if teachers had the training to read with understanding matters of this sort. The discussion on pp. 435-471 deals with matters of supreme importance to every teacher and parent of boys. The same may be said of the discussion with reference to girls on pp. 494-512. The author handles his difficult themes in these chapters with the greatest frankness; and to his mind there is nothing in sexual development or manifestation which should be treated with greater reservation or hedging than in the case of any other phase of development. Science strives single-minded and constantly toward one end—the portrayal of fact, and it ignores the commands of the weak or the timid or the prudish—'Hands off from this or that topic.' It seems to the reviewer that on the whole it is a good thing to keep the minds of the run of people off from sex matters by keeping them on other matters; but there are exceptions. It would not be desirable to have the discussion of sexuality become as common as the discussion of art or politics, say, for it must be that for many to think about it would be for them to revert to primitive practice with reference to it. To control sexuality in most people you must keep them thinking about other things. But it is different when the physician, teacher, or parent discusses the subject; and this makes President Hall's treatment of the subject eminently valuable and timely.

Chapter XVII., treating of adolescence in girls and the educational regimen best adapted to female needs and nature, should properly, it seems, follow directly after chapter VII. In this chapter the author first brings together the results of many studies upon the sexes, showing the differences between them in strength, mortality, cerebral mass and organization, senses, agility, etc., etc. He reviews the medical literature treating of female diseases and the character of female education, and then he presents in great detail arguments to the effect that girls need an education different from that of men. When coeducation is carried on throughout the adolescent period the results are bad in every way; the boys suffer as well as the girls. In

none of his educational doctrines does President Hall run counter to present-day popular opinion and practice more than in this matter of the training of girls. It is suggestive, though, that expert medical, and to a lesser extent educational, opinion is on the author's side. But it will be a long time before the popular mind will give up the notion that because men and women are to live together in maturity they must get acquainted with one another's ways betimes, and have their minds and hearts fashioned by the same educational regimen.

It is possible that President Hall does not in some cases, especially in respect of this question of the education of girls, take due account of the slow development of new types in some respects through the elimination of those who can adapt themselves least well to the conditions of modern life. We may be working out an order of society wherein men and women will be closer together than they are now, alike in ability and in interests. We may be bridging the chasm between male and female; many think thus to-day. At any rate, it is, I believe, an accepted principle of human evolution that there can be no advance in social organization and function without endangering the peace and happiness of those who are unable to adjust themselves to changing conditions. Every new generation has a period of storm and stress and struggle in the effort to become adapted to the complex society into which it is born. A good proportion of every generation cannot achieve adjustment, and all such must suffer the consequences of their misfortune. My point is that the present may be a transitional epoch in the evolution of women, and if so there will be many who cannot adapt themselves fully to the new order, and they will experience all the unhappy consequences of alienation. But does this mean that we must hold progress in check so as to accommodate those who are freighted most heavily with the débris of ancestral life? Should we ignore nature's experiments in producing new types, or should we in our educational regimen plan to conserve those who can establish a new order of sex relations? The reviewer is not arguing a case; he is simply calling attention to the danger of condemning the present order because many suffer or die by the way in trying to adapt themselves thereto. The matter is a good deal more complex than it appears to be at first sight, and to my mind we need a more critical consideration of it than even President Hall gives it. The general principle here in question is applicable to other educational theories advocated by the author, wherein he condemns the tendencies of the times because some children suffer the pains and penalties of mal-adjustment to the new order of things. It

must be remembered that disaster to a portion of the race always follows in the wake of progress.

The chapter on 'Adolescence in Literature, Biography and History' will be read by the uninitiated with greater interest perhaps than any other. The author here gives us mainly the stories in condensed form told by distinguished men and women of their experiences during the adolescent period; though he gives a brief account of the adolescent characters in the works of Plato, Aristotle, Shakespeare, Eliot, *et al.* Parts of this chapter will seem familiar to one who has read somewhat in autobiography; but the study of the lives of the saints—thirty-nine of them—with reference to their adolescent experiences will be decidedly new.

The second volume treats almost entirely of the psychology of development, with special emphasis, of course, upon the adolescent period. Chapter IX. traces the changes which occur in the development of the different senses and of the voice. A considerable amount of special investigation is reviewed and organized in an interesting manner. The author makes no practical suggestions in this chapter, which will be a cause of regret to those educationists whose entire endeavor is devoted to 'training the senses.'

In the opinion of the reviewer the author is at his very best in chapter X. He is discussing evolution and the feelings, and the instincts characteristic of normal adolescence. There are no tables here to limit the range of vision and the breadth of interpretation. One cannot read this without feeling that a bold and powerful intellect is working upon a body of conceptions of tremendous importance and of unlimited scope in the effort to get at the most fundamental truths which they can yield respecting the natural history and the present constitution of the mind of man. It is not too much to say that it is at every point profound and impressive. The author is deeply versed in all the theories that the philosophers have given us respecting the origin and nature of the soul; but evolution alone offers us a satisfactory account of how man's mind originated, and how and why it has become what it now is. The mind of man is the consummation of all the varieties, or perhaps degrees, of mind that have appeared on the earth since life began; and only an infinitesimal part of it ever penetrates up into consciousness; the rest of it remains forever beneath the threshold, and 'can only be studied in motor responses and subconscious psychoses' (II., p. 66). As one reads the author's account of how the human mind has been built he is reminded of Drummond's description of how his body has been built: Contributions have been

made from every age, from every clime, from every species though extinct for unnumbered geologic ages; and at adolescence heredity steps on board and takes control, and if you would adequately understand the psychic changes of this epoch you must have some conception of the natural history of mind from its most primitive beginnings. The adolescent with all the past stirring in his soul and yet needing to adapt himself to the institutions of modern civilized society — this is the individual the author portrays in this chapter.

Space will permit of little more than a mere mention of the titles of remaining chapters. 'Adolescent Love' is treated in chapter XI. The subject is regarded from the physiological, anthropological, phylogenetic, pathological, and psychological standpoints. It is in some part a recapitulation and extension of topics considered in chapters V.-VIII., though there is much new material and interesting points of view regarding courtship, the modes of manifesting sex feeling, and the hygienic and educational treatment of adolescent love. I cannot refrain from quoting a passage in this chapter (II., 142) which illustrates the author's unusually figurative, poetic, and, as I think, extraordinarily effective style, considering the author's leading purpose, which is to arouse the dormant people in education, religion, and so on, and to make men aggressive, dynamic, in searching out the true way in the training of the young, and in strenuously pursuing it. He goes on to say that "one might parody life as a stream from high mountain ranges, which wring it from the clouds, coursing down through all the manifold ways in which the water comes down at Lodore, to the sea of eternity. Adolescence is the chief rapids in this river of life, which may cut a deep cañon and leave its shores a desert. Educational methods, from those of the statesman and the religious founder to those of the artist and man of science and even the pedagogue, are hydrographic engineering which builds a series of well-located and well-devised dams to irrigate wide arid areas or turn the mills of life, or that its floods be stored up against drought and need, so that nothing be lost. Seepage is the waste of licensed vice in otherwise happy families or prosperous civilizations. The rich alluvium of custom and tradition, once rank with a life now gone and forgotten, is the soil or mold from the broad acreage of which culture in all its departments and the most precious values of life grow toward a harvest. Marshes are formed of the rich body of myth and custom, like the coal measures, from which higher utilities may be extracted. Alkaline dead sea plains of phallic detritus may be extracted. * * * Youthful dissipation is the wreckage of a spring freshet

which wears away the dams, makes deep gullies, and may restore the primitive desert."

In chapter XII. the author gives his views of the feelings of the adolescent toward nature, and the necessity of a revolution in our present methods of teaching science, especially geography, botany and physics. As Turkey is the sick man of Europe, so geography is the sick man of the curriculum. Science, all branches of science, as now taught, are formal, mechanical, mathematical, too specialized and analytic, with the result that the students are abandoning the sciences and moving into other fields, though no subject could satisfy adolescent needs so fully as science if rightly taught. The author is 'inconsolable in view of the pathos of the present educational status' of the sciences (II., p. 151). To quote a sentence or two regarding the teaching of botany will suggest the author's views respecting the errors to be avoided in presenting any phase of nature to youth. He says (II., pp. 210-211): 'A botany that begins by merely plucking, collecting, analyzing, classifying and affixing Latin names that mean nothing in place of those that mean everything, desiccating the herbaria, makes havoc with' the study of nature. " * * * Taxonomy has its important function, but here it is not even a necessary evil. The fact that so many young and old maidens wear out a Gray's *Botany* or other text-book, and learn to give uncouth names to all wayside plants, is a pathetic illustration of woman's subserviency to authority or man-made fashion in making something of a stone when her soul cried for bread. If Latin were accepted as the inexorable mind breaking condition, and the whole *circa* 150,000 plant species known, it would not be botany, but a rank crop of Latin tares, and would put the child's soul, which is normally nearer the floral kingdom than the adult's, far away. * * * After the folk-lore stage scientific study at the high school could begin with fertilizing — with the relations of blossoms to insect life, and thus the whole philosophy of sex taught in the delicate, far-off way of the field. Then should come the relations of plant to man, the vine, sugar, cotton, flax, fruit and cereals with something of their domestication. A third human factor, never to be lost sight of, should be the biographic element in the history of botany, from the Herbalists and doctrine of signatures on to Linnaeus and down to the present time. Something of mythic plants, of pests, diseases, struggle for existence, and commercial and industrial botany should also be taught. Drawing should be greatly reduced; much taught without the presence of specimens, and laboratory work minimized save a few experiments on movements, tropisms and plant physiology."

It seems to the reviewer that the substance of this chapter has been presented in various addresses to teachers during the past few years, and the same appears to be true of the last fifteen pages of chapter XV. and much of chapter XVI. on 'Intellectual Development and Education,' wherein the author discusses in an original and thorough-going way the studies and methods of schools from the very beginning on up through the university. It is probable that the views presented in these chapters have been largely the cause of the unrest and aspiration among educators everywhere to-day. If any reader is unacquainted with these theories, no idea of them could be given him here; he must study the chapters. It may, perhaps, be added that while the author is himself, according to his own declaration, an optimist, yet it is to be feared that he will sow the seeds of pessimism in the minds of some of his readers, for pretty much everything that is in education is wrong, or it is at least crude, imperfect, mechanical, based upon logical and *a priori* premises rather than upon the established principles of genetic psychology. Teachers who have not had their minds soaking for some time in modern biological and genetic psychology will be unable to follow the author without many misgivings and pangs of conscience in his radical departure from the traditional curriculum and methods of teaching. Even the normal schools, which ought to be open-minded toward all educational suggestions and least firmly wedded to custom, — even these regard some at least of the author's doctrines with considerable consternation, and anxiety lest they should prove calamitous if actually put into operation. That they would prove disastrous to the policy of some of the static, tradition-loving normal schools is a foregone conclusion.

Chapter XIII. is devoted to a discussion of pubic initiations among savage tribes, ephebic education in ancient Greece and Rome, the treatment of youth in mediæval knighthood, and religious confirmation among the Jews, Catholics, Episcopalians, *et al.* The line of thought developed in this chapter is carried on in chapter XIV., where the adolescent psychology of conversion is examined in great detail. The treatment, from the standpoint of biological psychology, of religious ceremonies and experience, and of theological teaching and practice is essentially new, and must prove of profound interest and significance to all teachers, preachers, and students of human nature. I alluded above to the ferment which the author's pedagogical theories are producing in things educational; but it is to be expected that his views of religious ceremonies and education will create much

greater disturbance in the theological camp. The new psychological orthodoxy is opposed at nearly every point to the theological orthodoxy which many persons have learned memoriter from their catechisms and the lips of their spiritual teachers, and which in the clear light of modern science are seen to be but the 'grimaces and tweaks of religiosity.' We wish President Hall had shown us whether the old orthodoxy has contributed to the development of civilization, or whether evolution has gone on in spite of it; and this wish should be extended to include our entire educational régime, which the new doctrines would abolish in large part.

The social instincts of the adolescent, and the institutions established to meet his social needs receive attention in chapter XV. A wide variety of phenomena are here brought together, and treated as of social reference. Self-consciousness, showing-off, affectation, bragging, dress and manners, anger, pugnacity, fear, blushing, bashfulness, pity, sympathy, susceptibility, love of home *vs.* running away, truancy, migrations, imitation, like and dislike of teacher, ideals of vocation, influence of biblical and historical characters, home and foreign ideals, property and the money sense, social judgment, cronies, solitude, ideas of punishment, work together and alone, social organizations, gangs, predatory clubs, student life with its banality, infantilism, class feeling, hazing, secret societies and duelling, associations for youth devised and directed by adults (of which many are discussed), material for moral and social culture, including oratory, the drama, the Bible, the Arthuriad, history — these topics indicate the ground that is covered in this chapter; some of them have been noticed in preceding chapters. The questionnaire as employed at Clark University particularly is more in evidence here than elsewhere in the book, except possibly in chapter XII.; and the topics are of such a character that data concerning them could be gathered quite effectively by this method.

The last chapter treats in a comprehensive and penetrating manner of what the author calls 'Adolescent Races.' The appropriateness of this term may be questioned, since adolescence signifies above everything else rapid transformation or remodeling or evolution. But the races treated in this chapter are not evolving rapidly; indeed, they seem to be, for the most part, permanently arrested. It would seem more consistent to regard the civilized and most progressive peoples as adolescent, since they are pushing upward toward the 'Super-man' with great speed and vigor. But this is a minor matter. We are shown here the results, unhappy for the most part, of an ad-

vanced race attempting to impose its customs, beliefs, standards, ideals upon a lower race. A race must *evolve*; it cannot be dragged up the ladder of civilization. History shows that the savage is on the whole much better off if left to himself than if higher races attempt to enforce civilization upon him. The influence of missionaries even is often extremely harmful. The discussion of this subject from the standpoint of modern biological, anthropological and psychological science is exceedingly timely, in reference especially to our governmental relations with the Filipinos.

Before closing, a further word should be said respecting President Hall's style. At every point he is handling large themes in a large way; and to be most effective he should adopt a large, generous, powerful style. This is just what he does, it seems to me. Everything about it denotes tremendous energy, virility, momentum. From the first sentence to the last you feel its mighty sweep; nothing can stop it. Vast aggregates of particulars are very frequently massed together in a single sentence and then the character and significance of the whole are impressed with striking figures drawn from all phases of human thought and experience. The enumeration of a great body of individual instances falling under a general principle or a class is characteristic of the work throughout. You may open the book at random, and you will not need to read long before running onto a sentence of the character of the following (I., p. 295): "Superficiality, stupid jests, and jollity in the midst of lamentation and world pain, the most bizarre turns of thought, theatrical reference to a spectator, fanaticism, the sharpest contrasts and conflicts of owlsh wisdom and fatuity, selfishness and altruism, idle distraction and great concentrative energy, savagery and tenderness, hypersensitiveness and obtuseness, growth and development concentrated upon any organ and function, so that there is hypertrophy here and atrophy there, sex organs and instincts enormously and prematurely developed or arrested, exotic virtue and brutal crime, exaggerated selfishness and no less extreme generosity and self-abnegation, resistance to authority and exceptional plasticity, fantastic views of life, abhorrence of work, or above all of regularity in occupation, lunacy with misleading lucid intervals, impulsiveness, scrupulosity, and reflection on trifles which may be paranœic — all these occur in different cases and a surprising number may follow each other in one individual."

The author lays under tribute for his figures and illustrations all typical human experiences, and science, literature, including the Bible, — and this especially — history and philosophy, mythology, folk-lore,

and so on. He is so effective in the use of metaphor and simile; abstract principles are so strongly vivified by tying them up to striking concrete experiences of all kinds, that one would read for the æsthetic effect even if he could not appreciate the thought. His is a poetic mind when viewing the natural history of the soul, and he often takes advantage of poetic license in his expressions. He tells us that the 'upward way is strewn with the wreckage of body, mind, and morals' (I., XIV.), and he has no time nor disposition to stop to qualify or explain. Men who like to get their science in mathematical propositions, in strict agreement with proven fact, neither going beyond the fact nor falling behind it — such will feel that the author sometimes gives his poetic temperament too free rein.

There is one quality of the style which may bring the uninitiated to a halt betimes in their reading. The number of strange words met on almost every page is likely to overwhelm a timid novice. Of course, it would be expected that when the author was treating his theme from the standpoint of any particular science, he would freely employ the technical terms of that science, and this he does. But in addition he coins a great number of words, and brings over terms from geology, palæontology, biology and all the rest and uses them in psychological descriptions and figures of speech. He is not one of those who think simple Anglo-Saxon words will serve adequately to express the height and depth of any man's thought and feeling. He revels in Greek and Latin combinations; and this will cause many readers to regret that they have not kept themselves fresh in the classic tongues. I think he would at any time rather use a term compounded out of classic roots than a commonplace word from his native tongue, even if he could convey his idea by means of it. He wishes a body of terms for his thought that are not used every day in the goings-on of the shop, the store, the parlor, and so on. See these terms that happen to come to my fingers at the moment: *banausic*, *claustrophobic*, *criminaloid*, *psychokinetic*, *nephelopsychoses*, *cosmocatoptric*, *auto-hetero-centric*, *autosoteric*, *psychophane*, *homoousia*, *archeopsychisms*, *polymorphic*, *macrobiotic*, *psychophores*, *hydrophilia*, *rodomontade*, *hebephramic* and so on *ad libitum*. The author loves to use English as well as Greek and Latin novelties — *historicity*, *too-Docetically*, *Munchausenizes* are samples. Now this supreme command of linguistic forms, both mnemonically and constructively, adds tremendously to the power and effectiveness of the book. If the thought was less massive the style might be considered overgrown, pedantic, pompous; but as it is, content and form seem quite con-

gruous. Students of human nature will feel considerably indebted to President Hall for introducing these terms, some of which, I predict, will speedily find their way into the literature treating of human development. Many of us will think it cause for congratulation that a master of linguistics and a master of modern psychological science in all its associations and ramifications have been joined in the same individual. As a result we have, as I believe, an epoch-making book, not alone for genetic psychology, but also for every science that is in any way concerned with the care and culture of human beings.

PSYCHOLOGICAL LITERATURE.

CHILD PSYCHOLOGY AND PEDAGOGY.

History of Education. E. L. KEMP. Philadelphia, J. B. Lippincott Co., 1904.

Of the making of general histories of education there seems to be no end. A number have appeared in English the past year, and the writer knows of several manuscripts that await publication. With one or two exceptions they are all built upon the same plan; they begin with the educational institutions and practices of the most ancient peoples of which we have any historical records, and they come on down, omitting nothing, until they finally end up with an account of present day systems and methods in the leading countries of the world. In treating of ancient education, especially in China, India, Persia, Egypt, Greece and Rome, they deem it essential to give a description of the geographical situation and features of each country, and some account of the political and social organization of the people, since the educational régime is dependent upon these matters. In presenting the educational ideas of eminent philosophers, as Pythagoras, for instance, they give an outline of his life and the principles of his philosophy. Kemp attempts to accomplish all these things in less than three hundred and fifty octavo pages; and it hardly needs to be said that he must treat his topics in a very general and fragmentary way. The book is evidently written for beginners, however, and it is the author's aim to give them just a glance at what he considers to be the most interesting features of educational practice in all times and countries, and the main points in the educational philosophy of great teachers and reformers. There is doubtless some value to be gained from this mode of treatment by elementary students in normal schools, say, who have had very slight training in history and philosophy, and whose study will cease with their unduly early entrance upon practical work. Mr. Kemp's style is well suited to the needs of students of this character, and in this respect it is an advance upon most of the histories of education designed for beginners.

The chief criticism to be made upon Kemp's book, and all books of which it is typical, is that it is simply a compilation of isolated, and, to a certain extent, unrelated facts. The author wishes his readers to

gain a conception of the evolution of education, to understand the 'genesis and nature of existing institutions, principles and methods.' To my mind, this is just what the student should gain from a course in the history of education; but I cannot see how Mr. Kemp's book is adapted to this end, unless it be supplemented by a great deal of work on the part of the lecturer. The book does not show us how educational principles have come to be what they now are; not a single institution or principle or method is traced down through the ages. Certain facts about each country are presented, and when the chapter is closed we hear no more about it; it is left for good. We have here a chronological record of events, but we learn absolutely nothing respecting their causal connections. No developmental ordering and interpretation of facts is anywhere apparent. The average student will certainly be unable to trace the genesis of our own complex institutions and methods from the isolated materials presented in this book.

It is time we had a history of education, or some phase thereof, written in the spirit of modern evolutionary science, which this book lacks altogether. Teachers need to be got into the genetic attitude. They should be led to see what our present system was in its primitive beginnings, and how our curricula and our methods of teaching and organization have grown up. As it is, they are required to learn by heart what particular men have said about teaching, and what was done in special epochs, but their learning throws no light upon the natural history of the system which they are called upon to administer, and either to conserve in its present form, or to modify in accordance with some sort of educational ideal.

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Ueber Farbenkenntnis bei Schulkindern. MARX LOBSIEN. *Zeitschrift f. Psychol. u. Physiol. d. Sinn.*, 1904, XXXIV., 29-47.

Lobsien made experiments with female children for the purpose of ascertaining differences in their knowledge of color names and in their color preferences. Only the seven rainbow colors were used.

Large colored disks were set up before a white background and at these the children were allowed to look for ten seconds and then to rest from one to one and one-half minutes before another test. The experiments were always made at the same time of day and with clear sunshine.

In the first part of the experiment the children were to write the name of each color presented. They all named red correctly every

time and made very few mistakes with blue. They named yellow and green correctly a great many times but made a large number of mistakes with orange, violet and indigo. The following table shows for each color the failures in per cents:

R	B	Y	G	V	I	O
0	0	4	6	56	85	85

With regard to orange, violet and indigo, there was a decided increase with age in the ability to name these colors, and an increase in the attempt at naming. In their erroneous attempts they usually called the color a tint or shade of the adjacent fundamental color.

In the next part of the experiment the children were asked to state their preference for one of two color disks shown simultaneously. Red was preferred the most and orange the least frequently. The relative number of times each color was preferred in comparison with the rest is indicated in the following table:

R	B	G	Y	V	I	O
409	379	378	299	214	155	141

In the next part of the experiment the children made a choice between two color disks, each of which was composed of two colors in equal proportions. The results were as follows: (1) The children always preferred one combination or the other. (2) The smallest differences in the preferences were between the combinations Y-G and B-I, O-B and Y-I, Y-I and Y-O; the greatest were between O-B and R-B, Y-B and B-V. (3) No single color combination was preferred in every case. (4) The so-called harmonious color combinations R-G, O-B, Y-V, were not so generally preferred as might have been expected.

In conclusion we may note that no comparison is made with other literature on the subject and that the terms used (p. 36) suggest the training rather of the artist than of the psychologist, as red, yellow and blue are spoken of as fundamental colors while green seems to be treated as one of the intermediate.

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Immediate Memory in School Children. W. H. WINCH. *Brit. J. of Psychology*, 1904, I., 127-134.

The method employed in this series of experiments was to expose to the view of a class of school children a set of twelve consonants arranged at random on a card in three lines of four letters each. The card was exposed for 25 seconds and the children were then required

to write down as much of it as they could remember, audible repetition not being permitted. It was found that the letters were not associated with words, and the author believes that there was no association except in time and space. It is not stated whether the children were instructed to read the letters in lines or columns or whether any record was made of the actual procedure in this particular. The method of marking papers is based, however, on the arrangement of the letters in lines and columns. Three credits are allowed for each letter in its right place; two credits for each letter one remove to the right or left, above or below; and one credit for each letter two removes to the right or left, above or below. Letters displaced diagonally or moved more than two spaces are not counted.

Preliminary experiments showed that an interval of twenty-five seconds between showing the card and beginning to write was of no consequence and that the conclusions would not be affected by the difference between girls and boys. The final tests were made on 39 girls between the ages of 8 and 15 years, chosen without reference to their proficiency in school work. On June 5, 1902, ten cards were given; on June 12, at the same hour, ten more were given, and on July 3, fifteen more. No practice between tests is mentioned, but the power of reproduction increased wonderfully from one test to another and this is interpreted as an improvement in 'pure memory.' In the cases of several individuals there was a gain of over 50 per cent. in proficiency from the first to the second test (one week later). The cards of a single test, however, were not compared with one another.

The general ability of these 39 school girls is indicated by the results of examinations in reading, arithmetic, dictation and composition. The position of each girl in her class — based on the year's work and the teacher's estimate — is also given. A very uniform connection is shown between success in the memory test and success in school work. The same connection is shown by further tests on other girls of one class, all about 13 years old, selected from the higher and lower divisions of the class.

The tests also show that memory of the type under discussion improves with age, within the limits chosen, but principally in so far as increased age implies a general increase in proficiency.

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The Psychology of Day Dreams. THEODATE L. SMITH. Amer. J. of Psychol., 1904, XV., 465-488.

The author's data for the article were taken from papers secured

from 1,475 persons, varying in age from six to ninety years. Out of the whole number addressed only five stated positively that they never had day dreams. The universal characteristics are the withdrawal of the attention from the external senses and a greater or less degree of mental automatism.

The contribution contains many points of interest. The characteristics most frequently mentioned are psychic deafness and blindness and muscular relaxation; but day dreaming may occur as an accompaniment of physical activity. The conditions were generally fatigue, monotony, or rhythmic sounds. Day dreaming seems to be a means of mental relaxation. The attention, usually of the passive type, is concentrated on the mental content, which of course differs with the age of the subject. As to the rightness or the wrongness of day dreaming only a small per cent. of children above the fifth grade and adults said it was right, without qualification. Some children said — "Can't help it, and what you can't help isn't wrong." Older subjects recognized its tendency to usurp the place of other activities and to dissipate energy, even though restful in itself. Three types of imagery are apparent: the volitional, the spontaneous and the insistent. The enjoyment of day dreaming, except in morbid cases, is universal. In morbid cases, instead of muscular relaxation, sometimes there is partial paralysis and rigidity of muscles. The painful reverie was reported chiefly by adults, only thirteen cases occurring among children, out of 980 pupils. The tendency to become habitual and excessive appeared in those having strong visual imaginations.

In summarizing the author maintains that every normal mind exhibits certain automatisms in its reproductive activities. Day dreaming appears to be normal and almost universal; its content is mainly environmental, and in childhood it is made up chiefly of memory images, — actual experiences or stories, reproduced. With adolescence there is a greater variety and complexity of content, with an insistence toward future possibilities. In adult life it is often associated with high intellectual endowments and creative power. It may become excessive and pass over into pathological states. Sex differences were found prominent and could generally be determined by the characteristic masculine or feminine type of the paper.

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ANIMAL PSYCHOLOGY.

Contributions to the Study of the Behavior of Lower Organisms.

HERBERT S. JENNINGS. Pub. by the Carnegie Institution of Washington, 1904. Pp. 256.

Professor Jennings in this volume takes his stand against a strict interpretation of the theory of tropisms. The author studies in detail: (1) 'The Reactions of Heat and Cold in the Ciliate Infusoria,' (2) 'Reactions to Light in Ciliates and Flagellates,' and (3) 'Reactions to Stimuli in Certain Rotifera (Metazoa).' With the data thus obtained (using in addition the results of his many former studies) he critically discusses the essential features of the theory of tropisms (paper 4).

The two fundamental assumptions of this theory are: (1) "The movements of organisms toward certain regions and their avoidance of others are due to orientation; *i. e.*, to a certain position which the organism is forced by the external stimulus to take, and which leads the organism toward (or away from) the source of the stimulus without any will or desire of the organism, * * * . (2) "The external agent by which the movement is controlled produces its characteristic effect directly on that part of the body upon which it impinges."

Professor Jennings shows that *orientation* is not a primary or striking factor in the reactions of the organisms studied above, to mechanical stimuli, to chemicals, to heat and cold and to variations in osmotic pressure. "The response in all these cases is produced through a 'motor reflex,' consisting usually of a movement backward, followed by a turning toward a structurally defined side. The direction of turning is thus determined by internal factors."

While orientation is a striking feature in the reactions of these organisms to stimulation by light, the method of orientation is, nevertheless, incompatible with the idea that it is due to the direct action of the stimulus upon the motor organs of the part of the body on which the light impinges. Orientation occurs by turning toward a certain structurally defined side, without regard to the part of the body struck by the light.

The reaction method of the rotifera to the electric current is a 'motor reflex' and hence inconsistent with the tropism schema. In the reactions of infusoria to this stimulus there is only a partial agreement with the requirements of the theory. Professor Jennings is inclined to rule out reactions to the electric current, since it appears to produce results of a peculiar kind which are not comparable to those produced by other methods of stimulation.

The general conclusion that Professor Jennings draws is that the theory of tropisms does not by any means explain the majority of the reactions of the lower organisms. In fact many of them are inconsistent with the demands of the theory. *Variability* in the reactions of such organisms to the same stimuli has been constantly overlooked. This fact leads the author to a study (5) of the 'Physiological States as Determining Factors in the Behavior of Lower Organisms.'

Under this heading the author discusses as types the reactions of the unicellular Stentor and the more highly developed Planarian. He shows by his own carefully conducted experiments that we can distinguish at least six different physiological states in Stentor. Pearl shows corresponding variations in the reactions of the flat worm. The author finally sets forth the view, (1) that the stimulus changes the physiological state of the organism as a whole, and (2) that this change in the physiological state induces a certain type of reaction.

Variability is certainly a stumbling block to the upholders of the theory of tropisms. Proving the existence of variability, however, broadens the field of the psychologist who is interested in animal behavior. As long as experiments seemed to prove the machine-like character of the reactions in lower organisms, the psychologist preferred to turn his attention to the behavior of animals in whose reactions variability is a clearly recognized factor. Removing the barrier of 'uniformity' (and Professor Jennings has done this, at least in the eyes of the reviewer) the behavior of the whole animal series, from amœba to man, claims the attention of the psychologists.

Passing over Professor Jennings' sixth paper, 'The Movements and Reactions of the Amœba,'¹ which in some ways is the most interesting one presented, since it proves quite conclusively that even here we have to deal with factors which are comparable to the habits, reflexes and automatic activities of higher organisms, we will examine the seventh and last, 'The Method of Trial and Error in the Behavior of Lower Organisms.'

In this paper the author contends that even in the lowest organism the method of behavior is one of trial and error. In the structure and method of locomotion of the flagellates, infusoria and rotifera, we seem to have a 'cunningly devised plan' for permitting this type of behavior. These organisms as they swim through the water revolve on their long axis and continually swerve to a structurally

¹ We pass this paper over for the reason that a knowledge of the results there discussed is not necessary for the continuity of Professor Jennings' argument.

defined side. The organism is therefore successively headed toward many different points of space. At the same time as they pursue their (spiral) course the motion of the cilia by which they swim is constantly pulling 'samples' of the water from a slight distance in advance. When this sample is hotter or colder than the water they usually live in, or contains some strong chemical, the organism reacts in a definite way. It stops, swims backward, and swings its anterior end *farther than usual toward the structurally defined side to which it is already swerving*. Its path is constantly changed until a successful one is finally found. This type of reaction is still more clearly seen in the reactions of an amoeba suspended in water in attempting to attach itself to solid objects. It sends out pseudopodia in all directions. If one of these pseudopodia come into contact with a solid object, the rest are withdrawn.

If the type of reaction is one of trial and error, what constitutes 'error' and what success? Here in the eyes of the reviewer is Professor Jennings' weakest point. He uses the old pleasure-pain argument a little disguised. "There is no common thread running through all the different agents which constitute error, save this one, that they are error from the standpoint of the general interests of the organism." Professor Jennings then argues from analogy: "How can we account for the fact that in man we have the same condition of affairs? etc. But to attempt to deal with the problem of negative reactions in the lower organisms without recognizing that they are conditioned in the same way as the negative reactions of man, without admitting the existence of some 'physiological state' analogous to that which is occasioned by pain in man, is, I believe, to close one's eyes to patent realities." Again, we must assume likewise another 'patent reality'—an analogous 'physiological state' corresponding to pleasure in ourselves.

Of course Professor Jennings has a right to make this assumption. In fact he is apparently driven to it if he tries to *assign* a reason for the correct mode of behavior on the part of the organism. But on this theory how would he account for the action of Nereis in selecting glass tubes, which give contact stimuli, even when the tubes are exposed to the direct rays of the sun which kill the worms? (Loeb). Again, if the organism reacts as a whole, by the method of trial and error, in consequence of a change in the total 'physiological state' of the organism, how would Professor Jennings account for the 'new methods' in the *righting* reactions of cut pieces of Planarians (these cut pieces in time, of course, regenerate)? "Here we find pieces of the body, in which the normal

mechanism of the reaction has been destroyed, immediately reaching a certain end (the righting) by a method differing entirely from any that Planarians ever used before to attain the same end, so far as we have evidence" (Pearl, 'Movements and Reactions of Fresh Water Planarians,' a paper which has Professor Jennings' entire approval). Again, Loeb presents in his writings numerous instances analogous to the above. Neither in the paper on 'Physiological States as Determining Factors in the Behavior of Lower Organisms,' nor in his final paper does Professor Jennings cope with this difficulty.

If we grant that Professor Jennings has taken the props from under the theory of tropisms, we must, I think, admit that he in his turn has neither proven that the positive reaction is due to pleasure nor the retractive one to pain. Finally, however much we as psychologists would like to believe that even in the lowest organisms the method of reaction is one of trial and error, we have to admit, I think, that it is straining the point to include the movements which Professor Jennings describes as taking place in the above organisms, under that method. This is plainly evident when we consider the apparently 'successful' reactions of pieces of mutilated organisms.

Psychologie der niedersten Tiere. Eine Untersuchung über die ersten Spuren psychischen Lebens im Tierreiche. FRANZ LUKAS. Wien und Leipzig, Wilhelm Braumüller, 1905. Pp. 276.

Professor Lukas attacks, in a book of the above title, the unfruitful problem of determining at just what stage in the zoölogical scale consciousness makes its appearance. The book is divided systematically into the following parts (corresponding to the ordinary zoölogical classifications) :

- I. The Protozoa.
- II. Cœlenterata { Cnidaria.
Ctenophora.
- III. Echinodermata.
- IV. Vermes.

Under each division the author discusses the general anatomical features, the changes in form and metabolism, reaction to stimuli, spontaneous movements, etc., of the various members included in the group.

Professor Lukas rejects the various criteria of consciousness (Loeb, Romanes, Wundt and others), but assumes that mental life may be ascribed to animals on purely logical grounds. If it can be proven

that an animal has organs which function similarly to our own; or secondly, that the animal makes 'expressive movements' similar to our own; or finally, if considerations seem to show that consciousness would be of value to the animal in meeting the requirements of its particular environment, then we have a right to assume the presence of a mental life in that animal — an assumption which is just as logical as that which we make every day regarding the presence of a consciousness in our fellow man.

Looking more intimately into the book we find Professor Lukas denying a mental life to class I. (Protozoa): "We see therefore that all the life activities which we have investigated in the protozoa can be explained as pure reflexes and impulsive movements (*impulse* in the *purely physiological sense*); we have accordingly no ground for assuming that any of these activities are accompanied by consciousness."

Continuing our examination we find that the author denies consciousness to the Sponges and to the Medusæ (Cœlenterata). He finds, however, the first trace of psychical life in the movements exerted by certain of the polyps (the polyp, as is well known, belongs to the same class as that of the Sponges and Medusæ, division II. above) in releasing themselves from objects to which they are attached and in the creeping movements which follow. The reactions of the more highly developed but closely related Medusæ are, according to the author, pure reflexes and impulsive movements.

In analyzing the content of such a rudimentary consciousness, Professor Lukas (accepting Wundt's classification of mental elements) argues that it is unnecessary to assume in it the presence of all three mental elements, since it is extremely unlikely that they appear simultaneously. Mere sensation, which can give information to the organism only about the bare nature of the stimulus, and simple feeling, which can only evaluate the sensation, are alike powerless to produce movement. Primary desire (Begehren) as the psychical occasion (Veranlassung) for the production (Auslösung) of movement, is the only really necessary element to assume in such a primitive consciousness. Desire in this sense does not change the nature of the *purely physiological impulses* which are already at work (these are present of course even in the protozoa); it simply strengthens them, increases their efficacy. Consciousness is an evolutionary factor, then, which comes to the front when the primitive physiological impulses to movements are insufficient or are too weak to overcome difficulties in the environment.

In division III. (Echinodermata) we find present desire, simple sensation and simple feelings, and associations among all three of these elements.

Finally in division IV. (Vermes) we have a still higher grade of consciousness. Taking the cases as a whole we find not only simple desires, simple sensation and feelings together with associations, but perception and acts of recognition as well.

In criticism, we may say that the author's conclusions regarding the behavior of these organisms seem to be based upon but little first-hand experimental evidence. The observations are general and not designed to test his assumptions step by step. The author's lengthy discussions on the anatomy and life history of the animals in question can be largely found in text-books on zoology. His references are to the work of Romanes and to the latter's contemporaries, while the work of Jennings, Pearl, Yerkes, and that of the host of other writers, both in America and in Germany, who for the last three or four years have been studying intelligently, minutely, and laboriously, these same animals, is nowhere mentioned. Finally, the book is full of naïve assumptions both psychological and metaphysical.

JOHN B. WATSON.

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Recherches sur le sens olfactif de l'escargot (Helix pomatia).

EMILE YUNG. Archives de Psychologie, 1904, III., 1-80.

The author gives us a survey of the previous publications concerning the sense organs of the snails. He shows how contradictory most of the reports are which are found in literature, and presents a number of careful experiments made by himself on the sensibility of the snails, chiefly of the large edible snail. Simple observation of the life of the snails shows that they are sensitive to movements of the air, to trembling of the object supporting them, to temperature, and to moisture. Whether they possess an olfactory sense is a question which cannot be answered so easily. They possess an eye at the tip of the large tentacles, but they do not seem to use this in order to distinguish objects. The eye is of very little importance in their life. The author describes in detail his experiments. When a snail is touched anywhere with a pencil point, it reacts by a receding movement of the area of the skin surrounding the point where it has been touched. When the shock received is greater, the whole snail recedes into its shell. The only difference between touching the tentacles and touching any other part of the skin consists in the greater sensibility found

on the tentacles, and particularly the tip of the tentacles. The tip of a tentacle (large or small) is also capable of perceiving the presence of an object at a distance, if this distance is not more than a millimeter. The author is inclined to regard this effect as produced, not by a light or a temperature stimulus, but by an olfactory stimulus. It is possible, he thinks, that the snail is affected by an olfactory stimulus which is too weak to be perceived as an odor by a human being. In order to test the sensitiveness of the snail to olfactory stimuli which we perceive as odors, he used a pencil point moistened, not with water, as in the previous experiments, but with essence of camomile. He found that any point of the skin which was approached by the pencil showed a reaction by a receding movement of the surrounding area. The only difference between the tentacles and other parts of the skin in this respect was found to be a greater sensitiveness of the tentacles. The most sensitive parts are the tips of the large tentacles, next the tips of the small tentacles; least sensitive is the rear part of the back. The relative sensitiveness is measured by the distance at which the different parts of the skin showed an immediate reaction, these distances varying in the case of camomile from 1 to 4 millimeters. The use of other odorous substances did not reveal any difference in the reaction, except that the snail is affected at slightly greater distances by those essences which smell more strongly to us. The receding movement does not indicate that the odor is disagreeable to the snail. The same reaction takes place at the moment when the odor of a carrot or a cabbage leaf is perceived: the tentacle withdraws, but, of course, reappears the next moment. An interesting fact is the rapid decrease in sensitiveness of the snail (just as of man) if the sense organs are exposed for a short time to the same olfactory stimulus.

The author now raises the question, at what distance a snail perceives the presence of nourishing substances, of its most common food. His numerous careful experiments prove that the snails are unable to find their food by the aid of its odor if the distance is at all considerable, more than 10 centimeters or so. The usual reports concerning the ease with which snails in nature are said to find their food by the odor, must therefore be regarded as greatly exaggerated and based on superficial observation of the conditions of the case. The author further deprived many snails of one or both of the pairs of tentacles. Their reactions showed a lesser sensitiveness to odors, but by no means insensibility.

The last part of the paper contains a critical discussion of the anatomical facts known, including some work of the author himself

The sensory cells found in the tentacles and other parts of the skin differ but slightly. He reaches the conclusion that neither the sensitiveness of the different parts of the body surface nor the structure of the sensitive cells under these different parts permit the assumption of any differentiation in the sensory function of the several parts of the body surface. The only approach towards a differentiation which one may speak of consists in the greater accumulation of sensory cells on certain areas (especially the tips of the tentacles) than on others. The name of 'the olfactory organs' which is so commonly applied to the large tentacles is not in accordance with the facts. They are neither more nor less 'olfactory organs' than any other point of the body surface.

Sur la biologie et la psychologie d'une araignée (Chiracanthium carnifex Fabricius). A. LECAILLON. Année Psychologique, 1904, X., 63-83.

The animal whose maternal instincts the author has studied is a spider common in oatfields. The female builds a nest on the top of an oat plant, lays about 160 eggs which she collects in a cocoon, and then closes the nest completely, staying within until the young have sufficiently developed to take care of themselves. The purpose of the mother's presence in the nest is to afford protection. If by any accident the nest is broken open, the mother at once sets to work repairing and closing it again. The author subjects this maternal instinct of the spider to several interesting tests. The chief results of his experiments are the following: The spider's attachment to the nest grows while she stays within. It is stronger after some of the young are hatched than when unhatched eggs alone are present in the nest. If a nest is opened, the mother removed, and another female placed on the nest, the latter adopts the nest, enters and at once begins to close it. She is, however, easily driven out by the mother, if this one is soon placed on the nest. But if the foster mother is left in possession of the nest for a number of days, her attachment to it becomes so strong that she defends it against the legitimate mother when the latter is replaced, until one of the contestants remains dead. Even the real mother's attachment to her nest weakens gradually, however, if she is separated from it for rather a long time. The spider does not take any interest at all in the individual young. If the nest is opened and some of the young spiders escape, the mother does not make the slightest effort to prevent them from doing so. All she does is to repair the nest. On this her whole attention seems concentrated.

One nest was broken by the author into pieces beyond repair. The mother remained with the pieces, throwing now and then a silk thread across them, until she died.

MAX MEYER.

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EVOLUTION AND HEREDITY.

A Factor in Mental Development. MARGARET FLOY WASHBURN.
Philos. Review, 1904, XIII., 622-626.

In this article the author expands the idea that 'upon the possibility of reacting to stimulation that neither hurts nor helps the organism at the moment of its operation, may rest the basis of all higher mental development.'

Briefly summarizing, she says that the progress in mental evolution has been marked in two respects: (1) advance in power to discriminate among stimuli; (2) the rise of the power to form 'free ideas.'

The author states that the aim of the paper is to indicate how both these gains of psychic evolution have been dependent principally on 'the organism's growing power to react to stimuli not in immediate contact with the body,' and discusses in a general way well-known facts in experimental psychology. In substance she states that an increase in the number of discriminable sensations within a given sense department means one of two things: (a) qualitative discrimination becomes more highly developed; (b) local discriminations become finer.

All such growth has been conditioned by the vital needs of the organism. Under this latter statement, two laws are briefly discussed: (1) 'qualitative discrimination has been developed with reference to stimuli that do not immediately hurt or help the organism'; (2) stimuli that are or may be harmful or helpful at the moment of their application, have given rise to local discrimination at the expense of 'qualitative distinctions.'

In discussing the principle involved in the problem of the rise of free images, the author states that there are three stages of development in response to stimulation: (1) The primitive condition where the animal does not learn by individual experience; (2) the stage of development where the animal learns by experience, without, however, having the power to recall the image of its experience; (3) the possibility of an image, purely centrally excited, not leading immedi-

ately to movement, when a process similar to the original may be set up, not by an influx of energy from without, but by the weaker nervous current coming from some other central sensory region, showing that the nervous substance must have been far more profoundly affected by the original stimulus than it was by either of the earlier stages.

The characteristics of such stimulus are: (*a*) intensity, (*b*) duration. The source of the image-forming power is, then, delayed reaction, 'made gradually possible by increasing sensitiveness of the organism to stimuli only indirectly affecting its welfare.' The author ventures the suggestion that this principle (applicable to lower organisms) may help to explain why the fully developed mind gets 'from the senses whose stimuli do not indicate direct contact of a beneficial or harmful object with the body, its clearest and most controllable images,' while, on the other hand, the more obscure image is obtained from the closer and more direct stimulation — touch and organic sensations. The senses giving rise to æsthetic feelings are the so-called higher senses — that is, those with greatest qualitative differentiation, with clearest images, with stimuli demanding least immediate and instant reaction. The affective tone of impressions depends on the relation of the elements, and upon the relation of these elements depends the delayed motor response. The lower senses permit no dwelling on the relation between the sensory effects of different stimuli.

MARY R. CAMPBELL.

JOHNS HOPKINS UNIVERSITY.

Il Destino delle Dinastie. L'Eredità Morbosa nella Storia. A. RENDA. Torino, Bocca, 1904.

The purpose of this essay is to put in evidence previous contributions, then to treat history from the viewpoint of psychology and psychopathology; to make certain observations on the complicated and obscure problems of heredity; to draw from the analysis of the hereditary development of psychic and psychopathic phenomena those consequences which illuminate the genesis and nature of being.

In spite of the development of knowledge, the new light thrown upon the biological problems of the evolutionary theory and the study of embryology, the phenomena of heredity are uncertain. Despite such hypotheses as Darwin's pangenesis, Weissmann's plasmic continuity, Spencer's polarigenesis, and Haeckel's perigenesis, the question remains, Are all the characteristics transmissible? And do these include those which are accidental, such as mutilations, or only those which are specific, or those which, being acquired, have modified the

germinal cells? The possibility of determining preventatively the future of those to be born, from one's knowledge of the parents, is a scientific mirage. But from history the extent of the genealogical tables of reigning families has the advantage of a cycle computed from actual occurrences. This permits one to follow the psychic history of a familiar group from its origin to its extinction; to observe the casual entrance of hereditary blight, to mark its growth, to describe all its modifications and to study the reversions. The chief source of error here is disregarding the disturbing influence exercised upon the conduct of rulers by the state of authority, the families which surround them, the traditions, social institutions and political exigencies of their environment. Hereby the results are modified. Volitions and character, inhibited and modified by direct external pressure, lose something of their genuine physiognomy. Still within three or four generations the first symptoms of lesion disturb the heroic hereditary fiber and signs of weakness and madness appear. Here the organic analogies of sociology are erroneous, yet there is a sort of collective biological evolution in which destructive microbes, as it were, hasten degeneration. The decline of aristocracies is attributable to the infiltration of inferior elements into a well-born group, although this may be repaired by systematic selection. Here psychic dynamism, because of its influence upon moral personality, ought to produce in the cerebral life a functional disturbance, and be the beginning of mental maladies and grave nervous affections (Jacoby); however, it cannot be proven that such power or ability is the essential and unconditioned factor of increasing morbidity. There are also to be considered lack of self-control, of impulsive inhibition, of moral sense, of respect for human life and of those sympathetic feelings which depend upon the circumstances of the times.

There is no doubt but that consanguinity in marriage has a baleful effect, since a subsequent cross-breeding does not greatly alter the psychic physiognomy. In the neuropathic tendencies of dynasties Orchansky's results are applicable: (1) The maladies of the father tend to be reinforced in the male line; (2) paternal heredity is progressive; (3) the first born are the most seriously affected; (4) the maternal heredity is, contrariwise, beneficial, depending perhaps upon the greater stability of the female organism. To this last view, which contradicts Lombroso, may be added the principle of Doubleday and Howorth that excessive prosperity of the individual is fatal to the prosperity of the species, since the privileged classes live in a parasitic state and thereby lack stimuli to action. Among all these conditions,

consanguinity and the greater degenerative tendency of males are the chief biological and social factors. In dynasties these lead to sterility, premature death, idiocy and moral madness. Germs of these things are also in all of us. The perfectly healthy man is an abstraction.

In part II. these principles are applied to the neurotic dynasties of Augustus, the Medici, the family of Charles V., the houses of Capet and Valois. Turning from the genealogical tables, part III treats of the contribution of art. Here the drama is said to have value in so far as it presents the conclusions of heredity, not the mysterious process of the formation of character. A study of the Plantagenets according to history and Shakespeare, furnishes the curve of degeneration showing the convergence of heredity as a cause. It is not here possible to construct an exact clinical scheme, but with the appearance of epilepsy and imbecility there come, in the first generation subsequent, epileptic equivalents; in the second and fourth, convulsions; in the fifth, a true epileptic psychosis: in the seventh, epilepsy with vertigo and unconsciousness, etc. In the English dynasty there appears an epileptic neurosis accompanied by deficiency or imbecility. Here Morel distinguishes four phases: in the first generation, irritability and cerebral congestions; in the second, intensification of the same, apoplexy and cases of grave neurosis, epilepsy, hysteria and hypochondria; in the third, eccentricity, lack of equilibrium; in the fourth, deaf-mutism, deficiency, precocious dementia. While Tigges proves the inconstancy of this progressive degeneration, the end of the process is always idiocy, imbecility and sterility. In brief, a nervous diathesis forms a connecting link between two morbid episodes or between two metatheses of an hereditary neurosis; while the passions are symptoms and psychopathic equivalents of a morbid process such as appears in mental maladies and anomalies. Returning to a concrete problem, the pedigrees of the French, English and Spanish dynasties exhibit instances of melancholia, persecutory paranoia, jealousy and avarice. Applying Galton's law, it is found that a descendant does not represent an arithmetical sum of the quantity of his ascendants, but possesses the quality of an ancestor from whom he derives an impression common to the family. In some cases morbid forms reappear with such persistency as to give a characteristic physiognomy even to the last of the line. In such a case the psychopathic personality of an individual is given from the prevalence in one group of a quality distinct from the other psychophysical elements with which it is associated. In conclusion it is said that the degeneration of ruling houses, especially of the nobility, has perhaps little force

nowadays because of the wider social forces at work; the study of such a tendency being merely one side of the polyhedron of humanity.

I. WOODBRIDGE RILEY.

JOHNS HOPKINS UNIVERSITY.

Sulla quistione del genio. VINCENZO ALLARA. Archiv für systematische philosophie, X., 2, 1904.

There are two predominant theories of genius: the physiological considers genius a superior faculty but always in exclusive and perfect relations with the physiological conditions of the organism in general and of the nervous system in particular, the other theory is the pathological, degenerative, or Lombrosian. The former is founded on insufficient evidence, the latter exclusively on pathological complications, which form both its strength and weakness. A mediating view makes genius a higher faculty entirely physiological but modified by pathological conditions of various kinds and degrees, be they transitory or permanent, inherited or acquired. If, as with Lombroso, genius and talent are synonymous, the latter should be considered as pathologically conditioned, as well as all intellection, whether negative or positive; for imbecility and idiocy and cretinism, as also normal thinking, are always emanations or secretions of the nerve cells.

Without carrying pathology to extremes, all men who have the least talent or genius possess pathological stigmata; especially do hydrocephaly and meningitis irritate and increase the functional activity of the brain cells. And yet genius cannot be considered as a manifestation entirely pathological, as a degeneration, for men without genius possess an exaggerated sensibility to meteorological conditions and this may be explained on psychological grounds.

I. WOODBRIDGE RILEY.

General Intelligence, Objectively Determined and Measured. C.

SPEARMAN. Amer. J. of Psych., 1904, XV., 201-293.

The purport of this article is " 'Correlational Psychology,' for the purpose of positively determining all psychical tendencies, and in particular those which connect together the so-called 'mental tests' with psychical activities of greater generality and interest."

The past fails to establish any positive conclusions fixing a definite status of correlation. Either 'General Intelligence' does not exist, or else it is a mere term of designation. Former experiments lack the value that is to be obtained through the adoption of some 'adequate system for proving and measuring associative tendencies.' Mathematical exactness is the keynote of the present work.

Experiments were conducted in discrimination in sight, sound and weight. The apparatus used for sound was a monochord so furnished with a Vernier scale that a difference of pitch of one third of a vibration could be produced; for sight, platinum prints obtained by photographic means, and for weight, a graduated series of weights of the 'cartridge' pattern. Five experimental series are reported, the reagents in two instances were children of a village school, in two others high school pupils, and in the final one male and female adults. The method employed was that of 'procedure with half knowledge. In estimating intelligence, four kinds were noted—school classification based upon examinations, native capacity, teachers' estimate, as 'bright,' 'dull' or 'average,' and common sense.

By far the most important feature is the method of correlation, and in this the author has employed Pearson's 'product moments' together with 'rank differences' and 'class averages,' all of which are carefully described in the author's earlier article, 'The Proof and Measurement of Association between Two Things,' *The American Journal of Psychology*, 1904, Vol. XV., pp. 72-101. Great care has been taken to eliminate all errors of observation and all irrelevant factors. Complete tables of actually measured results with the various correlations expressed in mathematical units are included with the hope that 'we shall eventually reach our pedagogical conclusions, not by easy subjective theories, nor by the insignificant range of personal experiences, nor yet by some catchpenny exceptional cases, but rather by an adequately representative array of established facts.'

The conclusions reached by the author are in part as follows:

1. "The results hitherto obtained in respect of psychic correlation would, if true, be almost fatal to experimental psychology as a profitable branch of science. But none of these results, as at present standing, can be considered to possess any value other than suggestive merely; this fact is not so much due to individual short-comings of the investigators, as to the general non-existence of any adequate system of investigation."

2. "On making good this methodological deficiency, there is found to actually occur a correspondence—continually varying in amount according to the experimental conditions—between all the forms of sensory discrimination and the more complicated intellectual activities of practical life."

3. "By this same new system of methodics, there is also shown to exist a correspondence between what may provisionally be called 'general discrimination' and 'general intelligence' which works out with great approximation to *one or absoluteness*."

4. "The above and other analogous facts indicate *that all branches of intellectual activity have in common one fundamental function (or group of functions), whereas the remaining or specific elements of the activity seem in every case to be wholly different from that in all the others.*"

5. "As an important practical consequence of this universal unity of the intellectual function, the various actual forms of mental activity constitute a stably interconnected Hierarchy according to their different degrees of intellectual saturation."

WM. R. WRIGHT.

UNIVERSITY OF MICHIGAN.

BOOKS RECEIVED FROM MARCH 5 TO APRIL 5.

Greek Thinkers: A History of Ancient Philosophy. TH. GOMPERZ. Trans. by G. G. BERRY. Vols. II., III. New York, Scribners, 1905. Pp. xii + 397, and vii + 386.

Logic, Inductive and Deductive. J. G. HIBBEN. New York, Scribners, 1905. Pp. xvi + 439.

Philosophical Orientation and Scientific Standpoints. JAMES WARD. Address before Univ. of Calif. Philos. Union, 1904. Berkeley, Univ. Press, 1904. Pp. 24.

The Wonders of Life. ERNST HAECKEL. Trans. by JOSEPH McCABE. New York and London, Harper & Bros., 1905. Pp. xi + 485.

Recherches cliniques et thérapeutiques sur l'épilepsie, l'hystérie et l'idiotie. BOURNEVILLE and others. Paris, Progrès Médical; Alcan, 1904. Pp. clxxxiv + 346.

Beiträge zur Gedächtnisforschung. F. REUTHER. Sonderab. aus Wundt's *Psychologische Studien*, Bd I, h. 1. Leipzig, Engelmann, 1905. Pp. 102.

NOTES AND NEWS.

IN connection with the international exposition to be held at Liège, Belgium, from April to November, during the present year, there will be held an International Congress of Education from September 17 to 20, inclusive. The purpose of the Congress is to consider the best means of promoting the physical, intellectual and moral development of the young in the home, the school and society.

The Congress will be organized in four sections, as follows: (1) Education of Children; (2) Study of Children; (3) Care and Training of Abnormal Children; (4) Parents' Associations, Mothers' Clubs and Other Supplementary Agencies for the Improvement of Youth. Membership in the Congress is solicited from educational institutions and associations, societies for the protection and guardianship of youth, students of the psychology of childhood, teachers, philanthropists and parents. The membership fee (ten francs) may be sent direct to the Secretary of the Congress, Louis Pien, No. 44 Rue Rubens, Brussels, Belgium, or to any member of the American committee.

To promote an interest in the Liège International Congress in the United States, the Commissioner of Education and the Secretary of the Interior have appointed the following American committee:

Chairman, Professor M. V. O'Shea, University of Wisconsin, Madison, Wis.; Secretary, Professor Will S. Monroe, State Normal School, Westfield, Mass.; the Hon. Alfred Bayliss, State Superintendent of Public Instruction, Springfield, Ill.; Miss Ellen M. Henrotin, Chicago, Ill.; Professor A. Caswell Ellis, University of Texas, Austin, Tex.; the Hon. Richard S. Tuthill, Chicago, Ill.; Professor William H. Burnham, Clark University, Worcester, Mass.; Mr. Charles W. Birtwell, Children's Aid Society, Boston, Mass.; President E. G. Lancaster, Olivet College, Olivet, Mich., and Dr. Tolman, Bureau of Education, Washington, D. C.

A joint committee in Paris and La Dorgonne — his native Province — has been formed to gather funds for a monument to the memory of Gabriel Tarde, the distinguished sociologist. Subscriptions may be sent to the treasurer, M. Félix Alcan, 108 Boulevard St. Germain, Paris.

Professor Geo. L. Raymond, Litt.D., formerly Professor in Princeton University, has been appointed Professor of *Æsthetics* in the George Washington University, Washington, D. C.

Assistant Professor J. B. Watson, of the University of Chicago, is doing special work, during the Spring quarter, at the Johns Hopkins University. It is also announced at the Johns Hopkins that Dr. Scripture cannot fulfil his engagement to lecture there this spring, being detained in Europe by the critical illness of one of his children.

PROFESSOR J. MARK BALDWIN has engaged to give a course of lectures on 'Genetic Logic' in the summer school of the University of California, June 26 to August 6.

THE following are gathered from the press:

PROFESSOR WILLIAM JAMES, of Harvard University, has accepted the acting professorship of philosophy at Stanford University. He will lecture at Stanford during the second half of the next academic year and will organize a department of philosophy for the university.

To perpetuate the memory of C. L. Herrick, and as a tribute of gratitude for his services, the Denison Scientific Association has appointed a committee to secure a fund to be known as the 'C. L. Herrick Memorial Fund.' Subscriptions may be sent to Professor Frank Carney, Denison, Ohio.

DR. R. S. WOODWORTH, instructor in psychology in Columbia University, has been promoted to an adjunct professorship.

We cite from *Nature* the following announcement, presuming that the studentship is open to American competitors: An Arnold Gersterberg studentship will be offered for competition in the Michaelmas term of 1906 (at Cambridge). Every candidate must send on or before October 1, 1906, an essay on one of the following subjects to Dr. James Ward, Trinity College, Cambridge. The value of the studentship is about ninety pounds, tenable for two years if work be satisfactory. Subjects: (1) A philosophical discussion of Energy and particularly of the new theory of Energetics; (2) A critical examination of Descartes' Philosophy of Nature; (3) The Relation of Mathematics and the Theory of Probability to Physics; (4) The Theory of Psycho-physical Parallelism; (5) The scope and methods of Comparative Psychology; (6) The Philosophical Import of Post-Darwinian Theories of Natural Selection.

THE PSYCHOLOGICAL BULLETIN

THE PRESENT STATE OF THE PSYCHOLOGY OF FEELING.

BY CHARLES HUGHES JOHNSTON,
Harvard University.

The prefatory statement, already become customary and trite, which a student of the psychology of feeling is tempted still to repeat, serving both as a justification and an apology for his proposed contribution, is that feelings, whatever they may be, do not as readily lend themselves to scientific investigation and experimentation as do other phases of mental life. In the whole field of psychology this is the realm richest in controversy. Theories are almost as numerous as there are authors who deal with the subject. In the purely logical phases Lipps and Tawney represent one extreme, Ribot and Urban another. From epistemological presuppositions as to the goal of psychological science Münsterberg¹ and Wundt² can never find common ground. In matters of mechanical technique the adequacy of measuring the possible physiological factors supposed to be involved in the bodily processes which shall correspond to the variations in the affective characters of the mental states in question, R. Müller's³ criticism is directed against all who rely upon plethysmographic methods, and Titchener⁴ thinks that this instrument will be discarded by psychologists in the near future. As to the given introspection of

¹ Münsterberg; *Psychology and Life*, Chap. I.

² Wundt, 'Ueber die Definition der Psychologie,' *Phil. Studien*, XII. Cf. especially S. 23: 'Sie (Psychologie) die unmittelbare Erfahrung zu ihrem Gegenstande hat.' Sensations, ideas, and feelings are really *unmittelbar*. S. 25, 'Nicht diese Abstraction, sondern lediglich die Erkenntniss der Objecte in ihrer realen Beschaffenheit ist das ursprüngliche Ziel der naturwissenschaftlichen Forschung.'

³ Cf. R. Müller, 'Zur Kritik der Verwendbarkeit der plethysmographischen Curve für psychologische Fragen,' *Zeit. f. Psych.*, XXX., 1902, 340-90.

⁴ Cf. Titchener, 'The Problems of Experimental Psychology,' *Sci.*, Vol. XX., No. 519, Dec. 9, 1904.

the experiencing subject whose mental states are being studied, Titchener¹ and Stevens² find themselves in vital disagreement with Wundt, whose tridimensional theory is thought by so many to be a valuable forward step in emotional psychology. Geiger's³ recent epistemological study of feeling elements and feeling relations marks an attempt at a reconciliation between Lipps and Wundt. His elaborate classification and his concept of a feeling element would probably be questioned by both the above writers. The article of Stevens above referred to well sums up the points at issue. Titchener does not think that empirical evidence bears out the theory of dimensionality of feelings. Wundt thinks he himself is relying exclusively upon this, and that he can find all these distinct elements, *Lust-Unlust*, *Erregung-Beruhigung*, *Spannung-Lösung*, in certain feeling states. Royce⁴ finds *pleasantness-unpleasantness* and *restlessness-quietness* sufficient. Angell⁵ agrees in the main with Titchener and Lehmann, and would exclude Wundt's two or Royce's one questionable elemental characteristic of feeling from affection in general. Since they are 'due primarily to the peculiar kinæsthetic sensations which accompany such states' they are rather of a sensory nature. At other times when they are 'general characteristics of the total attitude of consciousness toward its object' they belong rather to the cognitive order of conscious processes. For these and many other writers the criterion for feeling is that it must be fundamentally distinct from sensational or ideational significance. To them it is a single 'total complex state' always, a concrete process, but not an element. Hence only pleasantness-unpleasantness can relate to feelings proper. Since the subject upon whom Titchener chiefly relies for his empirical data failed to find any phase of his feeling experiences, except their pleasant-unpleasant character, that could not be referred to some localized organic process as a sensation complex, he concludes that excitement, depression, strain, and relief are really sensational in character.

Wundt's strongest plea, on the other hand, is that he too is dealing strictly with pure facts of introspection. From one point of view *P-U* represents the qualitative aspect of sensation, *E-D* the intensive

¹ Cf. Titchener, 'Zur Kritik der Wundt'schen Gefühlslehre'; *Zeit.f. Psychologie*, XIX., 321.

² Stevens, 'The Plethysmographic Evidence for the Tridimensional Theory of Feelings, *Am. Jr. of Psych.*, 1903, XIV., 13-20.

³ Geiger, *Archiv für Gesamte Psych.*, Heft V., 1904, S. 233-288; or cf. my review of this, *Jr. of Phil., Psych. and Sci. Methods*, Feb. 16, 1905.

⁴ Royce, *Outlines of Psychology*, p. 178.

⁵ Angell, *Psychology*, pp. 259 ff.

aspect, and *S-R* the temporal aspect. Looked at from another point of view (perfectly permissible he thinks, contrary to Titchener), *P-U* tends to modify one's present conscious state, *E-D* one's future state, while *S-R* is peculiarly determined by the past state in every instance. In answering Titchener's objection¹ as to the fact that sensations invariably accompany states of *E-D* and of *S-R*, Wundt² seems to be correct in saying that all feelings of whatever dimensions accompany sensations, and that any other view would imply that feelings are not present when sensations are. If such were the case there would be little meaning or value in the concept of feeling-tone, the adoption of which has marked the great advance beyond Herbartian psychology.

Titchener further objects to the Wundtian scheme. *E* and *S* are not maximal opposites of *D* and *R*. Excitement and depression, for example, are rather in one continuous dimension, differing only in degree. Further, if we ascribe the attributes of quality, intensity, and temporalness to our conceptual feeling element, why not logically add spatiality, and make use of the further attribute, expansion-contraction? To Wundt this is merely 'logical schematization,' and not psychological in method. He does not ascribe spatiality to anger, for instance, because he does not find this by introspection. To say, however, that one is not justified in using the other attributes because this one in the case of anger is '*sinnlos, das eine bloße Fiction ist.*' As to the maximal opposites, just as unpleasantness is as positive a state of feeling as pleasantness, so Wundt would contend that repose or relief is quite as positive and distinct a feeling as is excitement or strain.

¹ If, as Titchener's article would seem to suggest, everything that can be localized as connected with or referring to organic sensations, must be solely some form of sensation complex, then 'feeling' in the Wundtian sense is unquestionably excluded from psychological inquiry. If so, Titchener's own statement that 'affection' is elemental (though feeling is not) would indicate that he has predicated a universal character of mental life which can have no explanation or description in terms of definite physiological accompaniments. According to this view feelings, in so far as they are phenomena, are only negatively characterized as that which *as yet* has not been reduced to sensations. This is clearly, however, a point of view foreign to the very essentials of Wundtian theory. It is strictly analogous to the much discussed scientific uselessness of the concept of biological organism as viewed by Verworn, for instance. This view carried out becomes entirely consistent with Münsterbergian atomistic psychology, where all teleological considerations are rigorously excluded. The very nature of feelings leads Mr. A. E. Taylor to prefer these supplementary considerations, or 'interpretative attitudes,' with the distinct proviso, however, that they are methods different in principle, with no real 'quantitative' significance.

² Cf. Wundt, 'Bemerkungen zur Theorie der Gefühle,' *Phil. Studien*, Bd. XV., S. 149.

The evidence, however, which he has second-hand from rather incoherent and vague remarks made by untrained persons upon whom Lehmann was making experiments for a somewhat different purpose, is at least unsatisfactory and questionable. The objective evidence afforded by the curves of Lehmann does not seem any more conclusive, as Stevens has well pointed out, than does his hasty analysis of the reported experiences. One cannot say with confidence that his tridimensional scheme is either exact or exhaustive. That it has by no means been accorded general assent, together with the fact that all experiments seeking to test it are still questioned, shows that even the solution of the problem of method is yet to be found.

The work of Geiger is very suggestive but is also unsatisfactory, as he has chosen to grapple first with the most complex psychoses, with feelings which do not lend themselves to systematic experimentations under controlled laboratory conditions.

The first and second controversial issues mentioned above, the question of the ultimate logical and workable concept of feelings as they can be dealt with phenomenally, and the other question as to the possibly practical or futile methods now employed for measuring such phenomena, though important, I am not now insisting upon. I wish rather to consider another problem which is peculiar to the psychology of feeling, and which I am convinced calls for as careful and as methodical a treatment as do either of the others mentioned above.

I mean that here introspection itself presents the problem. No experiment on feelings can furnish important results for psychology until on the mental side facts can come into question which are readily granted by every one. If some psychologists proceed to study certain so-called affective phenomena or feelings of excitement, etc., which by others are in turn called only sensation phenomena, then either feelings are misconceived or else sensations are subject to different interpretations. Wundt makes a clear distinction, and thinks that feelings are just as elemental as sensations. Münsterberg, Royce and Titchener do not accept as useful for psychological purposes any such fundamentally different elements. In any case, however, the last word cannot be said till there has been accumulated much more indisputable data concerning simple feelings themselves.

The experimental method demands that we start with the simplest material available, and when such material has been adequately described and explained, then attack the more complex. Experimental psychology thus begins with sensation, and most of its accumulated

data relate to the simplest indisputable facts of experience. With what the subjects in a laboratory report as seen or heard or tasted or localized as some tactual impression on a defined portion of the body, neither the investigator nor his readers for one moment call into question. This is simply a report of a given experience of a person in a clearly defined situation, which reported facts would presumably be given by any one whomsoever under the same conditions. In the experimental study of sensations, then, the problem of ability properly to introspect is not presented.

This is not true of the feelings. Many psychologists, as Lipps and Tawney, for example, think that they are absolutely unique. Others, Royce and Wundt, for example, as noted above, think that some analysis into elemental components is possible and desirable. Still others, among them Titchener, Angell, and Ward, would make affection represent only the most general character of all conscious states, differing in concrete cases only in intensity and duration. Geiger would prefer to consider all feeling states analyzable in a manner exactly similar to sensations, differing only in the matter of the greater obstacles they present to introspection, when one seeks to find out the form and the manner of the relation and combination of these elemental components.

At any rate none question the difficulty, though many would still suspect the possibility, of finding for feelings a treatment analogous to sensations. When I place before my subjects a color of a known quality and saturation, or produce a tone from a tuning fork whose pitch has been ascertained, in all cases I can count upon the certainty that I am studying sensations whose classification has already been universally agreed upon. When I proceed to study the accompanying feelings, I cannot be sure. In the first place we have no special sense organs for different kinds of feelings with which to make a clear beginning step in classification. That a subject will at any time find a given shade of red pleasant, or exciting, or both, or neither, what other possible elements of feeling may occasionally be present, in what relation the tension element may be to the pleasant phase, or whether pleasure, excitement and tension, for example, clearly exhaust the feeling in question, can only be determined by careful training in this kind of introspection. This sort of simple stimulation is naturally the only material available for laboratory purposes, and the very novelty of such introspection will of itself demand much training. That changes in respiration, in muscular expansion, in arterial pressure, or in the actual or incipient tendencies to motor discharge, do occur

when feelings are being experienced, is perhaps in a general way established already. Just to what these various graphic representations of bodily processes correspond is not clear in most of the recorded results. In the case of Lehmann's¹ work, which is the most elaborate and detailed account of the kind, it is Wundt who later interprets for himself the rather unsatisfactory notes taken by Lehmann from his subjects. From the statements the subjects themselves have made one does not feel confident that they themselves were conscious of the well-defined components of the affective phase of their experiences. If they had so defined such feelings as made up of elements of pleasure, tension, and excitement, which three characteristics exhausted all that they felt at the time, in that case the plethysmographic curves might indeed tell us something of some definite mental state. Lehmann himself thinks that the only feeling tone for any of them was the pleasant-unpleasant character, and that the rest of each experience was merely sensational in nature, with distinctly no other feeling elements involved.

In testing the tridimensional theory, or in systematically trying to classify certain feeling states which can be conveniently treated experimentally, one should study the simplest feelings possible, first in isolation, and then if possible in simple combinations of these with others of a similar degree of complexity. In the rich pervading experiences of every-day life one can scarcely abstract from the too prominent personal equation. The nature, number, and forms of combination of such tumultuous organic feelings, presenting indeed one of the most vital problems for the psychology of the future, of which at present practically nothing definite is known, as Titchener pointed out in his St. Louis address, offer well-nigh insurmountable obstacles for reliable introspective analysis. This very confusion of intricate processes has divided the psychologists into two wings. Is Titchener right, or is Geiger and those whom he follows? Must we begin with the presupposition that elemental affection is a 'tilt of the whole organism,' and that feeling as such, wherever and whenever it occurs, unlike a sensational or ideational complex, is unanalyzable further, or ultimate? As Titchener himself asks, is any given affective process coextensive with the *whole* state of consciousness of the moment, or are feelings also to represent a composite array of more or less definitely combined partial states or elements, a 'mosaic of affections,' as he styles it? Or again, does feeling sometimes include

¹ Lehmann, *Die körperlichen Aeusserungen psychischer Zustände*. Lehmann, *Hauptgesetze des menschlichen Gefühlslebens*.

other than affective elements? Where in our psychological data shall be placed Professor James' 'feeling of relation' or Krüger's 'feeling of certainty and doubt'? Can one test Geiger's claim that there are also purely logical feelings? Is the affective element effective? If so, for what? Is contrast itself a new feeling, as Geiger also insists? Or is it rather a state of consciousness brought about by the old inevitable law of the 'opposition of feelings'? Can there be a pure feeling of certainty as such, or of necessity, or of doubt, and what relation, if any, have these to the affective feelings? Can feelings reinforce and fuse or occur peaceably together, as well as inhibit each other? What can be empirically ascertained as to the relation of attention to an affective process? Such an enumeration of problems could be continued indefinitely. Careful introspection under proper conditions alone can pave the way to their solution, or make physiological experimentation of any value.

Again, Titchener's objection to Wundt is not, as Wundt would have it, merely a 'logical discussion of the meaning of words.' It is true, and not surprising, that subjects upon whom recently numerous experiments have been tried, do not readily come upon Wundtian characteristics of their own accord. Obviously they alone reporting what they feel can give any significance to the resulting curves. However this may be, the tridimensional theory has offered the suggestion of something tangible as regards feeling, and has brought forth many experimental endeavors which in the main have been concerned with testing this particular theory, rather than with forming any other possible or probable one. Lehmann¹ uses a sudden noise to arouse the feeling of fright, touches his subject softly on the ear for pleasure, requires mental reckoning for voluntary attention, and employs other stimulations such as quinine, asafœtida, ammonia, or warm water, for the purpose of bringing about distinct mental states. He finds characteristic changes for states of voluntary concentration, etc. Wundt chooses to interpret these affective elements as mixtures of excitement and unpleasantness.

Zoneff and Meumann,² also without any special precaution for exact introspection, have attempted to compare intellectual and sensory attention. They have failed to find any difference between voluntary and involuntary attention. The concentration, however brought about, is the only general characteristic which shows constant corresponding changes in the curves.

¹ Lehmann, *Die körperlichen Aeusserungen psychischer Zustände*, S. 81.

² Cf. 'Ueber Begleiterscheinungen physischer Vorgänge in Athem und Puls, *Phil. Studien*, XVIII., 1901, S. 1-113.

Gent,¹ in his plethysmographic study, tends to work almost exclusively upon the presupposed adequacy and exactness of Wundtian dimensionality. In following any tentative scheme exclusively there seems to be a danger that the richness and variety of emotional life may be overlooked. The examination of the psychical state as such is not prominent in this work. Consequently Gent, contrary to Brahn, does not apparently meet with the great difficulty of finding pure states of excitement, tension, etc., to work upon. For feelings of tension a touch on the head, a hair drawn across the lips, a sound in the hall, a sharp or weak call, or a weak odor suffices. Relaxation results from slow metronome clicks. For the complex state of *unlust-erregung-spannung* a painful stimulus on the head or ear, sulphur-quinine, or sour lemon is used. For *lust-spannung* the smell of a fresh lemon or of violet is sufficient. Suggestion of increase of arm volume for excitement, and of the sinking of arm volume for depression are likewise tested. Recalling a state of anger occasions unpleasant excitement, anticipation of intellectual work, pure pleasure, and a depressed, melancholy, nervous subject furnishes the feeling of *unlust-beruhigung*. The resulting curves, he thinks, bear out Wundt's theory.

Boggs,² who has used sphygmographic tests, has in the main attained similar results. Voluntary attention gives the purest forms of strain-relaxation. High organ note, white rose odor, turpentine odor, or purple-red colored glass arouse pure pleasure. Blue glass plate, pressure, lemon juice, or slow metronome furnish unpleasant states. Again, high chord on organ or discord, rasping files, high whistle, red plate glass, or ammonia produce feelings of excitement, while light blue glass plate, or sage green, or odor of castor oil are depressive. Odor of bergamot or of onion essence makes the subject feel the complex state of unpleasant depression. Most of the subjects were ignorant of the purpose of the experiment, one was asleep at one time, and all were 'occasionally warned not to confuse sensations and feelings.' The experimenter did not wish the subjects to be influenced by a 'desire to make the proper introspection.' In the cases of mixed feelings excitement-depression appeared first, pleasantness-unpleasantness next, and strain-relief last.

Dumas³ thinks there can be discovered in the form changes of the

¹ Gent, W., 'Volumpulscurven bei Gefühlen und Affecten,' *Phil. Studien*, 1903, XVIII., 715-792.

² Boggs, L. P., 'Experimental Study of the Physical Accompaniments of Feeling,' *PSYCH. REV.*, 1904, XI., No. 4-5.

³ Cf. Dumas, G., *La Tristesse et la Joie*, Paris, Alcan, 1900, p. 426.

curves more variations than introspective analysis furnishes in the cases of joy and sadness. If so, he claims that they have no psychological significance. Brahn,¹ taking account of this, has in his very careful sphygmographic experiments made an attempt to train his subjects. As a result of this self-examination by his subjects, the easy classification is not effected. *Erregung, anregent, lebhaft, energisch, weichlich*, though somewhat different, are classed under the dimension of excitement feelings. *Beruhigung, abspannend, erschlaffend, langweilig, abstuftend, beklommen*, are sufficiently alike to admit of being all called depressive phenomena. Out of two hundred experimental tests, however, Brahn finds only five cases of feelings where pleasantness-unpleasantness does not enter. The stimulations arousing these are camphor, mint, and high tones. He also finds the purest cases of tension to accompany voluntary attention. He hence agrees with Wundt that Lehmann's general sensory excitement curves should be interpreted to correspond to real feeling states. Further, since there are only three forms of pulse changes, they should correspond to the three phases of feelings. Where pleasure predominates, the curves are longer and higher, for unpleasantness they are shorter and lower. When excitement enters it increases the height, while depression lowers it. Tension and relief correspond to contrasted changes in the diastolic. As to the further observation that unobserved stimuli show lengthening of the pulse, there is no direct statement recorded as to whether or not this was merely inadequate introspection. In the four cases where strength of pulse changes correspond to the intensity of the feelings, one is not told what was the unit of measuring the feeling, nor whether these four feelings were experienced by one or by several different subjects.

Rauh² has reviewed many other proposed contributions to this experimental work, and finds few decisive facts upon which even a small number of experimenters can agree. Münsterberg's theory as to connection of flexor muscles with unpleasant and of extensor muscles with agreeable feelings has been contradicted by Störing,³ who claims that often exactly the opposite occurs. Other writers think this is more or less dependent upon the habits of the individual in question. Few psychologists accept Féré's dynamometric results which tend to

¹ Brahn, M., 'Experimentelle Beiträge zur Gefühlslehre, *Phil. Studien*, XVIII., 127.

² Rauh, *De la méthode dans la psychologie des sentiments*, Paris, Alcan, 1899, p. 315.

³ Störing, *Phil. Studien*, XII., 475-524; or cf. *PSYCH. REV.*, Jan., 1897, p.

show that the greatest amount of power possible for one to exert corresponds in general to the pleasant affective states, and a corresponding degree of impotence results from unpleasant feelings.

In short, those writers such as Angell, who do not think that there are any essentially qualitative differences in affective states as such, tend to question the significance of all graphic curve variations. In objection to Lange, who advances the theory that pleasure, for example, is dependent upon peripheral vaso-dilatation and consequent paralysis of vaso-constrictor nerves, Binet and Courtier¹ insist that it is upon the intensity only of the nervous excitement that the organic manifestations ordinarily reported as relating to the difference between the affective characters of psychic states depend. In most individuals *all* emotions produce vaso-motor constriction, acceleration of the heart and respiration, and augmentation of the amplitude of chest. All this corresponds to the quantity and not to the quality of the emotion. Even grief and joy are not to be thus distinguished.

This brief review, inadequate as it is, and necessarily failing to represent all that is plausible in any single author's view, at least may serve to emphasize afresh the unsettled state of the psychology of feeling. Is the concept of feeling itself clear? Can feeling states ever be resolved into sensational complexes, or even elemental feeling-complexes? If pleasantness-unpleasantness is recognized as insufficient to distinguish essential differences of introspection, as especially the German psychologists think, do we not need a new theory? It cannot very well be discussed until a more nearly universal consensus of opinion as to its relation to consciousness be agreed upon. Is it a mode or a quality of mind? Is feeling the reality and thought the reflection upon it, or are both transformations or abstractions from some other primal real unity? Or again, is our whole affective life merely the epiphenomenon, the functional expression of the relation of ideas, with which statement so many writers shelve the question? As Tawney² asks, can there be any priority, in our genetic theory, of either feeling or thought? In each experience can we say that consciousness of motor excitations which are not regulated by the will directly follow affective states, or are merely simultaneous with them, or (with James) that they are identical with them, or (with Titchener) that such localized sensational complexes are never the feeling at all,

¹ Binet and Courtier, 'Influence de la vie émotionnelle sur le coeur, la respiration et la circulation capillaire,' *L'Année psych.*, III. Cf. also *L'Année psych.*, II.

² Tawney, G. A., 'Feeling and Self-awareness,' *Psych. Rev.*, IX., 1902, 570-596.

but are merely, to quote Angell, 'of a sensory nature'? Is feeling, in the Wundtian sense, as fundamental a category as sensation? Are feelings always subjective in reference as opposed to sensational and ideational states? Is the subject-object relation preserved in the one and lost in the other? What can the psychologist do with feelings as conceived and treated by Lipps? If one must cease looking for organic references for feelings of all kinds, must he then admit into his material for explanation Kant's 'das Gefühl der Achtung' or Höffding's 'spiritual emotion'? Can there be general affective states which are comparable to concepts?¹ Can one, as Angell² does in one of our most recent text-books of psychology, dismiss affective memory with a word as to the general difference of intensity only?

Such problems have been frequently formulated, and numerous logical discussions have followed. So far as I have been able to find, no extended and systematic study of what can be gained by proper introspection of simplest feeling elements and their relations has been done in any experimental way under controlled conditions. As noted above, these vague introspective reports which one can collect from those who are primarily interested in the technique of physiological measurements, are scarcely sufficient to convince one of their great psychological importance. Brahn's 'melancholy subject,' or Gent's subject who 'recalled an unpleasant experience with a friend,' or Boggs' 'sleeping subject,' or the experience of another who describes the feeling state as 'awful' or 'something fierce' are rather extreme examples. Though Wundt's suggestion has been prolific in stimulating experimentation, still his answers to Titchener's objections, that they are really only 'logical discussions of the meaning of words,' does not seem to be altogether fitting, since after all there is no other means of indicating what one is experiencing. Brahn, one of Wundt's own followers, does not accept the excitement dimension without many verbal qualifications. The work of Geiger, on the other hand, is in some respects that of a pioneer. Objections to it also, however, have been noted above.

¹ Cf. Urban, W. M., 'Logic of Emotion and Affective Memory,' *PSYCH. REV.*, VIII, 120 ff., and cf. Ribot, *La logique des sentiments*.

² Cf. Angell, *Psychology*, p. 266.

PSYCHOLOGICAL LITERATURE.

GENERAL.

Leitfaden der Psychologie. THEODOR LIPPS. Leipzig, Wilhelm Engelmann, 1903. Pp. ix+349.

The title of this book is misleading, for the book is a mixture of psychology and metaphysics. The psychology is of curiously varying worth. On the one hand the book abounds in keen analysis and in illuminating description of psychic phenomena. As examples may be instanced the account (p. 88) of the apprehension of the visual depth of objects; the treatment (p. 116, *seq.*) of abstraction as a form of attention; and the full discussions of the relational consciousness — for, however one may disagree with occasional details, one must welcome this restoration of the thought side of experience to the position from which empirical psychology, in its revolt from Kantianism, has often seemed to dislodge it.

On the other hand, the book is distinctly defective in its classification of conscious experiences, and it reveals, throughout, the unwarrantable tendency, characteristic of Herbartianism, to conceive of psychic phenomena in terms of metaphysical reality. The main objection to the classification is the absence of a controlling principle, the consequent shifting from one standpoint to another, and the resulting tendency to consider the same subject under different heads. This criticism is substantiated by a closer examination of the book, which is divided into six sections: (1) *Grundlegung*; (2) Apperception, (3) Knowledge, (4) Will, (5) The Feelings, (6) Special Psychic States. The first section contains not merely a discussion of problem and of methods, but separate chapters on Contents of Consciousness, Attention and Consciousness, Association and Memory. The second section, which considers apperception, fusion and allied phenomena (*Verwebung* and *Verschmelzung*), analysis and synthesis, is not, in the nature of the case, differentiated sharply enough, on the one hand from the association chapter of section 1, and on the other hand from the earlier chapters of section 3, on Relations and on Judgment. Section 3 is, in fact, a curious conglomerate, for its middle chapters plunge heavily into metaphysics, while discussing object, phenomenon

and the real; whereas its final chapter (XIV.) considers an entirely different topic: the experience known as *Einfühlung*. This, however, is a fundamental conscious attitude, not a single concrete form of experience, and deserves a place in the very first chapter of the book, where the *Bewusstseins-Ich* is discussed. That the topic is out of place in section 3 is shown by its reappearance in Chap. XIX. of section 5 ('The Feelings'), in the consideration of affective feelings, and still more in the treatment of æsthetic and ethical valuations. As a whole, section 5, which treats of the Feelings, should be included with section 4, on the 'Will,' under what Lipps recognizes as the higher class of endeavor (*Streben*).

This uncoördinated treatment is the more to be regretted because Lipps has, ready to hand, as it seems to the reviewer, a fundamental principle of description and of classification in his doctrine of the immediately realized I, in its two phases of *Selbstgefühl* and of *Einfühlung*. As one or other of these opposing yet related forms of self consciousness, in which the emphasis falls now on the central self, the myself, again on the other self, the thou or the you, every experience, however otherwise distinguished, must be defined. The most significant portions of the book are, accordingly, in the opinion of the writer of this notice, the vivid accounts of the 'mit jedem Inhalt zugleich miterlebten oder mitvorgefundenen, jedermann bekannten, aber nicht näher beschreibbaren Beziehung der Inhalte zu dem Zentralpunkte des Bewusstseinslebens, Ich genannt * * *.' Lipps lays special stress on the fact that the consciousness of this I is a part of every experience, the implication of every idea. "To every content of consciousness," he says, "belongs this relatedness to the I. Accordingly, to every content of consciousness belongs the immediately experienced I, the *Bewusstseins-Ich*, or I of Feeling." All this is a peculiarly good account of the essential nature of consciousness. In his treatment, also, of many specific experiences—notably of apperception and of the æsthetic and ethical consciousness—Lipps views consciousness as essentially self-consciousness; and the more explicitly he does so, the more successful is his analysis. Even 'objects (*Gegenstände*)' are constituted by the I's apperception of psychic contents (p. 177 *et al.*).

The second radical defect of the '*Leitfaden*,' so far as it is to be viewed as a book on psychology, is its tendency to define and to classify in terms of metaphysics. The most flagrant instance is found in the statement of the 'universal principle' of pleasure. "Pleasure," Lipps says (p. 259), "accompanies a psychic occurrence in the measure in which in its growing efficiency (*Wirksamwerden*), and consequently in the apperception of the object which is thought in it, the

nature of the soul comes to its rights; that is, to positive value." Whatever the significance of the metaphysical doctrine underlying this conception, it will be admitted that psychic facts should not be described on the basis of metaphysical distinctions.

There is little need to discuss in detail the metaphysical doctrine of the book, for the position of Lipps is well known. Underlying the empirical I, which he has described so vividly, there is, he teaches, a real I, or soul, whose activities constitute the psychic occurrences (Vorgänge). And behind the psychic object he assumes a transcendental object, which alone has causality. For the real I he argues, first (p. 7), on the ground that a 'permanent somewhat, a substratum, is presupposed by psychic phenomena'; second, by an appeal (p. 9) to the everyday consciousness; third, and most plausibly (p. 40 *et al.*), by a reference to the experiences — remembering the once forgotten, for example — which are easily explained by the soul-activity hypothesis. No one of these arguments, it must be admitted, demonstrates the reality of this shadowy double of the I immediately known. Even less convincing is the argument for the existence of the transcendent object: that causality presupposes it, since causality is, by its very nature, a causality between the objectively [that is, the transcendently] real. But this assumes the very point at issue, ignoring the conception of cause, prevalent since Hume introduced it, as mere connection of phenomena.

This notice has failed of one of its aims, if it has not suggested the merit of the book which it criticises. A 'guide to psychology' the book, it is true, is not likely to become, except for its author's own students, partly because, as the brief preface states, it is quite bare of reference to the literature of the subject, partly because of its total neglect of the physiological conditions of psychical phenomena, but especially on account of the radical defects already named. Yet the distinctive psychological doctrines of Lipps are so vigorously, and so effectively set forth, that the book has positive, and — at some points — great value.

The Meaning of the Physical from the Point of View of the Functional Psychology. H. HEATH BAWDEN, *Philosophical Review*, 1904, XIII., 298-319.

The criticism and discussion already called forth¹ by this paper

¹ Cf. G. M. Andrus, *Philosophical Review*, 1904, XIV., 429-444 and 660-665; H. H. Bawden, *ibid.*, 541-546; M. Prince, *ibid.*, 444-451.

of Professor Bawden, and by those which preceded it,¹ furnish evidence of the suggestiveness of his conception of psychical and physical respectively as 'tensional' action and 'stable' action (p. 301), or as 'focus' and 'marginal context' (pp. 308, 318 *et al.*) The doctrine is criticized mainly on three grounds: first, the lack of precise equivalence between the terms 'tensional' and 'focal,' on the one hand, and the terms stable and marginal, on the other; second, the variability of the characters attributed to psychical and to physical; third, the deduction from these premises of an identity-theory, in place of the idealism which—it is claimed—is the logical outcome. With these criticisms, in their general outline, the writer of this notice is in agreement. The purpose of this paragraph is, however, primarily to call attention to the discussion; and incidentally to point out that the interests involved are metaphysical, not psychological. From the standpoint of psychology, pure and simple, both the psychical and the physical are primary data to be accepted on their face value, as distinct sorts of fact. The investigation of their ultimate nature is a metaphysical, not a psychological, problem. The tasks of psychology are first, to analyze and to classify psychical facts; and second, so far as possible, to explain them scientifically—that is, to refer each one of them to the facts, psychical or physical, which it regularly accompanies.

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ATTENTION.

The Physiological Factors of the Attention Process. W. McDougall. II., *Mind*, No. 47, pp. 289-302; III., *ibid.*, No. 48, pp. 473-488.

In the first of these papers we have not, as we might expect, an expansion of argument of the first paper of the series, but the author takes a new standpoint that is apparently almost unrelated to the old. There the attention processes were pictured as due to the varying permeability of nerve tracts at different levels, in this the explanation is on the basis of the hydrostatics of a hypothetical nerve fluid, neurin. Each nerve process is pictured as corresponding to the release of a certain amount of the neurin in one nerve group, which flows to and tends to excite other related nerve processes in other nerve groups when it is itself in any way in activity. The theory is strongly sug-

¹ *Philosophical Review*, 1902, XI., 474 *seq.* and 1903, XII., 299 *seq.*; and *Journ. of Philosophy, Psychology and Scientific Methods*, I., 62 *seq.*

gestive of the hydro-dynamic analogy of Lehmann, which was probably unfamiliar to the author at the time he wrote. It is difficult to see what advantages these highly pictorial hypotheses have over the theory of Exner, who expresses the same facts in terms of the well known physiological processes of reinforcement and inhibition.

The second article traces the reflex effect of muscular contraction upon the related sensations. The results offer perhaps the most satisfactory evidence of this effect so far obtained. The experiments consisted in recording the time that it is possible to hold one colored field against another when both are presented together as in the stereoscope. When both eyes were normal it was found possible to increase the time that either could be held. When one eye had been treated with atropine it was no longer possible to increase the time that the color seen with the paralyzed eye could be held. The same explanation is extended to cover the change in perspective of Neckar's cube, and it is concluded in general that the contraction of a muscle serves to increase the action of the sensory center, just as the discharge of the sensory areas increases or initiates the contraction of the muscle. But the author promises in a later article to show that this factor is less important in controlling attention than has often been supposed.

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The Effect of Stimuli upon the Length of Traube-Hering Waves. C. E. GALLOWAY. Amer. Jour. of Psychol., 1904, XV., 499-512.

The aim of the investigation was to determine whether or not the effect of stimuli on Traube-Hering waves coincides with the effect of stimuli on the fluctuations of the attention, and to secure evidence of a common physiological basis for the two processes. It is a continuation of a series of investigations conducted by Professor Pillsbury, Dr. Slaughter and Mr. Taylor in the Psychological Laboratory of the University of Michigan.

The results are summarized by the author as follows:

"1. Traube-Hering waves are increased in length for each of five subjects by stimuli whether pleasant or unpleasant.

"2. Muscular contraction for two subjects increased the length of the waves.

"3. The daily variation in the length of vaso-motor waves is in the same direction as in attention waves from the same subjects."

The physiological explanation offered is that there is an irradiation from the sensory and motor centers upon the vaso-motor centers,

causing a shortening of the constriction period and a lengthening of the dilation period.

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The Effect of Closing the Eyes upon the Fluctuations of Attention.

BERTHA KILLEN. Amer. Jour. of Psychol., 1904, XV., 512-514.

The experiments conducted by Miss Killen were intended as checks upon those of Münsterberg, in which he found that winking every second prevented the fluctuations of the rings on a Masson's disc, and from which he and Pace infer the peripheral nature of the fluctuations.

Miss Killen experimented on three subjects, who recorded by the usual kymograph and electric key the fluctuations of a single black ring shown on a Masson's disc in a room lighted electrically. Her first table shows that the momentary closing of the eyes every minute lengthened both visible and invisible phases for one subject, shortened both for another, and lengthened the visible phase while shortening the invisible phase for the third. It shows for two subjects a relative lengthening of the invisible phase as compared with the visible, and shows the reverse for the third subject. Her second table shows somewhat different results from the same data, probably because of questionable computation.

With one subject the intensity of the ring was varied until a point was found at which with the periodic eye closure *no fluctuation appeared*, thus confirming Münsterberg's results. No tests appear to have been made in this direction on the other two subjects.

Miss Killen concludes that both Münsterberg's results and her own can best be explained by a central reinforcement of the attention process, due to the additional stimulus.

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ASSOCIATION.

L'Association des Idées. EDOUARD CLAPARÈDE (Bibliothèque Internationale de Psychologie Expérimentale). Paris, O. Doin, 1903. Pp. 424.

In this book, M. Claparède offers a discriminating study of association, supplemented by summaries of the literature, theoretical and experimental, of the subject. He cites more than three hundred

writers, ranging in time from Plato to Pilzecker, and including writers in physiology and in biology as well in psychology.

Claparède conceives of association as the 'connection of the elements of an acquired experience' (p. 399 *et al.*). He explains it by the following 'law' of objective, or cerebral, simultaneity: 'when two cerebral processes occur simultaneously, a relation is established between them, such that the reëxcitation of one tends to propagate itself to the other' (p. 51). From this it follows that the so-called 'association by similarity' may be reduced to 'association by contiguity.' Claparède considers the question of the particular direction of the association, under the heading 'évocation,' and presents a useful condensation of the experimental studies of the subject. His classification (p. 227) of the forms of association according to the four factors, *Préparation, Induction, Association, Induit*, is too long to quote, and perhaps too detailed to be of real value.

Claparède's discussion of disputed problems of association is independent, yet always based on the results of previous study and investigations. He admits, for example, that the laboratories have failed to demonstrate the existence of mediate association, and yet he makes out a strong case for it, as a probable explanation of the occurrence of so-called free images.

In the second, and shorter, part of the book, the author considers the rôle of association in the mental life. This affords an opportunity for a general outline of psychic processes and for a vigorous criticism of associationism, 'le mirage associationiste,' as it is called.

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La Dissociazione Psicologica. A. RENDA. Torino, 1905. Pp. 83.

Association presents consciousness as a stereopticon succession of psychoses. But in addition to such a law of regularity there is a universal element of corrosion, disaggregation, reduction, *i. e.*, dissociation. Of the three forms, conative, emotive, and representative, the first is immanent in all automatic and secondary reflex action. Dissociation exercises its disintegrating work when the incessant task of adaptation requires acts accommodated to new ends, by separating the primitive motor series, eliminating the useless parts and forming new synergetic series. The rapidity of movements, their economy and correspondence to ends, presupposes dissociative action, which develops the more fully, the greater is the functional differentiation of the nervous centers, and the more distinct the series of kinetic images corresponding to acts. Of emotive dissociation more ought to be made because

of the inhibition of certain expressions of mimicry, the elimination of affections and passions and even the isolation of a state of consciousness. Perceptive dissociation is exhibited in visual acts, in the formation of abstract ideas and concepts, in the creative activities of imagination—in fine, in all the subjective coördinating of the chaotic objective world.

The universality and importance of dissociation have been minimized by considering it as a state of fragmentary consciousness, a mere side of a process of association. Rather should it be considered as one of the modes of manifestation of a single process, in fact a veritable function. Dissociative elements, relegated by others to the obscurity of primitive association, are found in artistic imaginations, in the discovery of scientific principles, in the incoherent flight of ideas of a paranoiac, in the syntheses of genius, *i. e.*, the products of the mind form a plenum of associations, full of profound dissociative elements. In the study of dissociation there are difficulties extrinsic and intrinsic. The associational school has obscured the dissociative phenomena. From fourteenth century nominalism to Newton's mechanical interpretation of nature; from the dogmatism of Hobbes to the subjective idealism of Berkeley, the conscious life was interpreted without the supposition of a reactive spontaneity. But after Mill and with the study of memory and the researches of German psychologists upon the active reactions of consciousness, allowance was made for processes of corrosion, of elimination, of abstraction. Here arose the intrinsic difficulties of the dissociative principle. That which is revealed to consciousness is always a synthesis; a dissociating consciousness always resolves itself into a new unity; the non-associative in a representative activity. Connected with this difficulty of a psychosis disappearing under introspection, like the mysterious horseman in the Holy Grail, is the difficulty of defining in what sense dissociation may be called unconscious. The secret work of fermentation has been referred to an unconscious psychic activity (Hartmann), to a subliminal consciousness (Meyers), to unconscious cerebration (Carpenter), to a psychic disposition (Höfdding); in fine, to the general nature of thought, presupposing that that, in its elaboration, is always physiological, and, in its completion, manifests itself as a conscious fact (Sergi). Disregarding the mythical conceptions of an unconscious activity, how are we to regard the latent dualism of the physiological hypothesis, the difference between cerebral acts accompanied by consciousness or those without it, or the transformation of the former into psychic phenomena? The theory of psychic disposition, followed by most Italian psycholo-

gists, is dubious. To explain it as a potential energy, is to give a physiological basis for unconscious processes which rise into general consciousness but not into self-consciousness. The facts are partly negative, often being explained as a forgetting of the processes, or a weakening or doubling of consciousness, or even, as in the case of indistinct and non-individuated processes, as parts of a collective consciousness. Here dissociation means those processes which are revived either as independent states, or as parts of other series. Dissociation may coexist with obscurity or weakened representation, it must not be confounded with them. It conduces to common images and concepts; they merely to silhouettes or larvæ of past representations. Dissociation is not to be classed with incomplete imagination (Ribot), or with the eclipse of a representation by its fusion into an abstraction (Baldwin), or finally with the process of distinction (James). In the distinctive processes there is a single act of attention for every attribute of an object; in the dissociative a single state, a fragment of one more complete, occupies the focus of consciousness.

Proceeding in part II. to the conditions and modes of dissociation, the author considers its value as great as that of association. Physiologically, dissociation may be attributed to obstructions in neural conduction, such as mutilations of the cerebral lobes. But the doctrine of neurons has no validity, since the reticulations of the nervous system have not yet been fully explored. Nor is the psycho-physical parallelism exact, since the correlation does not fulfil the laws of totalization. Yet dissociations should be connected with the reintegration of cellular groups and with accidental physiological excitations, as in sleep, hypnotism, excessive work, etc. The psychological conditions of dissociation are: (1) The consciousness must not receive impressions in succession, since simultaneous impressions form fusions; (2) all impressions must remain unanalyzable; (3) the consciousness must not be in a state of indifference. Other favoring circumstances are words, familiarity with certain representative or perceptive series, the schematic tendency of the mind, peculiarities of mnemonic type and hypertrophy of attention.

There are three kinds of dissociation: Spontaneous, teleological, congruent. The first is neither voluntary nor reducible to mechanical representations, but has regard to involuntary attention. Teleological dissociation is concerned with the elements fitted to a final cause determining a state of consciousness. It is neither the arbitrary mixture of fragments of experience which form new experiences, nor a mechanical imposition which creates the materials of thought. Congru-

ent dissociation is distinguished from teleological by its emotional quality. It does not deal with mere intellectual syntheses, but is colored permanently by the sensorial type. It has reference to the characteristics which distinguish persons and races, and is finally concerned with the moral progress of society by the rejection of old conceptions.

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SUGGESTION.

L'examen de la suggestibilité chez les nerveux. L. SCHNYDER.

Arch. de Psychol., 1904, IV., 44-57.

The apparatus used consisted of a metallic ring so connected with a dummy electric apparatus that the patient supposed that the ring was charged with electricity. The ring was held around the arm of the patient, without touching, and the question was asked, 'Do you feel anything?' The following table summarizes the results, showing what per cent. of cases, in each type of disease, were amenable to the suggestion, *i. e.*, felt the electric current:

	Men.		Women.	
	No. Cases.	Per Cent. Affirmative.	No. Cases.	Per Cent. Affirmative.
Neuraesthesia,	51	61	53	77
Hysteria,	9	44	28	43
Melancholia and related				
troubles,	22	36	13	3
Traumatic neuroses.	10	60	17	5

Reasons for these characteristic differences in suggestibility are suggested and discussed.

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MEMORY.

De la mémoire. J. LARGUIER DES BANCELS. Arch. de Psychol., 1904, III., 145-163.

This article is an elementary and general presentation of the facts and theories of organic memory in which the writer teaches that that principle which conditions organic memory in nervous tissues is also to be found in vegetable and inorganic matter.

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PSYCHOLOGY OF READING.

Experimentelle und kritische Beiträge zur Psychologie des Lesens bei kurzen Expositionszeiten. ERICH BECHER. *Zeitschrift für Psychol. und Physiol. d. Sinnesorgane*, 1904, XXXVI., 19-73.

This article attempts to settle, mainly in an experimental way, some matters in dispute among former investigators in the field of the psychology of reading. Experiments were made by the tachistoscope method of Erdmann and Dodge, which was supplemented by the use of an electric spark. In order to meet the criticisms of Wundt, care was taken to secure the best adaptation of the retina possible. From a series of preliminary experiments it was concluded that the after image is a negligible factor for the purposes of the investigation.

The main body of the article is concerned with the possibility of the shifting of attention during short periods of exposure. The author's experiments showed that words of as many as twenty-six letters could sometimes be read correctly in the time of the flash of an electric spark. This time is manifestly too short for any shifting of attention, which Wundt and Zeitler think necessary for the reading of words in short periods of exposure.

The hypothesis of Wundt as applying to tachistoscope experiments where the period of exposure was .10 sec. may be stated thus: Everywhere, when we fixate a single point through the sense of sight, the ability to recognize an object depends upon the position of the image of that point upon the retina and the position of the point in the field of attention. We may, therefore, speak of a point of greatest attention and a fixation point. It would then be only an extension of the hypothesis to suppose that during a fixation the unequally favorable position of the point of the field of sight would be made less noticeable by the point of attention being moved successively to the places which are distant from the fixation point.

To test this hypothesis two series of experiments were made. In the first the subject was told to direct his attention to the same point as that upon which the eyes were supposed to be fixated. In the second the subject directed his attention to a point to the left of the fixation point. If the attention keeps shifting during the period of exposure, there should be no practical difference between the results of the two experiments. From the actual results of the experiments, however, it was shown that the number of letters rightly read at the left hand point was more than doubled when the attention was directed

to the place where they appeared. At the same time the number of right hand letters read was smaller than in the other experiment in the case of two observers and remained the same with a third.

Experiments were also made in the reading of letters with red circles about them and plain black letters. If, as Zeitler supposes, the dominating letters can draw the attention in the reading of words during short periods of exposure, then the red marking should do the same. But the experimental results were slightly in favor of the black letters, probably on account of the disturbing influence of the color.

Wundt claims that the reading of words in short periods of exposure is an apperceptive not an assimilative process in his meaning of these terms. The writer regards these two processes as merely different degrees of one and the same process. But his experiments go to show that even in Wundt's use of the term such recognition of words is assimilative. It was found that some of the well known convertible figures used by Wundt could be recognized as either solid or hollow in such short exposure times as .10 seconds. Final syllables such as -en, -er, -es, n, s, were also distinguished, although they contain none of the so-called dominating letters. Similar results were obtained with prefixes. Hence the writer concludes that the gross word form rather than the dominating letters is the important factor in bringing about the recognition and that the process is throughout one of assimilation.

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RELIGION.

The Soul. — A Study in Past and Present Beliefs. L. D. ARNETT.
Amer. J. of Psychol., XV., Nos. 2 and 3.

It is the author's purpose to give a complete historical account of the origin and development of the belief in a soul. The object of such an account is two-fold. It will serve as a comparative study of the opposing views of the ministry and of psychologists with regard to the nature of the soul and may lead to a more definite understanding as to the correct use of the term. It is impossible in summarizing the article to do more than scant justice to the wealth of data upon which the author bases his conclusions. The soul is described by primitive man most frequently as a shadow, as breath, as wind, or as life, heart or echo. The dream is found to be the strongest influence giving rise to the idea of a soul. This idea is closely connected with superstitious belief: it is religious rather than philosophical or psy-

chological. Certain animal adaptations of which the savage is incapable, such as the flight of birds or the swiftness of the deer, inspire his imagination and from these his ideal is formed. His conception of the soul is in no way related to that of a personal God nor does it contain an idea of mind. Soul to primitive man is the life principle, a shadow-like form of the body that lives on after death.

The early Greek cosmologists in general held to this mythical belief but sought to discover in matter upon what this life principle depended. The theory of opposites of Empedocles, the form of Pythagoras and the 'nous' of Anaxagoras mark the gradual growth of a dualistic conception which resulted in the idealism of Plato. As mental phenomena came to be studied the belief in the soul as the life function was given up. By later Greek philosophers it came to be regarded as composed of particles of matter, located in the region of the abdomen. It was closely connected with the mind as to function.

With the decline of Greek philosophy the development of the belief in a soul has been along three lines. The religious idea, antedating the philosophical and psychological, has been found at all stages of civilization and is most commonly accepted at the present time. Along with the development of the religious conception, attempts have been made by philosophers from time to time to define the soul on the basis of the relationship between God, the universe and man. More recently, psychologists have concerned themselves with the relation between the soul and the mind.

A chronological view of the development of the theological belief in a soul is presented by the author. The opinions of thirty-eight persons connected at different times with the church is given. For many of these dogmas there is found to be little foundation in fact. The early fathers maintained a corporeal existence for the soul. The doctrine of immanence has tended to modify the old belief in a larger entity, a personal world spirit that dwells apart from man and has furnished him with a soul which returns to its creator at death. The belief in an immanent, all-pervading spirit has replaced this conception. To this spirit the soul of man is related from above, on a lower level it has corporeal relations with other human beings. The tendency of modern thought seems to be toward an ethical interpretation of the soul.

The problem for the philosopher has been that of establishing some relation between the belief in an immortal spirit and the belief in a Supreme Being that will be consistent with his conception of the universe as a whole. Beginning with Leibnitz, the dynamic view of

life, which holds it to be the development of some form, the soul finding its perfection in God, has been generally accepted by philosophers. Lessing, Schelling, Hegel and other idealists have held the spiritual nature of the soul to be akin to that of the Absolute Being. By Schopenhauer it was identified with will.

A consideration of the opinions of the most prominent psychologists yields the following results. A truer conception of the nature of the soul based on the evolution of animal life is to be expected with the advance of scientific knowledge. We cannot attain to such a conception by analysis alone. "The psyche is a product of evolution." "Soul life is homogeneous throughout the animal series, that of man the highest product." What is found in the animal as vital force is the soul in man. Each species represents a type of soul and from this as a special form of the phylectic soul, and a result of heredity, the individual soul appears. The new psychology questions the use of the term 'soul,' urging that it carries with it an idea of substance from past theological discussions. It would substitute the narrower term 'self.' Empirical psychology recognizes only the phenomena of consciousness.

From the answers to a series of questions sent to the colleges the author reaches the following conclusions as to the modern popular idea of the soul. The materialistic conception of soul as a product of body has a very small following. The idea of a soul will exist as long as the desire for immortality is found in man. The popular belief in a soul substance is largely the result of religious teachings. It has been affected little by the hostile attitude of modern psychology. For the more highly educated the soul stands for an ethical ideal, for people in general it may be described as an undefinable mass of feelings. Theology, representing the emotional side of the belief, and philosophy as representing the cognitive, should be studied as correlated subjects. The mystical, vague belief of the ancients in a combination of vitality and mind, of soul and life, has been gradually replaced by an empirical mind, the basis of which is found in the functioning of a normal nervous system.

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Die Eigenart des religiösen Lebens und seiner Gewissheit. D. ADOLF MÜLLER. Archiv f. Phil., 1904, X., 166-229.

A uselessly long paper divided into six parts: Religion, Religions, Nature of Religion, Religion and Natural Science, Religion and History, Religion and Philosophy.

In the first and longest section the essence of religious life is discussed. The author would modify the well known definition of Schleiermacher: 'Religion is a feeling of dependence,' by the substitution of *Gemüt* for *Gefühl*. 'Feeling' seems to him not inclusive enough. He uses *Gemüt* in a very wide sense. It is 'Mut, Wille, Gefühl und intuitive Erkenntnisfunktion,' it is that 'keimkräftige Mutterboden seelisch-geistigen Lebens' which receives lovingly or rejects sternly all impressions, according as they correspond or not with its nature. He agrees, therefore, with those who refuse to identify religion with thought or with feeling, and who find the source of religious life at the very center of being.

A longer analysis of this paper would be out of place in a psychological magazine.

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ETHICS.

La Science Positive de la Morale. G. CANTECOR. Part I. *Revue Philos.*, 1904, LVII., 225-241, 368-392.

The article is an exposition and criticism of the so-called positive science of ethics, still vague but pervasive in its pretences, against which the author takes up the defence of conscience.

Not long ago moralists, whatever their tenets, were agreed on one thing—on the distinction between what is and what ought to be; and they recognized more or less explicitly the right of reason to impose rules on practice. They thus saw an opposition between the spontaneous impulse of instinct and the commands of reason. Both rationalist and empiricist held that the speculative reason can determine theoretically the normal form of individual and social life. Such is the conception which the partisans of the ethical '*science positive*' combat. In their attack they commit themselves to the performance of two tasks; 'we would ask,' they say, 'of MM. Simmel and Lévy-Bruhl that they show us the futility of theoretic ethics and the incapacity of reason to regulate life; while of M. Wundt and especially of M. Durkheim we would demand explanation and proof as to how an ethical system is possible which holds absolutely to the facts and is yet practical.'

In defence of their position they say, in the first place, that the traditional ethics has never really existed. All the moralists of the same epoch, however different their principles, have given forth the same precepts, due to the fact they simply borrowed these from the social

conscience of their time, and added an attempt at justification. They have therefore really prescribed nothing, but have simply performed the task of systematizing the true ethics. Whence, in truth, does the reason get these rules which it pretends to impose on the will? The usual answer is that it bases them on what it knows of man, of the world, and of life, which answer illustrates well the arbitrary character of theoretic ethics. Speculation on all subjects is rather hazy. But even granting that the moral ideal could ever be determined speculatively, it would still be dubious whether such a conception would be applicable to practice, and whether it could ever obtain the character of a duty. For speculation deals with an abstract man-in-general, and cannot apply its conclusions to individual men. The ideal can only be found in the actual; it must not be constructed, but simply ascertained. Reason can explain a duty, but it cannot create one.

Science can show the practical impotence of reason. The place of obligation is not within the individual conscience, but in the relation of the individual to society, and, more exactly, in the opposition of the individual will to the collective will, and the functioning of this collective will must be accepted not as a problem but as an inexplicable fact. Theoretic reflection as to what is good or bad in itself is nonsense, for an action is not obligatory because it is good, but good because it is obligatory. Mere consideration of the psychological nature of action would show that reason is helpless to propose ends. We act on the stimulus of objects innately desired, and reason can simply furnish, or rather choose among, the means towards attainment.

Thus ethics becomes the mere knowledge of what is. But will this positive science have any practical utility? It is on this point that the new moralists divide, some giving up all pretension to control action, and others still retaining this claim. Wundt holds that by comparative study of moral systems we may ascertain actual rules of conduct. His procedure is itself sufficient criticism. From the confusion of actual practice through history he makes out a development from lower to higher conceptions. But what has he done here but call in the reason to pass judgment on these unequal moral values? He has merely fallen back on the old method with the sole difference that he uses as the bases of his researches the history and observation of humanity instead of the history and observation of man. Note also that other partisans, as Simmel, declare plainly that ethics can no more than any other science propose new duties. Lévy-Bruhl has much the same conception. Thus understood does the science of

ethics respond to our practical needs? This 'moral rational art' would serve little purpose. It would supply only means, not ends, and it is just choice between conflicting ends that is the ethical demand.

We cannot but protest against the paucity of the gifts of this new ethics. All that it promises is to show us day by day the path behind our footsteps; of our destination it knows nothing. But it is the misery and glory of man to live on distant hopes. Further, it destroys individual liberty, for on what basis can we protest against the impositions of society if the collective will decides what is right?

The visible sources of the conception outlined above are obvious enough—Historism in Germany and Positivism in France—two forms of thought very characteristic of our century, fertile in principle and in their first effects, but most pernicious in their tendency toward extreme pretension and intolerance. The first manifestation of *l'esprit positif* is the desire for exact and definite knowledge on all subjects, which reduces all investigation to a question of fact. But so obvious is this that this new moral science could never have proceeded without further assistance which it found in certain theoretic views on the nature of man, in certain prejudices of history, philosophy and psychology, in the modern tendency to absorb the individual in society and reflection in the history of thought. If one could follow the development of this tendency one would see the meaning and also the impossibility of the new ethics. M. Cantecor then outlines this development, tracing the gradual substitution of history and ethnology for psychology, and of natural laws for reason and reflection. The works of civilization are viewed as results of natural forces, of unconscious and collective social action, the effects of which reason may afterwards systematize. This is just the fundamental idea of the system of Comte, and just what the adherents of the contemporary ethical science assert. Comte sets up the principle that we ought to think in accord with the necessary form of human intelligence in our epoch, that we ought to believe what is tending to become the thought of all. Thus Truth as the Good becomes a social category. The intellect must be regulated by the needs of sociability. Thus in tracing the development of this doctrine we see that in proportion as positivism takes account of internal demands, the conception of truth becomes frailer and frailer till it vanishes completely carrying with it all right of the doctrine to our allegiance. We must needs go back and affirm as ultimate and underived the rule of reason in its two aspects—theoretical and practical.

The question arises as to what is the connection between the meta-

physical ethics demanded by reflection and the 'physics' of custom which they would substitute for it. There is a very simple but suggestive fact fraught with significance in this matter. When existent science or morality presents itself to us as law, we reflect; instead of yielding without resistance to the ideas or commands, we suspend adherence or obedience; we want more light on the *truth* of the opinion or the *legitimacy* of the action. All reflection then affirms that there is a right distinct from fact, that what is thought is not necessarily what ought to be thought, what is done not necessarily what ought to be done. Reflection begins with suspension of judgment or decision and ends in motivated judgment or decision which presupposes, first, the notions of a good and a true as normative rules of thought and of action, and, secondly, that the characteristics by which one recognizes truth and goodness are known. It is true that the founders of the new ethics denounce the illusion of moral reflection and of the notion of good on which it is founded. But on what other basis than that of moral reflection do they themselves answer the questions: "What use ought we to make of customs? What attitude ought we to take toward them?" Whatever their answer, by the very fact of putting it and attempting a solution, they assert the necessity of acting on reason and of taking it as our principle of conduct.

When they doubt the possibility of formulating a theoretic system of morals, they may mean to call in question three things: that from an abstract idea of duty one can deduce concrete and precise duties; that the rules proposed can be obligatory; that these rules can be applied with sufficient elasticity to diverse situations. M. Cantecor disposes of these three objections.

We must then conclude that there exists in us a moral faculty, a practical reason, superior to all authority of fact and which, therefore, has the right to pass judgment on history. From the apparently presumptuous, dangerous and chimerical character of this doctrine, it was labelled revolutionary by Comte. Revolutionary it certainly is in its permission of free reaction against tradition. But when one considers the rarity of free minds and the strength of tradition, it can hardly seem dangerous. As for the chimerical aspect, there is no reason for believing that the *a priori* conceptions of the reason will not accord with the necessities of life; that there will be contradiction between the real and the ideal. In truth the moral ideal when seen near at hand reveals itself as the secret principle of the development of nature.

EDNA ASTON SHEARER.

VISION.

Ueber die Helligkeitsverteilung im Spektrum für das helladaptierte Auge. MAX LEVY. Zeitschrift f. Psy. u. Physiol. d. Sinnesorgane, 1904, XXXVI., 74-89.

Levy determined the distribution of spectral brightnesses for a protanope and an 'anomalous trichromate of the second type.' He found that both these retinas differ from the normal in that their point of maximal brightness is shifted toward the green; and that they agree approximately with each other for all parts of the spectrum save for the blue-end (from $511.9 \mu\mu$ onward), to which light the protanope is less sensitive. But since this divergence is referable to a difference of macular pigmentation, it may be taken as established that the dichromatic system of the protanope agrees throughout with the system of the second type of trichromate, so far as brightness function is concerned. In discussing the theoretical significance of these results, Levy reaches the remarkable conclusion that in both the abnormal conditions under investigation the brightness-sensitivity is due to the isolated functioning of the (Helmholtzian) green-sensing substance.

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A Color Notation. A. H. MUNSELL. Boston, Ellis & Co., 1905. Pp. 81.

La Psicogenesi della Coscienza. G. DELLA VALLE. Milan, Hoepli, 1905. Pp. xii + 292.

Weltanschauungslehre. I. Methodenlehre. H. GOMPERZ. Jena and Leipzig, Diederichs, 1905. Pp. xvi + 416. M. 12.

Economy in Education. R. N. ROARK. New York, American Book Co., 1905. Pp. 252.

Hume: the Relation of the Treatise on Human Nature, Book I, to the Inquiry concerning Human Understanding. W. B. ETKIN. New York, Macmillans, 1904. Pp. ix + 330.

- Manual of Psychiatry.* J. R. DE FURSAC. Trans. by A. J. ROSANOFF and ed. by JOS. COLLINS. New York, Wiley, 1905. Pp. xii + 352.
- Le mécanisme des émotions.* P. SOLLIER. Paris, Alcan, 1905. Pp. 303. 5 fr.
- Annual Report of the Commissioner of Education, 1903, Vol. I.* W. T. HARRIS. Washington, Govt. Printing Office, 1905. Pp. cvii + 1216.
- Psychologie de deux Messies Positivistes, Saint-Simon et Auguste Comte.* G. DUMAS. Paris, Alcan, 1905. Pp. 314. 5 fr.
- The Classics and Modern Training.* S. G. ASHMORE. New York, Putnams, 1905. Pp. vi + 159.
- The Revelation Rediscovered.* J. C. C. CLARKE. Upper Alton (Ills.), Clarke, 1905. Pp. x + 259.
- The Metaphysical System of Hobbes (Selected Chapters and Extracts).* Selected by M. W. CALKINS. Chicago, Open Court Publ. Co., 1905. Pp. xxv + 187.
- Locke's Essay Concerning Human Understanding, Books II, IV (with omissions).* Selected by M. W. CALKINS. Chicago, Open Court Publ. Co., 1905. Pp. xiii + 342.
- Man's Responsibility, or How and Why the Almighty Introduced Evil upon the Earth.* THOMAS G. CARSON. New York and London, Putnams, 1905. Pp. v + 524.
- Primitive Traits in Religious Revivals.* F. M. DAVENPORT. London and New York, Macmillans, 1905. Pp. xii + 323.
- Les Lois de l'Ergographie.* J. IOTYKO. Brussels, Hayez, 1904. Pp. 172.
- Optical Illusions of Reversible Perspective: A Volume of Historical and Experimental Researches.* J. E. WALLACE WALLIN. Princeton, N. J., The Author, 1905. Pp. vi + 330. Cloth, \$2.25; paper, \$1.85 (postage, 15 c.).

NOTES AND NEWS.

PROFESSOR HUGO MÜNSTERBERG, of Harvard University, has declined a call to a chair in philosophy in the University of Königsberg. He will spend the coming summer in Europe, sailing the first of June.

DR. JAMES M. MECKLIN, of Washington and Jefferson College, has accepted a call to Lafayette College to fill the chair of philosophy.

AT a recent meeting of the board of regents of the State University of Iowa the following changes were made in the department of philosophy and psychology. Professor G. T. W. Patrick was granted leave of absence. Professor C. E. Seashore was made head of the department. Professor Arthur Fairbanks, of the department of Greek, was asked to give the courses in ancient and mediæval philosophy and philosophy of religion. Dr. J. B. Miner was promoted from instructor to assistant professor of philosophy. Mr. Daniel Starch was appointed assistant in the laboratory.

Mr. L. A. Weigle has accepted a call to the professorship in philosophy at Carleton College, Northfield, Minn. Mr. Weigle will complete the work for the doctorate in philosophy at Yale in June. He has been during the past year assistant in the Yale Psychological Laboratory.

THE following are taken from the press :

PROFESSOR C. M. BAKEWELL, of the University of California, has been appointed to a professorship in the department of philosophy in Yale University. He will enter upon his work there next autumn.

DR. W. P. MONTAGUE, tutor in philosophy at Columbia University, has been made instructor.

DR. R. B. PERRY has been appointed to an assistant professorship of philosophy at Harvard University.

PROFESSOR R. B. C. JOHNSON has resigned the chair of philosophy at Miami University to accept a preceptorship at Princeton University.

THE
PSYCHOLOGICAL BULLETIN

THE ILLUSION OF CLEAR VISION DURING EYE
MOVEMENT.¹

BY RAYMOND DODGE,
Wesleyan University.

Some time ago the PSYCHOLOGICAL REVIEW published a short contribution to the theory of the function of the eye movements under the title, 'Visual Perception during Eye Movement.' Possibly 'The absence of visual perception during eye movement' would have been a more appropriate title, since the paper maintained that under ordinary circumstances no new visual impressions are received during eye movements of the simple reaction type. The evidence was clear enough. The only really surprising fact was that it should have needed expression at all. It would seem as though rapidly recurring moments of practical blindness to events in the environment ought to need no detailed proof. That the matter did require proof and that this was received with some scepticism created a new problem in psychological optics, viz., the cause of the illusion of continuous clear vision during eye movements of the simple reaction type.

The first systematic attempt to answer this problem and the allied problem why we do not see the fusion of the visual field, that theoretically might be expected to accompany the rapid succession of stimuli during eye movement, was a paper by E. B. Holt in *Harvard Psychological Studies*, Vol. I. This paper reaches the conclusion that 'voluntary movements of the eyes condition a momentary visual central anæsthesia.'

While I have not been able to reach entire agreement with this conclusion, it seems to me that we must look in the direction Mr. Holt has pointed out for any final solution of the problems. How-

¹Read in part at the meeting of the New York Academy of Sciences in New Haven, March 27, under the title 'Central Anæsthesia During Eye Movement.'

ever, if I might state my conclusion at the beginning, I should want to substitute the words inhibitory process for anæsthesia in his formulation.

With regard to the causes of the inhibitory processes my disagreement with the Harvard Studies is more radical. Mr. Holt conjectures that eye-movement anæsthesia is the effect of 'muscle sensations of present movement streaming to consciousness to form the basis of the new post-motum localization.' Without admitting the efficacy of such sensations of eye movements to produce a visual anæsthesia I must protest again that I do not find in myself sensations of eye movement 'streaming to consciousness'; and moreover, that a careful examination of a considerable number of persons during the last ten years makes it clear that in this respect I am not altogether abnormal.

But even if eye movement sensations were 'streaming' to consciousness, anæsthesia would be a rather unprecedented consequence. It does not occur in touch as a result of moving the hand; neither does it occur in the slower and more easily observable kinds of eye movement. When we follow a moving object, for example, eye movement is a condition of clear vision, not a condition of anæsthesia. Similarly, when the fixation of an object is maintained during movements of the head, by means of compensatory eye movements, neither head movements, nor eye movements, nor both together produce anæsthesia. Obviously these facts do not disprove Mr. Holt's hypothesis with respect to the more rapid forms of eye movement. But they certainly do create a certain presumption against it; and we have a right to demand as a condition of proof unequivocal evidence. Unequivocal evidence, however, is not at hand.

The main experimental data on which the hypothesis of anæsthesia during eye movement depends are comparisons of the perception of concrete objects stimulating, under similar circumstances, the moving and the motionless eye. The plan is irreproachable, but unhappily the maintenance of similar conditions in the two instances is extremely difficult. It would be impracticable to attempt a complete discussion of Mr. Holt's experiments at this time, but I hope I shall not appear ungrateful for the services he has rendered the problem if I call attention briefly to some questionable phases of his argument.

1. The pendulum tests, the only experimental support for his hypothesis, give results which can be interpreted as favoring central anæsthesia only occasionally. Otherwise, they are either indifferent, or in some cases, at least, distinctly opposed to that hypothesis.

2. All the pendulum tests presuppose experimental conditions

which I have found it impossible to duplicate either for myself or for my pupils. A voluntary reduction of the velocity of the simple reaction movements of the eyes to 10° in 120 σ , or anything approximating that velocity, without interrupting the movement has been consistently impossible. Undoubtedly some such velocity is momentarily approximated at the very beginning and at the very end of any simple reaction movement. Unquestionably some of the phenomena Holt describes would be easily accounted for on such a basis, but that interpretation is I think rather arbitrarily denied us by the author.

3. Velocities such as the above correspond closely either to simple pursuit movements, during which, as we have seen, vision is notoriously good; or to very short movements of two or three degrees. All the phenomena on which the hypothesis rests may be explained without recourse to central anæsthesia on the assumption of discontinuous sweeps of the eyes, interrupted by these short movements. These are certainly not precluded by Holt's experimental conditions. Moreover, they are very common, and may occur without revealing themselves in any way to introspective analysis.

Let me illustrate: In Holt's first pendulum experiment a dumb-bell shaped opening, cut vertically in a screen attached to a pendulum, oscillated between the eye and an illuminated surface, shaped like a very broad dumb-bell, almost like a capital letter H laid on its side. The observer tried to make his eye movements approximate the angle velocity of the small dumb-bell, seeing it, however, only when it was passing the illuminated figure. Occasionally the small dumb-bell was seen complete, occasionally a fainter image of the broad illuminated dumb-bell was seen and occasionally the two ends of the small dumb-bell were seen without any handle. The first phenomenon would naturally occur if the velocity of the eye exactly coincided with the angle velocity of the pendulum at the middle of the exposure. The second would occur if the eye were accidentally at rest during the exposure, as Holt points out. A similar appearance would also occur if there was a gross error in the correspondence of the two velocities. The last appearance, *i. e.*, the handleless dumb-bell, is regarded as the proof of central anæsthesia; on the principle that the difference in the time of exposure of the handle and ends, due to the broadness of the illuminated figure, while not sufficient to render the handle invisible to the eye at rest, is enough to render it invisible to the eye when it is exposed for the same length of time at the middle of an uninterrupted eye movement. But as I have just pointed out there are other conditions involved which would explain the phenomenon with-

out recourse to unusual hypotheses. The handleless dumb-bell would appear if the velocity of the eye happened to coincide with the angle velocity of the pendulum when the dumb-bell shaped opening was passing some other than the central part of the illuminated figure. Or again, it must appear if the illumination was near the threshold and the angle velocities nearly but not exactly coincided. Under these circumstances the total illumination of the handle would be much reduced, and it would consequently be invisible, while the ends might still overlap sufficiently to appear above the threshold and approximately in normal form. Analogous possibilities occur in the second pendulum test with colors.

In view of the ambiguity of Holt's experiments I devised a combination of my perforated disk and his pendulum exposure apparatus. It is well known that the sectors of a rapidly rotating disk, which appear fused to the motionless eye, will flash out as distinct when the eye moves across the disk in the direction of its rotation, at the same angle velocity. Now it is possible to so balance the light reflected from and transmitted through a revolving perforated disk that the perforations shall be just visible under the most favorable conditions of eye movement, but entirely invisible when the eye is at rest. If the same relative illumination be maintained and the same slit be exposed to the motionless eye, the necessary duration of exposure in the latter case compared with the known time of eye movement in the former case will give a fair measure of the degree of visual anæsthesia during eye movement.

These experiments gave entirely negative results for all three of my subjects. Under conditions of illumination such that the slits were occasionally visible, when the rate of movement of the disk precluded their visibility for more than 30 σ , the threshold duration of the exposure of the slit for the motionless eye was approximately 25 σ . This seems to me rather decisive evidence against the hypothesis of central anæsthesia.

Mr. Holt scored against a similar experiment with the objection that there is no evidence the slits are seen during actual eye movement. 'As far as introspection goes,' Mr. Holt contends, 'the retinal impressions may lie dormant until after the moment of eye movement blindness and then flash out as positive after images.' In so far I thoroughly agree with Mr. Holt that there is no introspective evidence in the matter. There is evidence, however, that the perception must occur largely if not wholly after the eye has come to rest, not on account of central anæsthesia during eye movement, but because

of the latent time of retinal inertia and the transmission of nervous impulses.

In short, I have yet to meet with any unambiguous evidence of anæsthesia during eye movement, either central or peripheral, while all my evidence at first hand is negative. Certainly we must all agree that the lack of clear perception during eye movements must rest largely if not wholly on other grounds. Some of these at least are not far to seek. First, I believe we can demonstrate the influence of certain factors usually held to be retinal in their character ; and secondly, I believe we must admit, at least in the longer eye movements, evidence of important central factors.

Chief in the first group is to be reckoned the after effects of stimulation. These alone would account for the nonperception of a fused visual field during short eye movements. An eye movement of 5° occupies about 30σ , but the positive after image of a moderate stimulation may last 30σ without perceptible diminution of intensity. A second and probably equally important peripheral factor consists in the inhibitive action of the new stimulation at each new point of regard. These two facts obviously work together to prevent perception of the faint fusion stimulus during short eye movements. The after effect of the first fixation lasts over, in practically its full intensity, until its successor becomes operative. A simple demonstration of these two factors is possible with a falling screen. Between a primary white fixation field and a secondary black one, a band of gray may be exposed for from 25σ – 50σ without giving any indication of its presence. Similar facts may be observed if colored fields are used, though the threshold duration of exposure differs even more widely than it does in the case of grays.

Even in this experiment the influence of a new factor is indicated. There is usually visible a clearing up of the secondary field. The black gradually grows to its fullest intensity, and the influence of the intermediate color stimulation is often felt indirectly in some modification of the character of this clearing up process. Analogous phenomena may be observed in normal vision. If one looks from a field of some brightness to one of less illumination, some thirty to forty degrees distant, it may be possible to observe a true positive after image of the former field on the latter. More commonly it will be observed that the second field clears up after a perceptible interval as though a veil were rapidly lifted. This appearance may be and often has been referred to the well-known processes of accommodation or the less known facts of binocular incoördination. But the same phenomenon

occurs in monocular vision on a perimeter. Similar appearances may be observed when the line of regard passes across an illuminated field between two darker fixation fields. Even when the light or color differences are insufficient to yield any recognizable separate perception from eye movement, they are often sufficient to perceptibly color the clearing up veil. The undifferentiated effect of adequate stimulation during eye movement is in this case falsely localized at the point of ultimate fixation; and there, like the more familiar obstructions to clear vision due to binocular incoördination and accommodation with which it is so easily confused, it is simply ignored. One of the simplest demonstrations of the clearing up interval is given by negation in monocular vision during eye movements of the utmost rapidity away from and returning to some fixed point of regard. Of course the eye must come to a full stop before it can return; but the return may be begun so quickly that nothing is seen clearly from the beginning of the movement to the end. The veiled appearance is marked and there is no time for the veil to lift.

This process of false localization and abstraction is presumably a central process, but it is a matter of elaboration rather than of anæsthesia. Peripheral conditions indicate why vision during eye movement of the first type cannot be other than confused under ordinary circumstances; and it is in complete accord with other facts of perception that a recurrent episode of disturbance of vision should be ignored. The fencing mask, the *muscæ volitantes*, and involuntary winking, are illustrations to the point. The real objects of interest in the visual field are the present object of fixation and that peripheral object which is about to become, at the completion of an eye movement, the new object of fixation. Other parts of the field are of lesser attention value, otherwise they would be substituted for the object of fixation. During moments of clearest vision, then, the space about to be traversed by the line of regard during an eye movement of the first type is without especial interest to us; and it is reasonable to suppose that what is without especial interest during clear vision, when the eye is at rest, would arouse no new interest during the confused stimulation incident to eye movements of the first type.

The case is quite different when, as in the Lamansky experiment for measuring the velocity of the eye movements, or in my own perimeter test for vision during eye movement, the real object of interest appears only during eye movement, but in such cases the special training needed for satisfactory experimentation is in itself evidence of new experimental conditions of the attention. Something of the same sort

occurs when I direct my students' attention for the first time to the clearing up interval. They are quite insistent that there is nothing of the sort. But soon for them as for myself it stares at one everywhere.

I fear that these explanations rob our problem of most of its interest and mystery, but I think that they have some advantage in the direction of probability.

PROCEEDINGS OF THE MEETING OF THE NORTH
CENTRAL SECTION OF THE AMERICAN
PSYCHOLOGICAL ASSOCIATION.

REPORT OF THE SECRETARY.

A meeting of the North Central Section of the American Psychological Association was held at the University of Chicago, April 22, 1905. About forty-five persons attended the meeting. The following papers, presented by members of the association and others, were read and discussed:

ABSTRACTS OF PAPERS.

The Perception of Reality. J. D. STOOPS.

Perception is the apprehension of a particular thing immediately present in experience. But because this particular thing is perceived as what it is, there is a 'fringe' about it, an ideal linkage which connects the particular with other things of its kind. If this ideal element, the relation, is abstracted and generalized, so that it is independent of the particular, we have a concept; if it is a 'fringe' about some definite concrete particular, we have a percept. In the process of perception we do not transcend experience. But when we conceive things, when we know things, do we not transcend experience? James says that we do not. Ideas are secondary, are dependent upon experience, and lead only to percepts. They never represent things beyond experience. Ideas stand therefore not between the mind and things external to the mind. They stand for some experience beyond immediate perceptual experience.

But if this be the true view, are we not driven to say that reality is only what we experience? It seems not. So far as this view goes, it leaves untouched the problem of the nature of things, in so far as they are not experienced.

The Irradiation of Light. FOSTER P. BOSWELL.

There are various modifications in the form of a small moving luminous image which are probably due to the presence of one form or another of visual irradiation.

There are five varieties of irradiation which may be conveniently distinguished but which are all capable of being brought under a single principle of explanation — the dissemination of neural excitation over the retina.

Irradiation α.—A very rapid spreading of the excitation over the retina, extending far beyond the borders of the stimulated portion and occurring immediately upon the impact of the stimulating light.

Irradiation β.—Irradiation within the stimulated portion of the retina after the form of a figure becomes distinctly perceptible.

Irradiation γ.—Emanations of decreasing intensity extend themselves outward and backward from a moving image until lost in the darkness of the background.

Irradiation δ.—The well known form of irradiation which occurs when a surface of greater intensity enlarges itself at the expense of one of less intensity.

Irradiation ε.—A form having many of the characteristics of *Irradiation α* but occurring only after long periods of stimulation, 30 seconds to a minute or more.

Report on Recent Work on the Growth of the Nervous System.

HENRY H. DONALDSON.

The Wundt Pendulum Complication Apparatus as Tested by the Duddell Oscillograph. WALTER DILL SCOTT.

The Duddell oscillograph records times with perfect accuracy to less than a thousandth of a second. The Wundt pendulum complication apparatus contains within itself no device for testing its own accuracy, and many users of the instrument have felt themselves forced to abandon it. The instrument can be tested with perfect accuracy by means of the Duddell oscillograph. By such a test the instrument in the psychological laboratory of Northwestern University has been found to be subject to a constant determinable error. When the bell is adjusted to give the clearest ring and when the bell tap comes at the slowest movement of the hand the error is 27 thousandths of a second and is always negative.

Pragmatism and its Critics. ADDISON W. MOORE.

(This paper will be published in full in the May number of the *Philosophical Review*.)

Development of Ethical Sentiment in the Child. M. V. O'SHEA.

The infant reveals no true feeling of duty, no sense of 'the ought' in his conduct. Whatever action will bring him food and relief from distress is right, and may be freely performed. He shows no tendency toward self-restraint for the good of others in any of his activities. But by the twelfth week, perhaps, one may note the beginnings of the sense of a personal environment to be reckoned with. Before the completion of the first year the child will of his own volition restrain himself in his crying, teasing, bullying, appropriating the possessions

of his brothers and sisters, etc. He will also share his possessions with others. Ethical development thereafter, in all normal cases, is a long story of continually increasing self-restraint in certain social situations, and helpfulness in others.

The genesis of the child's self-restraint is found in his discovery that certain acts turn out ill for him; the social environment will not tolerate them. In a similar way he discovers that it pays to be helpful and generous. Social censure and approval are thus at the bottom of his ethical discriminations. But direct imitation reinforces tremendously the penalties and rewards administered by the social environment.

Until the inhibition or performance of an action becomes facile, so that it will occur more or less mechanically, there will always be something of a struggle between impulsions and restraining or importuning ideals of social origin, and this is felt as strain or tension, which we call the sense of duty in its simplest, crudest form. Actions at first *must*, then later *ought* to be performed.

Personal forces which in the beginning function in the child's consciousness focally and individually, come in the course of development to function subconsciously and coalescently. It may happen that all traces of concrete personal presence will disappear from consciousness; but this will not occur until conduct in any particular situation is so definitely established that to depart therefrom would occasion distress. Conscience arises slowly when social ideals begin to repress, modify, supplant impulsions; and it subsides when this work is thoroughly accomplished.

Feeling as Emotion and Sentiment: A Neglected Chapter in Psychology. LOUIS C. MONIN.

The Upper Limit of Hearing as Affected by Differences in Age and Sex. FRANK G. BRUNER.

This paper presents some data on the upper limit of audibility as a result of tests made on several hundred Americans, varying in age from six to sixty-five years. These tests were made by the author, with the coöperation of Dr. R. S. Woodworth, at the Louisiana Purchase Exposition. The Edelmann type of Galton whistle was used in the tests, and afterward the pitch values of the various whistle lengths were carefully determined by objective methods.

Contrary to the results of Dr. Chas. H. Myer's tests on the Scottish children, some of the individuals tested were found to hear tones whose pitch values were upward of 40,000 v. s., and at least 50 per cent. of all whites hear tones as high as 31,000 v. s. The highest

tones are heard by those from 15 to 25 years of age. After this the upper range of hearing gradually declines, till at 65 years the average person hears with difficulty tones of 19,000 v. s.

Women on the whole have a greater range than men. In the earlier years this difference amounts at least to 2,000 v. s.

The Nature of Consistency. GUY A. TAWNEY.

Consistency was defined as (1) man's immediate sense of the self-maintaining quality of certain personal activities or (2) as the self-maintaining quality of these activities, the self-maintained being the social ego-alter self of reflection. Inconsistency, correspondingly, is the felt impossibility of reacting to a situation in self-maintaining ways. From this point of view the paper attempts to show that all criteria of value may be defined in terms of consistency and that the sense of consistency is simply one factor in the reflective type of consciousness, a contribution of reflection to the cognitive experience of the race. Types of consistency rest upon the three arcs of the psycho-physical process, viz., the arc of sensation, the arc of need, and the arc of movement or the production of change in the time and space order. Types of consistency are called presentative, practical and purposive. Presentative consistency is mechanical in form, the consistency of the merely presented data of judgments of value, a postulated consistency which is always constitutive in the world. Practical consistency is defined as that of voluntarily produced changes in the body or in other objects through the body. Purposive consistency is distinguished from the purposiveness of all consistency and indeed of all mental processes in being a reflective consciousness of the relation of means to ends. Three forms of this type appear in the harmony between objects and the mind's powers of apprehension, the harmony between an object and some end external to the object, and the harmony of the object with itself — beauty, utility and perfection.

WILLARD C. GORE,

Acting Secretary.

PSYCHOLOGICAL LITERATURE.

Einführung in die Psychologie. ALEXANDER PFÄNDER. Leipzig; J. A. Barth, 1904. Pp. vi + 423.

This is an introduction in the strict sense of the word and not an elementary treatise or outline. It discusses the general philosophical or methodological questions preparatory to a treatise and does not pretend to give details or even facts. The position taken on nearly every question is that of the man on the street. The author takes a keen delight in defining and tracing subtle distinctions that would do credit to a scholastic, and he is very much more concerned with what must be than with what actually is.

In the first chapter fifty pages are devoted to a definition of psychology which contains nothing worthy of note. The second, the material and the psychical reality, asserts that the physical and the mental are equally real, independent and isolated from each other. Interaction is supported against parallelism on grounds very similar to those held by Busse. It is noteworthy that the author argues against parallelism as if that doctrine asserted that mind and body could not interact rather than that we did not know how they interact. The answer to the argument from the doctrine of the conservation of energy is met by the assertion that mind is probably some form of energy. There is no recognition of the materialistic implications of this view.

In the third chapter we are told that introspection is the only psychological method, although experiment is welcomed as an aid to introspection. All objective methods are rejected with scorn. It is denied that physiology, even sense physiology, can contribute anything of value to psychology.

In the second part is given a discussion of the mental elements and, very briefly, of mental laws. The whole system of mental elements is enormously complicated under the plea that the author is avoiding epistemological assumptions. As a matter of fact he is substituting a very old epistemology for the newer. The primary mental elements are sensation, feeling and effort (*Streben*). However, we have not merely sensations on the intellectual side, but must distinguish in addition things, the aspects of things which may become sensations (colors, tones, etc.) and sensation. When sensations are to be known again they must themselves become objects of conscious-

ness, and then again mental states of the second degree. Whether the fact that we know that we know constitutes a third degree, or where the multiplication is to cease, we are not told. We are informed, moreover, that the consciousness of the object is entirely different from the object, and there is at least an implication that the qualities of the knowledge of the conscious states are absolutely different from the qualities of the conscious states themselves. The whole scheme is a reduction to absurdity of the popular tendency to multiply psychical entities beyond any necessity. Effort is made a third conscious element partly because the author finds it on analysis, but more because it is impossible to think the relation of subject to object without it.

The entire series of mental processes is further increased by the knowing self. This again is added not because there are facts to be classified but because we cannot think of the knowing process without the knower. Objects cannot know themselves. We cannot have unity in consciousness unless we have a unitary subject above consciousness. The argument for the necessity of a transcendental subject is not consistently carried out, for we are told in the section on self-consciousness that the self becomes an object of consciousness and is known by itself. An infinite regressus of subjects is not insisted upon. Apparently it is well enough to admit an impossibility if you can get it into small enough compass.

The treatment of attention on the analogy of a selection of different depths of perspective is well carried out and promises to be fruitful.

It is very remarkable that a professed psychologist should have been so little influenced by the thinking of the past century. Fortunately the attitude is not one that is likely to become general in a practical age.

W. B. PILLSBURY.

UNIVERSITY OF MICHIGAN.

Herbert Spencer. JOSIAH ROYCE. New York, Fox, Duffield & Co., 1904. Pp. 233.

This volume—for which the 'Autobiography' furnishes the occasion—contains a discussion of Mr. Spencer's contribution to the concept of evolution, a criticism of his theories of education, and a chapter of personal reminiscences by James Collier, for nine years the secretary and for ten years the amanuensis of Spencer. The reminiscences are interesting, but add nothing of moment to what is given in the 'Autobiography.' Mr. Spencer's opinions regarding education are so well known that there is little need of discussing them, except for the purpose of showing—as is very clearly done in this review—

that their singular onesidedness is due to the fact that they reflect his own individuality, and are a generalization from the method of training to which he was himself subjected.

The most important content of the book is the first paper. Professor Royce points out that Spencer's view of his own work was somewhat provincial, and that he was ignorant of the historical relationships of his doctrines. He did not understand that 'the great historical enemy of the evolutionary interest in philosophy has been not 'supernaturalism,' nor yet the doctrine of 'special creation,' but *the tendency to conceive the universe as an eternal, and so, temporally viewed, as an essentially permanent order.*' The proof that an alternative view has always, quite aside from Christian theology, existed along side of the evolutionary hypothesis is not presented in detail; it might be worth while, for the benefit of uninstructed readers, to show more specifically how large a part the conception of the eternity of the 'forms' of things has played, both in ancient and in modern thought.

Professor Royce would exempt the synthetic philosophy from some of the controversial tests which its opponents have sought to apply to it. He would not, for example, judge it on the basis of the theory of knowledge with which it is implicated. These discussions of knowledge and being expressed their author's 'limitation to certain very simple intuitions—the wholesome, straightforward intuitions of an English Radical, who, having early seen that we *can* know about natural causation, but cannot know anything about theology, and that we *can* know our rights and our duties, but cannot make out what it is that interests some people in Plato, and in Kant, and in all such speculators—henceforth reflects upon ultimate problems only for the sake of bringing to sharp expression the beliefs that he never learned to question or to analyze.' In other words, the system should be treated, not as a philosophy, but as a systematization of science. Another exemption, which many would not be so ready to concede, is from responsibility for the application of formulas derived from material phenomena to the description of mental and moral processes. "Spencer's formula was intended to hold true of phenomena only." His "business, as a student of phenomena, was with 'mechanism,' in the general sense, rather than with 'teleology.'" "He ought not, therefore, to be condemned merely because he undertook to conceive evolution in mechanical terms. He would have been false to his first philosophical purpose if he had conceived it otherwise." Yet the question may be asked whether this restriction of view may not have led to the misinterpretation of some of the phenomena involved.

In his restatement of the Spencerian formula, Professor Royce exhibits its inadequacy to the task assigned to it. As an empirical description of changes observed to take place in every process of development, its accuracy and ingenuity must be admitted. But is it a principle of explanation, which can be applied, like the law of gravitation, deductively, in individual cases? It is safe to assume that the ultimate verdict will coincide with that here rendered. "Spencer's theory of evolution does not determine the relations of the essential processes of evolution to one another, does not define their inner unity, and does not enable us to conceive a series of types of evolutionary processes in orderly relations to one another."

One need hardly ask better help toward a just estimate of the great career so lately closed than is afforded by this little book in which historical, biographical and critical insights are happily blended.

EDWARD H. GRIFFIN.

JOHNS HOPKINS UNIVERSITY.

HISTORY OF EDUCATION.

Die Geschichte der Erziehung in soziologischer Beleuchtung.

PAUL BARTH. Vierteljahrschrift für wissenschaftliche Philosophie und Soziologie, 1903, XXVII., 57-80; 209-229.

"Education is the intellectual propagation of society." The physical propagation of society furnishes the material for education. The family is not only society's special organ for its own perpetuation, but in all stages of culture is, and has ever been, the means by which its first steps in education are taken. Among primitive peoples there is no educational organization outside the family or the group to which the family belongs. The physical and the intellectual factors in education are inseparable.

Changes in the social organization, such as the almost infinite division of labor, the growth of ranks and classes, demand, and in general are accompanied by, changes both in the form and content of education. This truth the author develops and illustrates by a study of the primitive American, Asiatic and Egyptian peoples. Society and education act and react upon each other.

The content of education is capable of the following psychological division: (1) It must relate to the will and create (*a*) an attitude or disposition worthful to society by the implanting of the personal and social virtues, (*b*) a certain readiness or skill in the control of objects by the will—an essential to all knowledge. (2) It must influence the ideas of life (*a*) by handing down to succeeding generations the

results of individual thought, and (*b*) by conveying to them an accurate and comprehensive world view. These phases of education the author designates respectively by *Zucht*, *Unterweisung*, *Unterricht* and *Belehrung*.

The training of the will is the most important part of primitive education. It is effected primarily by training in war, also by submission to the will of the chief and of the gods, by direct teaching of valor and endurance, and by reverence for parents. The fisher and hunter lack these virtues of the will because they have no fixed and permanent possessions in defense of which they must fight. In some measure they are possessed by the graziers and by the ruder agriculturists, but are seen in their highest form in the husbandmen of patriarchal peoples.

The author, having dealt mainly with the forms of earlier social life and education, promises to write on the relation of present day education to that of modern Europe.

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EXPERIMENTAL METHODS.

Die Massmethoden der experimentellen Psychologie. G. F. LIPPS.
Archiv f. d. Ges. Psychol., 1904, III., 153-243.

After an introduction on the beginnings of experimental psychology, the author discusses the nature of psychical measurement, indicates the problem of psychology, and then passes to a consideration of the methods based upon measurement and enumeration.

Four principles are laid down for the development of the methods:

I. The first is that the measurements made on the basis of the connection of the physical and psychical possess not absolute, but variously conditioned significance, assignable only with reference to the prevailing influences.

II. Secondly, each observation refers to an interval of quantitative values.

Each observation is made under the influence of various factors, but we may, with repeated trials, make a distinction among these. There are (*a*) variable and (*b*) constant influences. The discrimination limen is to be considered a relatively fixed value, and is determined by the constant influences. The errors of observation are referable to the variable influences, whose effect is also increased or decreased by decrease or increase of power of discrimination.

III. Hence, the scattering of the estimations in a series is condi-

tioned by the constant influences, which determine an interval of values, as also by the variable, which act as disturbing factors.

Since one cannot know how the constant and variable influences together determine the series (IV.), the evaluation of a series of observations cannot be limited at the start by the acceptance of laws to which the scattering of the observations must be subservient. In particular it is unsatisfactory to use only the average error as a determination of a series, and unallowable to presuppose the ordinary law of error as a norm for the scattering of the observation-values.

After some discussion of the methods of Fechner and reference to later changes, the author concludes that, although, with the modification of the method of right and wrong cases which Bruns has given, we hardly have to consider the influence of the form of the law on the result, yet the difficulties in evaluation of the results, which a general law involves, make it not superfluous to attempt a development of the measurement methods without positing a law of error.

We may, perhaps, get the meaning of what follows thus:

Let the range of the measurements be divided into intervals $a_1 \pm l, a_2 \pm l, \dots a_v \pm l$, the a -value representing the middle of the interval. The value of the norm for the observer, under the variable in connection with the constant influences, may be considered to fall a certain number of times in each interval. Represent these times by $z_1^l, z_2^l, \dots z_v^l$. The total number of observations $= m = z_1^l + z_2^l + \dots + z_v^l$. Let i be the discrimination limen, so that, if the apparent norm falls in the range $a_x \pm i$, we shall get a judgment of 'equal' when a_x is compared with the norm. Suppose a_x and the given norm are compared m times, and the number of 'equal' will be represented by z_x^i , and x may have values $1, 2, \dots v$.

Now, $z_x^i : z_x^l = i : l$.

So, $(z_1^i + z_2^i + \dots + z_v^i) : (z_1^l + z_2^l + \dots + z_v^l) = i : l$.

$$i = \frac{l}{m} (z_1^i + z_2^i + \dots + z_v^i).$$

If we write merely z_x for z_x^i , and take b as the point of departure or origin for the measurements,

$$E_x = \sqrt[x]{\frac{1}{m} \{z_1(a_1 - b)^x + z_2(a_2 - b)^x + \dots + z_v(a_v - b)^x\}}$$

will represent the mean value of order x of the series. Then,

$$m = z_1 + z_2 + \dots + z_v.$$

$$mE_1 = z_1(a_1 - b) + z_2(a_2 - b) + \cdots + z_v(a_v - b).$$

$$mE_2^2 = z_1(a_1 - b)^2 + z_2(a_2 - b)^2 + \cdots + z_v(a_v - b)^2.$$

$$mE_{v-1}^{v-1} = z_1(a_1 - b)^{v-1} + z_2(a_2 - b)^{v-1} + \cdots + z_v(a_v - b)^{v-1}.$$

By these equations, any value of z_x , and therefore the course of the z -values, is determined.

If η_x represents the mean value of order x for b' as starting point,

$$E_x^z = \eta_x^z - \frac{x}{1} (b - b') \eta_{x-1}^{z-1} + \frac{x(x-1)}{2} (b - b')^2 \eta_{x-2}^{z-2} - \cdots \pm (b - b')^z.$$

These mean values may be considered generalizations of the arithmetical mean and the mean error. For E_1 determines the arithmetical mean, since, when b is the arithmetical mean

$$\frac{z_1 a_1 + z_2 a_2 + \cdots + z_v a_v}{m}, b = b' + \eta_1;$$

and E_2 is the mean error.

Represent g series of observations by $a_{\lambda 1}, a_{\lambda 2}, \cdots a_{\lambda v}$ and $z_{\lambda 1}, z_{\lambda 2}, \cdots z_{\lambda v}$, where $\lambda = 1, 2, \cdots g$; $m_\lambda = z_{\lambda 1} + z_{\lambda 2} + \cdots + z_{\lambda v}$. The points of departure b_λ are the arithmetical means of each series. Suppose the series similar in all respects, so that they may be reduced to each other by increase or decrease of the observed values by the same amount. Then $m_1 = m_2 = m_3 = \cdots = m_g$ and $z_{1x} = z_{2x} = \cdots = z_{gx}$ and η_x will in general represent the mean values; if all the series be taken as one group of m observations and E_x represent the mean values of the whole, we shall get

$$gE_x^z = g\eta_x^z + \frac{x(x-1)}{2} \eta_{x-2}^{z-2} \sum (b_\lambda - b)^2 + \cdots + \frac{x(x-1)}{2} \eta_2^z \sum (b_\lambda - b)^{x-2} + \sum (b_\lambda - b)^z.$$

Now, in a given series of observations with arithmetical mean b and interval $b \pm i$, suppose this divided into g components with arithmetical means $b_1, b_2, \cdots b_g$, and intervals $(b_1 \pm d), (b_2 \pm d), \cdots (b_g \pm d)$, where $d = i/g$. So $b_1 = b - (g-1)d$; $b_2 = b - (g-3)d$; $\cdots b_g = b + (g-1)d$.

$\sum (b_\lambda - b)^{2\mu-1} = 0$. And, since g may be taken as large as we please,

$$\sum (b_\lambda - b)^{2\mu} = \frac{2^{2\mu} \cdot g}{2\mu + 1}.$$

So

$$E_z = \eta_z + \frac{x(x-1)}{2} \eta_{z-2} \cdot \frac{i^2}{3} + \frac{x(x-1)(x-2)(x-3)}{4} \eta_{z-4} \cdot \frac{i^4}{5} + \dots$$

$$E_2 = \eta_2 + \frac{i^2}{3},$$

$$E_4 = \eta_4 + 2\eta_2 \frac{i^2}{3} + \frac{i^4}{5}.$$

If we now have n series of observations belonging together, established under like circumstances, so that η_z and η_4 are the same for all, while the discrimination limena $i_1, i_2, \dots i_n$ vary, we shall get $2n$ equations with $n+2$ unknowns, which may then be determined. But it is questionable whether η_z and η_4 , which depend upon the distribution under variable influences, remain the same.

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INTENSITY.

- (1) *Definitions of Intensity.* (2) *A Study of Intensive Facts.*
W. H. SHELDON. J. of Philos., Psychol. and Sci. Methods,
1904, I., Nos. 9 and 10.

Finding in existing definitions of intensity contradictions which can only be due to a misunderstanding of the meaning of the term, Dr. Sheldon has undertaken to find a new definition, which shall reconcile the differences of the old, and provide a criterion by which intensive facts may be recognized as such. In comparing the various definitions given by psychologists and physicists, he finds agreement in that intensity (by which he always means intensive quantity) is held to imply greater, less, or equal. But from this characteristic follow contradictions. For the property of being greater, less, or equal seems to imply measurability, and measurability seems to imply parts. But psychologists agree that no parts are distinguishable in intensity. Those of them who insist on the measurability of intensity assert that parts must be present, even though not to be discovered; while those who maintain its simplicity deny that it can be measured. (Yet later Dr. Sheldon states that 'psychical intensities certainly are measured.') Physicists find intensities capable of being measured, and yet incapable of being superposed or added, although superposition and addition have always been supposed to be conditions of actual measurement. The question then is, 'Do greater and less

imply parts, or can there be a kind of quantity which is logically incapable of addition or division or the properties usually associated with measurement?’

Modern mathematics offers a solution to the problem in its statement that it is possible to define a series ‘each member of which may be greater than the one before . . . but such that there will be no whole-part relation unless you assume the associative and commutative laws.’ Since intensities, unlike qualities, are capable of direct serial arrangement, we have in them an instance of such a series, provided that they are not subject to the associative and commutative laws, that is, provided that the series is not coexistent and reversible. The new definition which has now been found, that ‘intensities are characterized by greater, less, or equal, and by absence of the whole-part relation, because they are describable in terms of order only,’ seems to reconcile the contradictions of previous definitions. It still remains to find the essential property in intensity which ‘allows it magnitude and denies it the whole-part relation.’

Taking time as an example of intensive quantity, Dr. Sheldon proves that in it we have a series that is essentially non-coexistent and irreversible, that is, transitive; since in time-measurements we are concerned only with the number of repetitions and not with the length of the repetitions themselves. (At this point, it is not perfectly clear what is meant by ‘time-length,’ although one judges that ‘succession’ rather than ‘duration’ is meant.) Since the commutative and associative laws are applicable only to a coexistent, reversible series, it is evident that in time we have a genuine intensity. But since this non-coexistence or transitivity which prevents the whole-part relation, is the essential property of the time-series, the temporal order itself may be regarded as the criterion by which intensities may be tested to discover whether or no they may come under this new definition, that ‘intensities have the property of being greater, less or equal, but without the whole-part relation.’

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VISION.

Ueber das Verhalten der Netzhautzapfen bei Dunkeladaptation des Auges. W. A. NAGEL u. K. L. SCHAEFER. *Zeitsch. f. Psy. u. Physiol. d. Sinn.*, 1904, XXXIV., 271-284.

Ueber den Einfluss der Dunkeladaptation auf die spezifische Farbenschwelle. LOESER. *Ibid.*, 1904, XXXVI., 1-18.

Investigators have repeatedly demonstrated that dark-adaptation increases the brightness-sensitivity of the excentric regions of the

retina, — the most recent determinations by Piper showing that the increase may amount to several thousand-fold. Since this phenomenon has been referred to a hyperæsthesia of the rods, the question naturally arises: Do the cones also become more sensitive (to color) when light is excluded from the eye? This is the problem which has been attacked by Nagel and Schaefer in the present investigation. Their experiments were confined to the fovea, and their method consisted in obtaining successive determinations of liminal color stimulus for different stages of a progressive dark-adaptation. It was found that the sensitivity of the cones to red, to green and to blue increased four-fold during the progress of the experiment. No determinations were made for the initial stage of dark-adaptation, *i. e.*, the measurements did not begin until the first minute of incipient dark-adaptation had elapsed; but the authors infer that the total increase of cone-sensitivity from the initial stage to the optimal stage of dark-adaptation may be about 20-fold. In a second series of experiments, a red light (visual angle of 20° to 30°) was thrown upon the foveal and paracentral regions. Here it was found that the amount of increase of color sensitivity was much greater than in the former case. From the end of the first half-minute to the end of the sixth minute the stimulus limen decreased by $\frac{1}{16}$. It is inferred that when the stage of real twilight vision has been reached, the color sensitivity of paracentral regions has increased to about 200 times its initial value.

Loeser also was concerned with an investigation of the dependency of color limina upon the condition of dark-adaptation. His stimulus-object consisted of a colored and a colorless square of approximately equal brightness, — the gray light being introduced for comparison, and refinement of judgment. Each square subtended a visual angle of 13° ; the whole stimulus-object an angle of approximately 28° . As he puts it, the image fell upon 'macular, paracentral and peripheral regions.' He employed a modified form of Piper's apparatus, and a method which consisted in determining the liminal color stimulus for different degrees of dark-adaptation. Loeser found that during the 'first minute' of dark-adaptation the stimulus appeared not only colored, but well saturated. In no case did he establish an initial interval of colorlessness. The color-limen was high during the early stages of dark adaptation, but sank rapidly during the first few (6–12) minutes, and gradually rose again at a later stage (20–46 minutes), after which it remained constant. The variation of limen was different for different colors. Sensitivity to red and to blue increased about 13-fold, and to green 18-fold, while the subsequent decrease was very much

greater for blue than for green, and for green than for red. In the absence of initial determinations, it is impossible to state the total amount of increase, but Loeser conjectures that in the optimal stage of dark-adaptation, color-sensitivity is 500 or 600 times greater than in light-adaptation. Loeser does not agree with previous investigators who have found that the adaptive change of sensitivity is in a constant direction. On the contrary, he holds that the optimal stage is reached relatively early, and that a decrease of sensitivity then ensues. He suggests that this change of direction may be due to the heightened sensitivity of the rods which may be assumed to contribute a whitishness to the color sensation; and he points out that there is an approximate coincidence between the point of time at which the color-limen begins to rise, and that at which Piper found the brightness-limen to begin its rapid descent. This view receives support from the fact that there was scarcely any diminution of sensitivity in the case of the red stimulus.

In the opinion of the reviewer, Loeser's experiments do not furnish indubitable evidence of the presence in dark-adaptation of a diminution of sensitivity. His numerical results lack uniformity; different determinations of the same limen (presumably by the same observer) vary by as much as 45 per cent., and when the limina of different observers are plotted, one finds curves which have little in common with each other. These facts lead one to suspect the influence of a factor which has not been taken into account. Loeser's description of his procedure is unfortunately too meager to furnish a definite clue to the solution of the difficulty. It seems probable, however, that there may have been a progressive change of chromatic adaptation during each series of experiments. At any rate, determinations of color-limina must, in the nature of the case, be less reliable when made serially than when each is the product of a separate sitting.

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Beitrag zur Lehre des intermittierenden Lichtreizes der gesunden und der kranken Retina. E. P. BRAUNSTEIN. *Zeitschrift für Psychol. und Physiol. der Sinn.*, XXXIII., 171-206, 241-288.

Braunstein's problem is to find the rate of succession of retinal stimuli that is necessary for the production of a single sensory image. Upon the determination of this rate depend greater accuracy in medical diagnosis and the answers to many questions concerning after-images and other visual phenomena. The solution of this problem has often been attempted, but the results have been con-

tradictory. The author makes an effort to discover the causes of their divergence.

In most of his experiments, the observer looks through an opening in a sheet of black cardboard or through a small tube at a rotating disk. This disk is made up of two, four, eight, or more alternating black and white sectors. Each revolution of the disk is recorded on the drum of a kymograph. This record is accompanied by a time curve. The moment the increase of their speed makes the sectors blend into an even gray, the observer breaks the electric circuit, by means of which the entire group of apparatus is propelled.

According to Braunstein, those who have found that increase of illumination hinders blending, and, therefore, requires a more rapid rate, have failed to see that greater intensities of light heighten the contrasts between the two stimuli. If the stimuli are such that their contrasts remain unchanged when the illumination is increased, a slower rate will produce fusion. He demonstrates this by means of a disk, *A*, one half of which is gray and the other half white; and another disk, *B*, one half of which is gray and the other half black. The gray in both cases is the same as that which would be produced by rotating a disk composed of the white and the black semicircles. Let the illumination of the white = 1, and of the black = 0. The illumination of *A* = $(1 + \frac{1}{2})/2$, or $\frac{3}{4}$, and of *B* = $(0 + \frac{1}{2})/2$, or $\frac{1}{4}$. Therefore, *A* is illuminated three times as much as *B*. Nevertheless, *A* blends with a slower rate of rotation than *B*.

The results depend, also, upon whether the eye has become accustomed to the intensity of light used in the experiment. He finds that the fovea requires a more rapid rate of succession for fusion after a half hour's perfect rest in a dark room.

When the sectors are increased in number, more stimuli per second are necessary. But the required rate of succession, he discovers, remains more nearly the same the narrower the opening through which the disk is seen. Diminishing the width of this opening makes it less and less possible for the eye to follow the rotation of the sectors. This is interpreted to mean that the increase of the rate with the greater number of sectors is due, chiefly, if not entirely, to the greater ease with which the eye can fixate and follow an object that makes a small retinal image.

Braunstein asserts that all other investigators have overlooked the fact that unless the eye is in a perfectly healthy condition, its discriminative power is impaired. Hence, fusion takes place with a slower rate of stimulation. He arrives at this conclusion through

the comparison of results from a large number of normal and defective eyes.

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HEARING.

Studies in Pitch Discrimination. GUY MONTROSE WHIPPLE.

Amer. J. of Psychol., 1903, XIV., 289-309. Commemoration Number.

This paper is a further working out of a problem treated by Dr. Whipple in two earlier papers, *i. e.*, the process of pitch memory and pitch discrimination as conditioned by individual observers and by varying time intervals. The first test was made on a young woman with some musical training, who at the age of twelve had discovered in herself the gift of absolute pitch. Her parents were unmusical but they came of musical families, so it is inferred that this gift may be an inherited musical *Anlage*, somewhat perfected by practice. This subject was not an experienced introspectionist. The results of the experiment were as follows: (1) Relatively accurate judgments of pitch can be made of instrumental or vocal music, the latter being more difficult. (2) Judgments are always direct, rapid, and in terms of visual-motor imagery, and referred to the piano key-board. (3) With no error greater than a tone, usually only a half-tone, under best experimental conditions, the piano notes were correctly identified ninety-two times in one hundred. (4) Accuracy of recognition is diminished if the clang-color of the notes is unfamiliar, *i. e.*, more correct judgments were made if the subject's own piano were used. (5) The octave in which a note lies is never mistaken. (6) Recognition is most accurate in the once and twice accented octaves. (7) With but fair ability to recognize the pitch of notes, this subject (*vs.* the generalization of Abraham) was able to image and reproduce assigned pitches very correctly. (8) Subject's sensible discrimination is no better than that of a trained musical observer, and is not aided by absolute pitch memory. (9) Kämpfe's method of modification of right and wrong cases was found to be the only satisfactory one with an observer of subjective type, *i. e.*, one whose judgments are easily modified by suggestion.

The subject in the second series of tests was a good introspectionist, a woman of almost no musical ability although fond of music. Dr. Whipple summarizes these tests of discrimination as follows:

"We have found that a typical unmusical observer, when placed

under proper conditions, may discriminate pitch differences of less than three vibrations correctly in 75 per cent. of the tests; but if the stimuli are of relatively low pitch, if they are given without any preliminary 'warming up,' if the time-interval between them exceeds four or five seconds, if they are given too briefly or in too quick succession, if they are of unequal intensity, or if they are presented simultaneously with one or more other similar stimuli, then discrimination becomes either difficult or quite impossible, and it may then remain impossible when D is represented not by a few vibrations, but by musical intervals of one or two octaves or more."

The third set of tests dealt with memory and pitch discrimination of chords and melodies. The subject, Professor I. Madison Bentley, was a trained musical observer. "As tested on the piano with half-tone intervals in the small octaves, with a time-interval of forty seconds and with distractions, the pitch of a chord is more difficult to remember and to discriminate than the pitch of a single clang. As tested under the same conditions, the pitch of a simple melody is as easily remembered and discriminated as the pitch of a single clang, possibly more easily. In the latter case, it is not clear whether the increased facility is due to the melodic form itself or merely to the greater number of stimuli employed." This last is one of the suggested problems which the article leaves to be solved.

The second subject said that certain notes seemed round, others triangular, etc. "These form-associations may point to a general tendency, with unmusical individuals, to transfer musical perceptions from auditory into other modalities" — a second point to be investigated. Dr. Whipple asks the further question: "Can musical incapacity, when discovered in childhood, be remedied by proper training?"

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SPACE PERCEPTION.

Fresh Light on Molyneux' Problem — Dr. Ramsay's Case. T. K. ABBOTT. Mind, N. S., 1904, XIII., 543-554.

Dr. Abbott first gives a brief review of the discussion which centers around the famous query of Molyneux to Locke, whether a man born blind and made to see could distinguish a sphere from a cube by sight. Heretofore no direct answer has been obtained experimentally, but Dr. Abbott goes over the most important cases of operations for congenital cataract and points out their bearing on the theory of visual space perception. Dr. Franz did not present the question to his

patient in just the right form, and so it is of peculiar interest to find that the patient of Dr. Ramsay when shown a ball and a toy brick was able to tell which was which. This case was reported by Dr. Ramsay in the *Lancet* of May, 1903, and in a pamphlet now out of print. Dr. Abbott gets his information from Dr. Ramsay. The same case is reported independently by Prof. Latta in the *British Journal of Psychology* for June, 1904, vol. I., No. 2. The question in this case was not put until after the patient had seen a number of objects, but both Dr. Ramsay and the patient himself felt that the distinction was made by comparing what was seen with an imaginary tactile impression. This man, Carruth by name, recognized the first human face which he saw, first recognizing the mouth because the sound of the voice came from it. He also recognized that the fenestrated pattern of a bench back was similar to an 'arch' but not so flat. Prof. Latta's own observations on this point differ materially from the version given by Dr. Abbott.

Carruth had a distinct visual perception of distance and magnitude, although his estimates were not at first accurate. All these facts are largely confirmatory of the theory of visual space perception maintained by Dr. Abbott in his *Sight and Touch*. The case is a valuable addition to the mass of evidence which he has accumulated. He notes as significant, also, the fact that we have here an exception to the general rule that the acquisition of sight after such an operation is a slow and laborious process; evidently it is not necessarily so.

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Experimentelle Untersuchungen der beim Nachzeichnen von Strecken und Winkeln entstehenden Grössenfehler. J. RICHTER u. H. WAMSER. *Zeitsch. f. Psych. u. Phys. d. Sinnesorgane*, 1904, XXXV., 321-339.

Is there any uniformity in the errors occurring in the reproduction of simple geometrical figures? The method was that of reproduction by free hand drawing. The standard figures were lines 5 mm., 10 mm., 50 mm. and 100 mm. long; and angles 30°, 60°, 120° and 150°, each in three positions with the vertex either at the right, at the left, or at the top. The lines 5 mm. and 10 mm. long were overestimated, *i. e.*, were drawn longer than the standard, and those 50 mm. and 100 mm. long were underestimated in the reproductions. All angles except 120° which had one leg horizontal were underestimated. Of those which had the vertex at the top 30° and 60° were overestimated and 120° and 150° were underestimated. These experiments

were made by Richter. Wamser repeated them with some changes. The results agree in almost all respects. No explanation of the results is suggested.

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READING.

Zur Psychologie des Lesens bei Kindern und Erwachsenen. O. MESSMER. Archiv f. d. Ges. Psychol., 1903, II., 190-298.

In view of the disagreement between recent experimental studies of the psychology of reading, the present paper exploits the influence of individual variations and initiates a comparative study of the reading processes. On the basis of the tachistoscopic experience of four adults and six children, from seven to eleven years old, Messmer distinguishes two types of readers, the objective and the subjective.

The former is characterized chiefly by the closest correspondence between the physiological fixation point and the point of attention. The limited fluctuation of the attention permits the apprehension of only a very limited number of letters at each exposure. A long word is read only after a number of successive exposures in which the attention is successively fixed on small groups of letters. There are few mistakes, but only comparatively little is read. The subjective type is characterized by a fluctuating or wandering attention (even during an exposure of 2σ duration!). The field of attention is relatively large. A whole word may be read from an eccentric fixation point. Attention is directed inward to the words at hand, and there is much confusion as to what is observed and what is interpreted. The objective type is best exemplified by the performance of a trained observer. The subjective type is more common both in adults and in children.

The author's discussion of the word form, one of the most difficult of our present problems, is dogmatic, careless in its generalizations and indifferent to the experimental data already at hand.

Far more significant is a new hypothesis of the successive apprehension of letter groups. In contradistinction from Zeidler's left to right succession, Messmer's succession hypothesis depends on the difference in the optical distinctness of letters and letter groups. The dominant letters are more easily and hence more quickly perceived. Letters and letter groups which are less distinct come to consciousness later.

Grammatical categories and orthographic rules are practically ignored by children in tachistoscopic reading. The effects of fatigue are found to be greatest in the most rapid reading. They are more

marked in children than in adults. Children read nonsense texts almost as rapidly as significant texts. Adults read the latter in half the time of the former. A valuable collection of misreadings is given at the end of the paper, grouped with reference to their kind and the frequency of their occurrence with children and adults. The reviewer still ventures to doubt that the results of minimum exposure and threshold stimulation may be transferred bodily to the processes of normal reading without doing violence to the facts.

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FATIGUE.

A Study of the Accuracy of the Present Methods of Testing Fatigue. A. CASWELL ELLIS and MAUD MARGARET SHIPE. Amer. J. of Psychol., XIV., 496-509 (Commemorative Number, pp. 232-245).

A variety of methods for testing fatigue were employed to see whether when used at the same time on the same subjects they would show corroborative results. Five students and one professor were tested two or three times a day for five days, using more than one method of testing at each period. The methods used were: reaction time for recognition of familiar names used with the ergograph — 27 perfect tests; reaction time (as before), addition of columns of figures, writing the cubes of numbers up to 9, memorizing nonsense syllables, all used together — 24 perfect tests.

A year later seven subjects were employed on the same tests with the addition of Ebbinghaus' method of filling in blanks made by omitting letters and small words from printed matter. There were 14 perfect records taken, and 24 more in which the reaction test was varied. With a view to trying the effect of testing untrained as compared with trained minds, ten children from 11 to 15 years of age were tested for three days. Adding, cubing, learning nonsense syllables, and filling blanks were the tests used.

These tests were taken at such times of day as would be likely to show a contrast between a rested and fatigued condition, as at 9 a. m. and 5 p. m. During some of the time such exhausting work as that of taking examinations came between them.

The results of these tests failed to show any distinct amount of agreement in the indication of fatigue. In the case of the reaction-time-ergograph test, on only 6 out of 27 times did an agreement occur between the reaction and ergograph records, while about half the results

indicated greater power when the subjects were really fatigued. With the larger combination of tests which followed, the reaction time and variations increased or decreased together 13 out of the 24 times, the reaction agreed with the addition test 13 times, with the cubing test 10 times, with nonsense syllable test 6 times, etc. The other results were of a similar nature. Other ergograph tests which were taken to measure the motor energy were also unsatisfactory. The conclusion of the authors is that these tests as now used are worthless.

It is unfortunate that the editors were obliged to cut out the tables which accompanied the original manuscript of this article, as these might have given some cue to positive results. There are, however, certain conditions which could not but help make a confusion in the results. In the first place fatigue is not simple as assumed by this study, but complex. When one has worked and produced even an extreme feeling of fatigue it is often through the exercise of but a comparatively few nerve elements or muscles. Others may be in a high state of efficiency. The test should be adapted to the *kind* of fatigue, otherwise the result will be as confusing as would be the testing of a town's wealth by examining the pockets of a chance citizen. There is also a motor excitement which accompanies some forms of fatigue and causes an acceleration of rate in the working of another function, *e. g.*, adding is accelerated after a fatiguing walk or after learning nonsense syllables. Some effect of this sort is also likely to creep in when tests of different kinds quickly follow each other as in the case of these experiments. Finally, one needs to distinguish between fatigue and languor, as these may produce different effects and either may be present without the other.

J. P. HYLAN.

Ueber Ermüdungskurven bei Gesunden und bei einigen Neurosen und Psychosen. H. BREUKINK. *Journal f. Psych. u. Neurol.*, 1904, IV., 85-108.

The larger part of this article is an historical and critical résumé of previous investigations on fatigue. Dr. Breukink obtained fatigue curves with Kraepelin's ergograph. Weights of 3, 4, and 5 kg. were lifted repeatedly and at a constant rate with a finger until complete exhaustion was reached. The following are some of the characteristic results.

For normal health, the second was the maximum lift in the first record, while in the second record the fourth was the maximum lift. The number and the average height of the liftings is greater for the men than for the women.

For hysteria, the maximum lift is the third or fourth. Frequently a sudden drop occurs in the curves.

For neurasthenia, the number and the height of the liftings are less than for normal persons. The first lift is frequently the maximum lift.

For chorea, the curves fluctuate very irregularly.

For dementia hebephrenica, dementia epileptica, and dementia paralytica, the average height of the liftings is less but the number of the liftings is the same or greater than for normal persons.

These experiments seem to have been made with the assumption of undoubted reliability of ergographic tests, which has been seriously questioned by recent studies.

DANIEL STARCH.

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MOVEMENT.

A Sketch of the History of Reflex Action in the Latter Half of the Nineteenth Century. ROBERT H. GAULT. *American Journal of Psychology*, 1904, XV., 526-568.

For the sake of a clearer presentation than is possible under a broad generalization, the author has treated his subject under the following: 'Statement of the Theory and Extent of Knowledge at the Time of the Pflüger-Lotze Discussion, Inhibition of Reflexes, Phenomena of Summation, Vascular Tonus, Muscular Tonus, Tendon Reflexes, Direction of Transmission and Coördination of Reflexes, and Speculative Considerations.'

Each division is a comprehensive résumé of the experimental facts so far discovered as well as the theoretical conclusions reached. The author's individual estimate of the real contribution to knowledge is thus stated: "Reviewing the history of the fifty years with reference to progress in the theory of reflex action we see clearly that the main gain has been rather in the slow alteration of standpoints than in any sudden appearance of new facts wholly incompatible with older views. The spirit of the age — its unconscious metaphysics — has changed and along with it the metaphysics of the reflex."

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Über Assoziationsreaktionen, die auf optische Reizworte erfolgen.

HENRY J. WATT. *Zeitsch. f. Psychol. u. Physiol. der Sinn.*, 1904, XXXVI., 417-430.

The reactions of eight subjects to familiar words of various classes, visually perceived, were timed by the chronoscope. As in the case of

Thumb's and Marbe's corresponding acoustic series, adjectives, pronouns, adverbs of place and time, names of relationship and numbers (versus Oertel) usually associated words in the same class — the exceptions ranging from 34 to 45 per cent. Oertel's discrepancy is ascribed (1) to allowing five seconds for the presentation and twenty for forming the association, whereas with the other investigators twenty seconds rarely elapsed before the subject reacted. This period is too long to allow accurate analysis of the mental experience. (2) To not controlling the reaction time but allowing secondary and tertiary associations, whereas the others ask for the first association.

When a word a associates b , b associates a , but numbers usually associate higher numbers, which is in harmony with the results for acoustic stimuli (Thumb-Marbe). The Marbe frequency law also holds for optical stimuli: the average reaction time diminishes with the increasing frequency of the word, first very rapidly, then slowly and finally unappreciably. But the optical stimuli give larger time differences. The mental speaking of the visual word did not influence the form of the association.

J. E. W. WALLIN.

PRINCETON UNIVERSITY.

BOOKS RECEIVED FROM MAY 5 TO JUNE 5.

L'Idealismo Moderno. G. VILLA. Torino, Fratelli Bocca, 1905.
Pp. xiv + 452.

The Psychology of Beauty. E. D. PUFFER. Boston and New York, Houghton, Mifflin and Co., 1905. Pp. 286.

Les Mensonges du Caractère. FR. PAULHAN. Paris, Félix Alcan, 1905. Pp. 276. (Bibliothèque de Philosophie Contemporaine.)

Der Vitalismus als Geschichte und als Lehre. DR. HANS DRIESCH. Leipzig, J. A. Barth, 1905. Pp. x + 246. (Natur- und kulturphilosophische Bibliothek. Band III.)

Die geistige Ueberbürdung in der modernen Kultur. MARIA VON MANACÉINE. Übersetzung, Bearbeitung und Anhang: *Die Überbürdung in der Schule.* DR. LUDWIG WAGNER. (Natur- und kulturphilosophische Bibliothek. Band II.) Leipzig, J. A. Barth, 1905. Pp. v + 200.

L'Année Philosophique. F. PILLON. Paris, Félix Alcan, 1905. Pp. 316. (Bibliothèque de Philosophie Contemporaine.)

The Color Sensitivity of the Peripheral Retina. J. W. BAIRD.
Washington, Published by the Carnegie Institution, 1905. Pp. 5
to 80.

Metaphysical Elements in Sociology. P. H. FOGEL. (Diss.)
(Princeton Contributions to Philosophy, Vol. 1, No. 4. Repr.
from the American Journal of Sociology, Vol. X., Nos. 3, 4,
Dec.-Jan., 1904-5.

Beiträge zur Psychologie der Aussage, herausg. von L. WILLIAM
STERN. II. Folge, 2. Heft. Leipzig, J. A. Barth, 1905. Pp.
154.

L'être subconscient. G. GELEY. 2e éd., revue. Paris, Félix
Alcan, 1905. Pp. 176.

NOTES AND NEWS.

The following items are taken from the press:

Professor E. B. McGilvary has tendered his resignation from Cornell University, to take effect next year, when he will accept the chair of philosophy at the University of Wisconsin.

Professor James H. Tufts, of the University of Chicago, was elected president of the Western Philosophical Association at the meeting held at the University of Nebraska on April 21 and 22.

Dr. E. B. Holt has been appointed assistant professor of psychology at Harvard University.

THE
PSYCHOLOGICAL BULLETIN

ANOMALOUS REACTION-TIMES IN A CASE OF
MANIC-DEPRESSIVE DEPRESSION.¹

BY SHEPHERD IVORY FRANZ,
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In the course of a series of experiments upon the condition of the nervous system in manic-depressive insanity, it was found that the reaction times of a depressed and retarded patient not only were much longer than the normal, but that on certain days there was a tendency for the simple reactions to be greatly prolonged, without a corresponding lengthening of the choice reaction time. Sometimes the time of the simple reactions was found to be equal to, sometimes to be longer than the choice reaction time. These results, so peculiar and at the same time so interesting, warrant a special report apart from the other results which do not show such anomalous results.

The subject of the experiments is a man, sixty-six years old, successful in business and of good education. He was admitted to the hospital greatly depressed and retarded in October, 1903, and the experiments to be reported were made September to December, 1904. Previous to his present illness the patient had had six similar attacks, from each of which he had recovered in a few months. The current attack (the seventh) is the longest, and at the present writing recovery has not yet taken place (June, 1905).

In the depressed phase of manic-depressive insanity there is a lowering of feeling tone and a decrease, often a slowing of voluntary bodily and mental activity, *i. e.*, a psycho-motor retardation. In this condition, in addition to the usual feeling of malaise and to the self-accusation, there is noted a feeling of inadequacy,—a feeling of inability to do what had formerly been easily performed, and, particularly, a feeling of inability to start ordinary acts. A patient may make

¹ This number has been prepared under the editorial care of Dr. Adolf Meyer.

few voluntary movements, and those that are made are very slow. He will sit or stand in one place for hours at a time, and, when compelled to move, will do so apparently with the greatest effort. He will talk little, and slowly, usually very short phrases, affirmative, negative or complaining. Sometimes there is a tendency to stereotypy, a repetition of the same phrase over and over again, whenever a question is asked: 'I don't know,' 'I'm not feeling well,' etc. These stereotyped expressions and the affirmative and negative answers are very often quickly given, indicating that there is no retardation for responses of that character. At times there is a slowing of mental processes which parallels or supercedes the motor difficulty.

When admitted to the hospital, the patient, the subject of the experiments, was almost immobile, kept in his bed, and made only gross movements of his arms and legs. During this time he had to be tube fed. Gradually this immobility passed away, but there remained a lesser amount of retardation. He walked slowly and very little, stood or sat in one place for hours, did not read, and did not take any interest in things about him. At the time the experiments were begun the patient's condition was as described. He said nothing voluntarily, answered slowly and in whispers, walked, dressed and ate accurately but sluggishly. As the experiments proceeded improvement was noted in reading, speaking, and walking. This progress, it should be mentioned, was observed only when he was in the laboratory; on the ward there was no appreciable change beyond an occasional improvement in speech. There is no mental deterioration apart from the depression and retardation.

The experiments to be reported are the times of simple and choice reactions to sound. The stimulus for the simple reactions was the sound given by a telegraph sounder operated electrically, and the reacting movement was the lifting of the finger (right hand) from a telegraph key. For the choice reactions, the same sound was reacted to by the same movement, and a finger of the left hand reacted to a low sound. In the choice reactions only the reaction times given for the loud sound (right hand) have been considered. Thus, the choice and simple reactions are directly comparable. The fact that the reactions of the left hand were not being considered was not known by the subject. The time was measured by means of a Hipp chronoscope, regulated by a fall hammer. The experiments were made each day at about the same time. At most of the sessions a number of simple reactions was first made, then an equal number of choice reactions (counting only those from the right hand, of course), and finally an

equal number of simple reactions. Occasionally the number of choice reactions equaled the number of simple ones. In the following tables the average and the average variation are given for the total number of reactions for the period of time considered. No reactions were discarded because they seemed to be too short or too long, but only when there was evidence that the subject had not reacted in a perfectly normal manner.

The results of the weekly grouping of the reactions are given in Table I. The general average of the 1,710 simple reactions is 273.1 σ and of the 990 choice reactions is 334.5 σ .¹ It will be noted that the simple reaction time is very greatly lengthened (although it should be mentioned that the subject's reactions were probably of a 'sensory' type), but that the choice reaction time is not correspondingly increased.² The most striking results, however, are that the differences in time between the simple reactions and the choice reactions are very slight during the ninth and thirteenth weeks. The average variations

TABLE I.

WEEKLY AVERAGES OF SIMPLE AND CHOICE REACTIONS TO SOUND.

Serial Weeks.		1	2	3	4	6	9	13
Simple Reactions.	Average.	299.0	209.2	208.3	224.0	282.9	311.5	342.8
	Av. Variation.	79.7	53.3	41.5	48.0	62.6	57.1	73.6
	No. Experiments.	120	100	100	610	100	300	380
Choice Reactions.	Average.	432.0	306.8	338.1	304.5	308.5	313.4	357.6
	Av. Variation.	82.3	71.8	75.2	55.8	47.1	48.5	24.7
	No. Experiments.	60	50	50	330	50	240	210
Choice minus Simple Reaction.		133.0	97.6	129.8	80.5	25.6	1.9	14.8

are mostly comparatively greater than normal. It was to be expected, as is found to be the case, that both simple and choice reactions during the first week should be greater than with practiced subjects, although the patient had been practiced on the reaction movements for some days

¹ Throughout this paper all figures will be given in thousandths of a second, *i. e.*, $\sigma = .001$ sec.

² Eight normal observers gave average simple reaction times from 120 σ to 180 σ (Wundt, *Physiol. Psychol.*, III., 416). Tischer, in experiments upon choice reactions, similar to those made on my subject, obtained an average of 316 σ ; the individual averages of his nine subjects varied from 293 σ to 357 σ (Wundt, *op. cit.*, III., 461).

before any time measurements were made. The decrease during the next three weeks was expected also. After an intermission of a week we find an increase, and still greater increases after other intermissions of two and three weeks.

The foregoing table gives only an indication of the abnormal reactions. It shows that the average simple reaction time is greatly lengthened during the sixth, ninth, and thirteenth weeks, but by weekly groupings the greatest abnormalities in the simple reactions are not shown. It is necessary, therefore, to consider the daily averages during this period and to examine in detail the results obtained on particular days. The daily averages for the last three weeks are given in Table II. The average variations have been determined for the total number of reactions on the separate days.

TABLE II.

DAILY AVERAGES OF REACTION TIMES, 6TH, 9TH AND 13TH WEEKS.
The days on which the simple reaction time was found greater than the choice reactions are designated by *.

Date.	Simple Reactions.			Choice Reactions.		
	Average.	Average Variations.	No. Experiments.	Average.	Average Variations.	No. Experiments.
Oct. 10*	312.9	94.3	20	266.1	34.5	10
11*	342.5	41.2	20	318.1	44.5	10
12	234.0	23.7	20	273.6	45.4	10
13	269.5	52.9	20	335.6	23.5	10
14	255.8	37.4	20	349.1	57.3	10
Oct. 31	365.3	79.3	60	372.3	38.8	30
Nov. 1	277.5	46.6	60	292.1	43.1	60
2*	321.3	50.6	60	294.4	46.9	60
3	291.9	39.3	60	302.0	36.9	60
4	298.2	48.1	60	358.9	44.8	30
Nov. 28	360.4	96.2	100	361.3	36.0	30
29	340.3	82.1	100	388.5	46.0	30
30	324.9	54.9	60	350.4	46.7	60
Dec. 1*	346.6	62.5	60	345.8	40.4	60
2	331.6	46.2	60	383.6	36.3	30

The average simple reaction exceeds the average choice reaction on four days (October 10 and 11, November 2, and December 1). On only six of the fifteen days was the average simple reaction less than the choice reaction minus its average variation. If from the choice reaction is taken its variation, and to the simple reaction is added its variation, we find the figures overlapping throughout this period. Moreover, we observe that the amount of the average

variation is, as a rule, either absolutely or relatively greater for the simple reactions than for the choice reactions. In some, probably in most cases, the greater variation is due to the fact that there are two different types of simple reaction on the same day. This is brought out more clearly in Table III. in which the reactions have

TABLE III.

ANALYSES OF CERTAIN DAILY AVERAGES.

The averages are given in large type, the average variations of the averages of groups of ten are given in smaller type and the total numbers of reactions are in parentheses.

Sequence of Tests.	Simple Reactions.	Choice Reactions.	Simple Reactions.	Choice Reactions.	Simple Reactions.
Sept. 28.	255.3 27.7 (50)	251.9 11.9 (60)	174.6 13.3 (60)	—	—
Oct. 10.	222.1 — (10)	266.1 — (10)	403.7 — (10)	—	—
Oct. 31.	330.0 42.9 (30)	372.3 1.2 (30)	400.7 49.9 (30)	—	—
Nov. 2.	— 245.2 23.2 (30)	303.7 31.0 (30)	331.7 27.1 (30)	281.8 8.8 (30)	310.9 11.0 (30)
Nov. 28.	—	361.3 22.8 (30)	409.7 31.3 (70)	—	—
Dec. 1.	300.6 14.7 (30)	337.5 8.1 (30)	392.5 30.8 (30)	352.0 24.8 (30)	—

been grouped according to the sequence of the tests. A glance at the table will indicate what is meant. For example, September 28 — fifty simple reactions were first taken, averaging 255.8 σ , then sixty choice reactions were made, average 251.9 σ , and finally sixty simple reactions, average 174.6 σ ; and October 10 — ten reactions each, in order (1) simple, (2) choice, and (3) simple, averaged respectively 222.1 σ , 266.1 σ , and 403.7 σ . On other days as well as on these two days the simple reactions first made differed greatly from those made after the choice reactions, thus indicating that there are two types or methods of reaction. Further comparison of the two tables shows that the lengthened average simple reaction on any day is often due to one greatly varied set.

Before attempting to account for the anomalous condition which has been found, it is well to summarize the main results thus far given. It has been found that in a retarded subject (manic-depressive depression):

1. The average time of simple reaction to sound is greatly increased.

2. The time of the choice reactions is sometimes increased, but proportionately not so much as the time of the simple reaction.

3. From day to day great variations in the time of both simple and choice reactions are found. The simple reactions show the greater variation.

4. There is a great variation in the simple reaction time on the same day, both when all such reactions are combined and particularly when they are grouped in accordance with the experimental grouping.

5. Occasionally the daily average simple reaction time is greater than the average choice reaction time.

6. More often the average of the group of simple reactions taken before or the average of the group taken after the choice reactions alone shows this peculiar condition.

Two possible explanations of the foregoing phenomena which immediately suggested themselves are (1) that the attitude of the subject, as shown by the greater or less number of premature reactions, had caused the great time difference, and (2) that during the second series of simple reactions fatigue had taken place and caused a lengthening of the simple reaction time. If the number of premature and wrong reactions in the choice experiments had been increased on certain days, and if on those days there had been a shortening of the choice reaction time, we should need to seek no further for an explanation of the condition. Such, however, is not the case. Table IV. gives the number of the premature and wrong reactions for each week

TABLE IV.

PREMATURE AND WRONG REACTIONS.

p = premature. *w* = wrong. Number of experiments in parentheses.

Serial Weeks.	Simple Reactions.	Choice Reactions.
1	12 <i>p</i> (120)	3 <i>p</i> , 3 <i>w</i> (60)
2	6 <i>p</i> (100)	1 <i>p</i> , 4 <i>w</i> (50)
3	2 <i>p</i> (100)	3 <i>w</i> (50)
4	20 <i>p</i> (610)	5 <i>w</i> (330)
6	2 <i>p</i> (100)	3 <i>w</i> (50)
9	— (300)	1 <i>w</i> (240)
13	1 <i>p</i> (380)	1 <i>p</i> , 4 <i>w</i> (210)

of the series for both simple and choice experiments. After the first week, the number of premature reactions is no greater than is found with normal subjects. It is evident, therefore, that the attitude of expectation (as shown by the premature reactions) with its easily liberated motor response cannot be considered the cause of the shortened choice reactions, and the absence of this mood cannot be thought to be the reason for the lengthened simple reactions.

The other suggested explanation, viz., fatigue, is not more tenable. Some of the results point in that direction, while others give opposite indications. On October 10 the first set of ten simple reactions averaged 222.1 σ , the ten choice reactions 266.1 σ , and the final ten simple reactions 403.7 σ (see Table III.). Similar averages were found on October 31 and November 28, which suggest a fatigue effect, but the reactions on other days give strikingly opposite results. This is notably the case on September 28 and November 2. Another example of this is not given in Table III., the results on November 1. On that day the first thirty simple reactions averaged 288 σ , then an equal number of choice reactions 307.3 σ , and the same numbers of simple and choice reactions respectively 266.9 σ and 275.8 σ . With as many, if not more, cases against as for the hypothesis of fatigue, it cannot be seriously considered.

It is possible that in this case we have simple reactions similar to the antagonistic reactions noted by Smith¹ and later studied by Judd, McAllister and Steele.² Smith has recorded the fact that 'the reaction movement may be complicated by a preliminary antagonistic movement and that the time taken up in this movement is on the average probably between four and five hundredths of a second.' A psychophysical explanation for this is suggested by Smith,³ viz., that the attention is directed to holding down the key before the stimulus is given, and the shock of the sound or light, as the case may be, causes an intensification of the muscular contractions, 'an increase in the innervation of the muscles which are already in a state of tension.' Smith has observed such a condition in patients suffering with general paralysis. "It is, further, possible that the phenomena of antagonism have certain relations, in some individuals, to the alternation of impulses of which we are conscious in deliberation, hesitation and doubt." If elaborated more, this hypothesis would account for all the facts

¹ W. H. Smith, 'Antagonistic Reactions,' *Mind*, N. S., XII., 1903, 47-58.

² C. H. Judd, C. N. McAllister and W. M. Steele, 'Analysis of Reaction Movements,' *Yale Psychological Studies*, N. S., Vol. I., 1905, 141-184. *PSYCHOLOGICAL REVIEW Monograph Supplement*, No. 29.

³ *Op. cit.*, p. 58.

which have been recorded by me. To begin with, it should be stated that I have observed in my subject actions similar to those of a general paralytic recorded by Smith, but the extra pressure of the reaction key before the reacting movement was not a constant phenomenon. However, great variability was noted in the experiments made at the Yale laboratory and also in those made by Smith. Assuming for the present Smith's interpretation of the simple reaction increase, we need to account for the more normal character of the choice reaction. This may be explained, though rather weakly, perhaps, as an inability to concentrate on the four factors present in the choice experiments, two sounds and two movements. Thus, the scattering of the attention would prevent any increased muscular innervation in these tests, whereas on the other hand when only one sensory-motor set of things had to be considered, the concentration of the attention permitted, and, possibly, caused the intensification of the muscular contraction preceding the reaction movement.

This explanation is not very satisfactory because it must consider these facts apart from others, which are of the same character, in this class of patients. A few of these facts are here given. It has been mentioned that these patients answer slowly (*i. e.*, slow association reaction), but will say 'yes' or 'no' quickly (more rapid association reaction). These simple affirmative and negative answers are, however, normally paths of very little resistance, although they are associative responses. To pin pricks there is often little or no response, but they are usually perceived and appreciated. It seems to me that in all these conditions we have to deal most probably with some sort of decrease in irritability of the body. Whether this lowered irritability be central or peripheral or general, I cannot at present say. The feelings of lassitude and of initiative inability are easily understood from this standpoint, and the so-called sensory complex, a condition in which the patient has a feeling of unreality, particularly of the body or its parts, is also intelligible.

At present, more than this we cannot say. It is possible that further consideration of the other experiments made upon this subject and upon similarly retarded patients may bring to light new facts that will help toward a clearer understanding of the general subject of retardation as well as of this particular condition.

A REVIEW OF SOME RECENT PAPERS UPON THE LOSS OF THE FEELING OF REALITY AND KINDRED SYMPTOMS.

BY DR. AUGUST HOCH,
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Although the symptoms which may be comprised under this heading are by no means infrequent in psychasthenic states and in various psychoses, they have received relatively little attention until quite recent years. In the textbooks on psychiatry with the exception of that of Wernicke, whose work is a perfect mine for everyone who wishes to study abnormal mental manifestations, they are scarcely mentioned or are buried, often to such a degree as to be almost unrecognizable, in the general account of hypochondriacal delusions. And yet the French literature contains a number of early studies, *e. g.*, the report of Krieshaber¹ and some articles of Cotard.²

Recently a number of studies have appeared which deal at some length with these symptoms. What is common to all the cases reported is the loss of the feeling of reality within one or another field of experience, either that relating to the outside world or to the body, or to the individual's own activities or thoughts.³ All these symptoms are present in spite of the fact that there exists neither a real sensory defect (some exceptions will be noted later) nor any agnosia.

We will briefly consider the cases recently reported. The patient of Foerster⁴ complained of being unable to feel the various parts of her body. This extended not only to the limbs, trunk, and head, but, when speaking of the respective sensations of sight, hearing, and taste, she said she could not feel her eyes, ears, or tongue. She claimed

¹ Krieshaber, quoted by Störing in his *Vorlesungen über Psychopathologie*, 1900, p. 286, and by James, *Principles of Psychology*, Vol. I., p. 377.

² Cotard: 'Du délire des négations,' and 'Perte de la vision mentale dans la mélancolie anxieuse,' *Etudes sur les Maladies Cérébrales et Mentales*, Paris, 1891.

³ Wernicke has for the sake of simplicity introduced into psychiatry special terms for these sets of experiences and speaks of the *allopsyche*, *somatopsyche*, and *autopsyche*.

⁴ Foerster, 'Ein Fall von elementarer allgemeiner Somatopsychose (Afunktion der Somatopsyche),' *Monatsschrift für Psychiatrie und Neurologie*, Vol. XIV., p. 189.

that when lying in bed she did not know what position she was in. When the wind blew upon her face or she was touched, the parts thus influenced became more real.¹ In regard to the outside world she said that she could not recognize anything, that the eyes did not reach out, that everything looked veiled, that she could not hear clearly, that she could not 'take in' odors, that the food did not taste as it used to, touch seemed dull, pain 'not as it used to be.' She had the same sense of unreality when she was asked to name objects by handling them. In regard to her own mental processes she said that she had 'no thoughts' and that she was unable to represent any impressions to herself. "While I look at a thing I know how it looks, when I close my eyes it is gone."² As is very common, especially in milder cases, this patient had a feeling of indifference towards everything. At the height of the disorder she expressed a very decided loss of the feeling of self (depersonalization). In addition she presented an inactivity and a state of depression, perplexity and fear.

It will be seen that this case resembles in many ways that of Krieshaber. K.'s patient also spoke of his body as non-existing, said that things looked far away, that his ears seemed stopped up, and that he felt as if he were a different being. This man, however, also showed a symptom which seems to be rare, but which I have been able to observe in a very grave case of this sort. To him things looked flat, had no relief. I may add that in my case this was associated with fleeting errors in estimating distances. K.'s case showed also a loss of the feeling of activity.

An interesting and graver case has been reported by Alter.³ The patient not only complained that his body was not real but that it constantly changed, 'the moment I change my position the body changes.' He spoke of it as being in particles, not put together right, etc. The external world was unreal and moreover changed. "Every time I look at things they are changed; I constantly get into different relations with my surroundings." And he spoke, for example, of the house as being mixed up, the corridor wrongly attached, or when

¹ In some cases of my own the very opposite took place; touching or rubbing precipitated the feeling of unreality for the parts of the body in question.

² The feeling of unreality in regard to one's own mental processes may be very marked. I have the notes of a patient who said that at no time did any thoughts come into her mind, and that her mind only had a content when someone talked to her, 'when the person goes, the thoughts go.' Another patient claimed that she only had thoughts in her mind so long as she spoke.

³ Alter, 'Ueber eine seltenere Form geistiger Störung,' *Monatsschrift für Psychiatrie und Neurologie*, Vol. XIV., p. 246.

he returned from a walk he said on one occasion: 'It seems as if I had been away for eternity, things look so different.' He also had an absence of the feeling of activity for his own actions, but not a sense of unreality in regard to his thoughts. Evidently as the result of this feeling of change produced by every movement, he sometimes lay motionless in forced positions, resisting every interference (a condition occasionally observed in such patients, but to be sharply differentiated from other, though superficially similar, states of akinesis). On some occasions he went so far as to definitely deny the identity of objects. This trait may be very much more marked in some cases; it was first described by Cotard under the term of *délire de négation*.

In a patient of Pick¹ the depersonalization was very marked. She complained that she had 'no consciousness,' that she did not know herself, that she was 'not alive,' and in the foreground was an absence of the feeling of activity. "It is not I who thinks or acts." She also said: 'I have no memory.' Aside from this there was no decided expression of unreality of the body, but the external world appeared strange. She said she saw things 'far away,' '*erstarrt*,' 'the vision is cut off.' She complained of absence of hunger. She was depressed and said she felt no interest in anything.

Juliusberger² reports a milder case who complained that things looked strange and lifeless. She appeared strange to herself, and her own writing and voice seemed strange to her. She said she was unable to represent to herself how things looked or tasted, that she could not realize the flight of time, that she felt indifferent, and for a time she claimed that her sense of hunger and thirst were absent.

This entire symptom complex, although scarcely in its gravest form, is evidently well known to Janet, and in his recent works³ much may be found on the subject. He gave a brief review of this work at a recent visit to this country.⁴ In this article he speaks, *e. g.*, of an epileptic who had a transient attack in which he had an abnormal feeling about the reality of the visible world, and doubt about the existence of things, a state which was associated with aboulia. Another case which resembled that of Pick said 'It is not I who eats, speaks, works,' 'I lack something to give me real existence.'

¹ Pick, 'Zur Pathologie des Ich-Bewusstseins,' *Archiv für Psychiatrie*, Vol. 38, p. 22.

² Juliusberger, 'Ueber Pseudomelancholie,' *Monatsschrift für Psych. und Neurol.*, January, 1905.

³ Janet, *Névroses et Idées Fixes*, Paris, 1898; *Les Obsessions et la Psychasthénie*, Paris, 1903.

⁴ Janet, 'The Psycholeptic Crises,' *Boston Medical and Surgical Jour.* January 26, 1905.

She also claimed that she could not remember anything. There was no definite feeling of unreality in regard to her body, and the abnormal feelings associated with the recognition of the outside world were only indicated. "It is dull before my eyes." This patient also said that she had lost all idea of time. But Janet also relates a case in which the body especially appeared altered to the patient. She had attacks in which she felt that she grew smaller and totally different. At one time she stopped eating because her mouth was 'gone.' Again her hands and feet seemed to her no longer to be a part of herself, 'a dream hand.' She said that things seemed to be done, to be seen and touched, not to be lived with. She also complained of lack of interest.

The objective examinations which were made of these various cases revealed very little. The acuteness of the various sensations was never altered, except in the case of Alter, who found a unilateral diminution for the appreciation of roughness in his case, a symptom which he attributes to hysteria. I myself found on one day with very careful examination a slight difference in touch sensation on the two legs. Various investigators have found the field of vision normal, the color perception intact. Foerster examined into the visual memory; he found it normal. It may here be added that in general the memory is not interfered with even in the cases who claim that they cannot remember, just as there is no real slowness in thinking when the patients claim they have no thoughts. Foerster found the ability to localize skin impressions to be normal. Janet, who made extensive and very careful tests in his cases, found no disorder of cutaneous, muscle, or visceral sensibility, but a certain disposition on the part of the patient to 'neglect agreeable or painful impressions.' I have repeatedly noted that patients who subjectively complain of lack of interest state that pinpricks do not seem so sharp as normally, though there is no objectively demonstrable diminution of pain sensation. Of interest are the results of Alter. The examination of various kinds of sensation gave at times perfectly normal results; again, at the same interview, anæsthesias or analgesias were found, especially when the attention was drawn to these sensations. Sometimes passive motions were correctly recognized and correctly imitated with the corresponding limb, again both were very poor. Sometimes cutaneous sensations were correctly localized, again very poorly. In a similar case of my own I found fleeting inability to localize cutaneous impressions and to recognize passive motions. It was in this same patient that, as I have indicated above, fleeting disorders of estimating distances by sight were noted. The impression left was that the perplexity alone did

not explain these disorders. While, then, it is impossible to demonstrate objectively any sensory disorders, it may nevertheless be the case that fleeting changes may be present in grave cases in which the somatopsychic alterations are the most marked, but further studies are needed.

As to the explanation of these phenomena, it is scarcely possible to come to any definite conclusions as yet. Pick, who in his first paper¹ called attention to the same transient states in epileptics as Janet reports, simply spoke of alterations in the feeling of recognition (the *Bekanntheitsgefühl* of Volkelt). Janet, who calls these phenomena psycholeptic crises, is inclined to oppose what he calls the simple explanation, that in some way these symptoms have something to do with disorders of organic sensations, because his careful search for alteration in this direction revealed nothing. What he regards as the common factor in these cases is a peculiar sense of incompleteness (*sentiment d'incomplétude*) in regard to perceptions, emotions, and actions, 'the mind does not carry out its processes to their normal completion.' He assumes that mental operations can manifest themselves in two different ways. They may bear 'upon abstract ideas, general ideas, imaginary conceptions and representations, and even upon the reproduction of past events.' On the other hand they may 'bear upon events which are present and real and produce a knowledge of complex events which are actually taking place in the universe at the moment; also where they produce reactions in us which are likewise perfectly real acts, that is to say, acts capable of determining modifications in the world as it exists.' While ordinarily these two sets of phenomena are regarded as identical, Janet claims that they differ in complexity and in the nervous tension which they require, the former requiring less tension, because they represent merely repetitions or syntheses, previously achieved, and because they deal with abstract elements, few in number and extremely simplified, the latter requiring greater tension because new syntheses and complex elements are constantly required and a constant adaptation to new situations. He concludes, therefore, that a lowering of cerebral activity would explain these phenomena. It should be added that Janet regards this merely as an hypothesis and urges that most stress be laid on the observation of facts. Whatever one might say about this hypothesis, it is not clear how it could explain the somatopsychic part of the symptom complex which is sometimes the most prominent feature. The fact that the most habitual sensations, those which inform us about the

¹Pick, 'Zur Pathologie des Bekanntheitsgefühls (Bekanntheitsqualität),' *Neurologisches Centralblatt*, 1903, Vol. XXII., p. 2.

various parts of our body, are no longer correctly valued (sometimes only parts of the body are thus excluded from correct valuation) is certainly not in accord with such an hypothesis.

Foerster, Alter and Juliusberger stand in their explanations on the ground of Wernicke and above all of Storch.¹ S. claims that the feeling of the reality of external objects and the projection into space depend upon the association of muscle sensations with sense perceptions. Foerster, therefore, thinks that the change is to be found primarily in a disorder of the consciousness of the body, an insufficient valuation of organic sensations, and secondarily in a disorder of the consciousness of the external world. The fact that his patient had a feeling of unreality about her own ideas he explained on the ground that these consist of memories of sense impressions and organic sensations. There is no doubt but that this explanation has much in its favor. Above all, it takes into account the frequent association of the somatopsychic and allopsychic changes, and it would also be in harmony with the fact that these symptoms present a close relation to emotional changes which latter may both succeed or precede (see below) them. Janet's claim that we find no real demonstrable disorders of organic sensations, even if it should prove to be absolutely correct, would be no argument against such an hypothesis, since such changes would have to be regarded like the agnosias as association disorders, and not as anæsthesias.

I shall refrain from going into the clinical side of these disorders; it may only be mentioned that according to Janet and Pick they occur frequently in epilepsy; according to Janet and Storch in psychasthenic and neurasthenic conditions. According to Janet they often form the basis upon which phobias and compulsive thinking arise. Storch states that they occur often in melancholia. In my experience they may be found in the various forms of depression, especially in the so-called involution melancholias; also in the depressions of manic depressive insanity where they may vitiate the prognosis; they may occur in the depressions of dementia præcox and general paralysis, though they may sometimes appear as independent affections. In general it may be said that they seem to be closely related to the depressive symptom complex (especially in its apprehensive form) not only in the sense that depression and apprehension follow them, but also in sense that the symptom complex here discussed may precede (or in manic depressive insanity replace) the melancholic syndrome.

¹ Storch, 'Muskelfunction und Bewusstsein,' *Grenzfragen des Nerven- und Seelenlebens*, No. X., Wiesbaden, J. F. Bergmann, 1901.

After I had sent off the foregoing review two articles have appeared which deal with the same subject, and it may be of interest to add these here.

The first article is by Deny and Camus ('Sur une forme d'hypochondrie aberrante due à la perte de la conscience du corps,' *Revue Neurologique*, May 15, 1905). The authors report a case with very pronounced abnormalities who had had similar attacks before. The present one developed after a brief period of confusion. The feeling of unreality was very extensive. The patient complained that the whole body was changed. This extended to the various parts, the limbs, trunk, and head, and she often said she felt as if the body no longer existed, and that when lying in bed she could not feel where the limbs were except when she rubbed them. She had no feeling of hunger but much thirst, yet after drinking she felt as if she had not taken anything. She claimed that after she closed her mouth she did not know where her tongue was. When waking up in the morning she said she did not know how the night had passed (I have observed a few times that such people claim that their sleep is different from what it used to be, that it is not real sleep). In regard to the outside world she felt that everything looked unreal, that hearing was different, smell, taste, touch lost: 'When I touch an object it is as if it were not I.' She said she was unable mentally to represent anything to herself. About her own acts she said, 'I do not feel it when I do anything,' and in general, 'I do not feel myself as before.' She complained of lack of affection towards her people, and of utter indifference. The general condition was one of agitation and depression. Like all other patients, she remained clear. Objectively no disorder of sensation could be demonstrated with the exception of a diminished pain appreciation, which as we have seen above is not uncommon. The authors decline, as we have done, to accept the hypothesis of Janet, and are in favor of that advanced by Storch and his followers.

The other article is a second contribution by Juliusberger.¹ J. reports briefly a case in which the feeling of unreality extended chiefly to the autopsychic activities, *i. e.*, to her own thoughts. But she also claimed that she had two selves, that sometimes she felt the one, again the other. She spoke of one, the more positive one, as being in her heart or in her chest, where it was bound up and pined for freedom, desired to live, that it was from there that

¹'Zur Symptomatologie der Melancholie,' *Monatsschrift für Psychiatrie und Neurologie*, May, 1905.

the thoughts and desires came. The other self she said was a negative one, that it was in the head, and there observed everything like a third person, but that it had no thoughts. She also said, 'It thinks up there, but it isn't I who thinks.' Again, "I repeat word for word what I hear, but it doesn't seem to be I. * * * It is as if one talked into a phonograph and it simply comes back. I don't hear, but I understand the sense." Or, she said that the thoughts had no connection with herself; or again, 'I have only a bodily feeling of myself, I have only a body.' This 'splitting of personality' J. wishes to explain by assuming a dissociation between the somatopsychic functions on the one hand, and the allo- and autopsychic on the other. He recalls Meynert and Wernicke, who regard the consciousness of the body, *i. e.*, the sum total of all organic sensations, as the 'primary self' which stands as an ever constant complex against the other contents of consciousness. In his further discussion J. tries to show that in reality the somatopsyche, the consciousness of self, and the conscious will are one and the same, and claims that while sensations and perceptions represent the becoming conscious of the completed reaction toward stimuli, the actual process, the activity of the nervous system itself, also becomes conscious as feeling of activity, this being the result of organic sensations and therefore the function of the somatopsyche.

J. finally seems to assume that the difficulty in thinking which his patient expressed in various ways is identical with the retardation of thinking so frequently found in certain states of depression with which often no feeling of unreality is associated. He is inclined to attribute this symptom to the same sort of dissociation, and he promises to show that much in the depressive syndrome will have to be explained on a somatopsychic basis. In a footnote he adds that in the manic states practically the same principles will probably hold. It is well in this connection to call attention to the fact that at the end of his former article J. suggests that it would be well to study whether or not pseudomelancholias, by which he means depressions without obvious psychomotor retardation, differ from true melancholias, that is, depressions with psychomotor retardation, in the fact that in the former the organic sensations of motion or their memory pictures remain in the 'waking consciousness,' while in the latter 'they sink at times more or less into subconsciousness.' In other words, he is inclined to attribute the retardation of motion, as well as that of thinking, both of which constitute prominent symptoms of those depressions which belong in the group of manic depressive insanity, to disorders similar

to that in the feeling of unreality sketched in the foregoing. Aside from the fact that J. brings no valid reason for this as yet, there exists much clinical evidence which seems to speak against such a view. Altogether it would seem wise not to generalize too soon in a field in which we still know comparatively little, a danger which Alter also has not avoided. However, in regard to J.'s point it is well to suspend judgment until we know what he has to say in the future article which he promises.

PSYCHOLOGICAL LITERATURE.

NORMAL AND ABNORMAL ASSOCIATION.

Diagnostische Assoziationstudien. I. Beitrag. Experimentelle Untersuchungen über Assoziationen Gesunder. C. J. JUNG and FR. RIKLIN. *Journal f. Psychologie u. Neurologie*, Vol. III., pp. 55-83, 145-164, 193-214, 283-308, and Vol. IV., pp. 24-67, with a preface by Professor BLEULER, Vol. III., pp. 49-54.

This remarkable piece of work and its continuations are no doubt the best single contribution to psychopathology during the past year. The difficulty in obtaining valuable data of sufficiently wide applicability from a study of sensations, of feelings, of memory, of will, leads to the study of associations as the fundamental phenomenon of psychic activity. As the type of association which would lead to most valuable results, the writers found that obtained with perfectly free scope and elimination of all aim-concepts. Strings of associations are too apt to lead to useless enumerations of coördinations and coëxistences.

The writers used a list of 400 words of 1-3 syllables, 231 nouns, 69 adjectives, 82 verbs and 18 adverbs and numbers, as simple as possible, chosen from every-day life and intermingled so as to avoid adjustment to any special reaction type. The word was spoken and the subject was instructed to utter the first word that would present itself. The time was measured with a stop-watch, from the chief syllable of the test-word to the reaction. Quite a few of the uneducated subjects had to be trained to really give the first reaction and to avoid certain special combinations or word-compounds after the fashion of certain games, and to get over a disturbing emotional stupidity or 'Schulstimmung.'

The first aim was the collection of a large material from normal individuals to determine whether there are any general rules in the reaction and any special reaction-types. Moreover, 'since attention is that delicate affective apparatus which first reacts in abnormal physical and mental conditions and modifies the results,' it was subjected to definite experimental influences. Thus, the material presented determines the laws of variation of associations within the range of the normal, and further, which are the direct effects of attention upon the

process of association, and especially whether the intrinsic value of associations decreases as it passes from the focus of consciousness.

Two hundred reactions were taken without further conditions, and at once classified, so far as possible with the help of the subject. The results were divided into a first and a second hundred; with many uneducated subjects fatigue asserted itself and the second hundred was obtained on the succeeding day.

Another series of 100 reactions was taken with the request that the subject should pay as much attention as possible to the introspection of the process (The A-phenomenon of Cordes) and yet react as promptly as before. After each reaction the subject had to describe the sum of psychological phenomena which were immediately produced by the perception of the auditory stimulus and the result was noted. Relatively few subjects even among the educated lent themselves to this task.

A third series of 100 words was taken the next day, while the subject had to make pencil-marks, about 1 cm. long, 60 per minute for the first 50 reactions, and 100 per minute for the second 50, following the beat of a metronome. In a few persons the acceleration was made after every 25th reaction, from 60 to 72, 100, and 108 beats per minute to avoid the effects of habituation. Thus each subject yielded 300-400 associations. In six subjects tests were also made in a state of fatigue, and in one just on awaking in the morning, and in another in a state of great irritation. The whole material consists of 12,400 associations in 9 educated men and 14 educated women, and 7 uneducated men and 8 uneducated women.

For the classification, Jung starts from the fact that we really deal with word-reactions which give a merely remote and incomplete picture of the actual psychical association and connection. Especially the uneducated fail very often to suppress real chains of association while the educated succeed better in yielding to the reaction without any special constructions.

Jung and Riklin use largely empirical principles, in the main following Aschaffenburg. It is necessary to consider not only the logical connections of test and reactions but also the fact that the stimulus and the reaction both being words, the mere verbal form may determine the reaction, and the fact that, with the uneducated, with patients at least, the system should allow of an approximately correct classification even without the help of the subject, such as is hardly feasible with the schemes of Ziehen, Mayer and Orth, and Claparède.

A. Inner association.

a. Coördination.

- a.* apposition — 1. by a common denominator
(lake — sea ; cherry — apple)
- 2. by similarity
(to spare — indulgence)
- 3. by inner relationship
(play — youth ; star — romantic)
- 4. by external relationship
(pencil — length ; sky — color)
- 5. by exemplification
(color — sky ; foreign — emigrant).
- β.* subordination — 1. specification
(tree — beech ; horse — the horse of Mr. X).
- γ.* denomination (cat — animal).
- δ.* contrast (pleasure — pain).
- ε.* coördinations not readily classified.
- b.* Predicative relations, judgments, qualities or activities include :
 - I. Noun and adjective, either as
 - a.* inner predicate (with real meaning) ;
 - 1. statement of fact,
(snake — poisonous, glass — fragile), or
 - 2. judgment of values,
(father — good, wood — useful)
 - b.* external, accidental or superficial predicate,
(water — wavy, salt — granular).
 - II. Noun and verb, in
 - a.* subjective relation,
 - β.* objective relation.
(at times difficult to differentiate from the coördination by example ; to polish — brass, is an objective relation ; to polish — shining metals, is a coördination by example).
 - III. Determinations of place, time, means and aim.
(go — to town ; to dine — at 12 ; strike — with a stick ; wood — for fuel).
 - IV. Definition or explanation.
(door — noun, star — celestial body).
 - c.* Causal dependence (pain — tears).
- B.* External associations — merely superficial connection.
 - a.* coexistence (ink — pen ; lamp — family ; ride — horse. Many associations with 'to write' are mere school reminiscences : pencil — write).
 - b.* identity.
 - a.* synonyms ; *β.* translations.
 - c.* verbo-motor forms.
 - a.* verbal connections acquired by practice :
 - 1. simple contrasts
(dark — light ; like — unlike) ;
 - 2. frequent phrases
(say — grace ; poor — church mouse).
 - β.* proverbs and quotations :
(eye — tooth ; liberty — equality ; to be — not to be).
 - γ.* word compounds or mere change of form :

1. toe—nail, piano—player, tooth—ache, or with repetition of word: simple—simpleton, tennis—tennisball.
 2. school—scholar; find—found.
 - δ. precocious reactions (to merely the first part of the word: dark red—light, fox-glove—dog).
 - ε. interjection (love—ah).
- C. Sound reactions;
- a. Completion of words (power-ful; New-York).
 - b. Sound (apply—apple; crack—creek).
 - c. Rhyme (heart—smart; hair—fair).

Aschaffenburg divided them further into rhymes with or without sense.

D. Residual group.

- a. Indirect association, intelligible only through the assumption of some link (especially in visual types):
 - α. Presence of a simple common link:

red—(flower)—fragrance; hay—(grass)—green; in these reactions the link is plainly realized by the subject. They are a symptom of displacement of inferior associations which nearly reach the threshold of the reaction, according to Claparède the result of competition of several intermediate associations, each of which is too weak to be conscious, or noticed.
 - β. Shifting associations by alliteration to a suppressed link:
 1. Centrifugal:

hair—(blond)—blue; Liebe—(Hass)—Fass.
 2. Centripetal:

malt—(salt)—vinegar; rosten—(Ross)—Pferd.

In all these cases the reaction is started before apperception is at work.
 - γ. Centrifugal and centripetal shifting by completion of the word, or verbo-motor association: normal—(solution)—filter; rat—(poison)—poisonous; Engel—(hard)—heart.
 - δ. Shifting through several links: ink—(red—li'tmus)—acid.

All these reactions are closely connected with changes of attention.
- b. Senseless reactions—(words without any connection, may be perseverations).
- c. Lapses (absence of reactions) occur most frequently with words which touch upon certain emotions or emotional undercurrents. They are evidence of more or less profound perplexity. In the series of test-words they should be distributed evenly so as not to vitiate the comparison of the first, second or further hundred of reactions.
- d. Repetition of the word (not including the occasional habit of repeating questions—usually an emotional phenomenon).

In addition to this analysis, the writers tabulate a number of special phenomena.

- A. Perseveration—the sticking to a word or to a complex: melt—hot, followed by slow—fire; cover—box, followed by rat—basket.

- B. Egocentric reactions: direct self-reference in: praise—for me; dance—I won't; or subjective appreciation in: idle—pleasant; piano—awful. They seem to be more frequent among men, less for personal desires, than in personal or subjective judgments.
- C. Number of repetitions of the same word as a reply.
- D. Verbal determination, the frequency of which is of special importance in certain abnormal states.
 - a. Use of the same grammatical form (nouns and nouns; adjectives and adjectives).
 - b. Identity of number of syllables (to estimate the influence of rhythm).
 - c. Phonetic coincidence.
 - 1. consonance—frequency of agreement of the vowel of the first syllable of the two words;
 - 2. alliteration—also in the first syllable;
 - 3. equal termination.

There is no doubt about the necessity of getting abundant experience in controllable healthy individuals before any such method can be profitably applied to patients. The detailed and full account goes a long way to familiarize the reader with the method of the authors. As an illustration of the final result of the summing up, the table of the experiments with a highly educated man of 28 is given.

In a brief summary in the *Centralblatt f. Nervenheilkunde u. Psychiatrie*, Vol. 27, pp. 556 to 557, August 15, 1904, Jung gives a few of the principal results in the following manner:

- 1. The educated have on the whole more external associations than the uneducated, consequently
- 2. The reaction time of the uneducated is a little longer than that of the educated (because they are less able to suppress special efforts at construction).
- 3. The principal source of the changes in the field of association is the changeable condition of attention.
- 4. The relaxation of attention causes especially a plain increase of all the inferior forms of association (merely verbal connections, additions to words, and sound associations). On the contrary an increase of attention leads, as a rule, to an increase of inner or intrinsic associations.
- 5. All psychic disorders which are especially marked by a deficiency of concentration show, therefore, an increased tendency to external and sound associations. This finding was corroborated by experiments with reduction of attention by being bored, by fatigue, or exhaustion in the sense of Aschaffenburg, by a recently experienced profound affect (in which the attention of the subject was inwardly directed to the persevering affect), certain forms of neurasthenia, of

Special Quality.	Normal.		Distraction.			Fatigue.	Sleepiness.	
	1st Hundred.	2d Hundred.	Internal.	External.			1st Part.	2d Part.
				1st Part.	2d Part.			
Coördination.....	9	13	4	10	12	10.2	2	—
Predicate.....	6	16	19	10	4	10.2	5	2
Causal relation	—	—	—	—	—	—	—	1
Coexistence.....	18	5	6	8	4	14.1	14	6
Identity.....	6	8	5	10	2	2.5	5	2
Verbo-motor type.....	54	52	56	46	54	53.8	40	51
Completion of word.....	1	—	8	4	12	2.5	2	2
Sound.....	—	—	2	6	2	—	4	5
Rhyme.....	4	4	1	2	8	2.5	20	21
Indirect.....	2	2	1	2	4	—	2	2
Senseless.....	—	—	—	2	—	3.8	—	—
Lapse.....	—	—	—	—	—	—	—	—
Repetition of word.....	—	—	—	—	—	—	—	—
Egocentric reaction	1	—	3	—	—	—	—	—
Perseveration.....	—	—	2	2	—	2	4	—
Recurrence.....	5	5	2	6	2	6	9	2
Equal grammatical form.....	73	47	47	54	46	63	59	60
Equal number of syllables...	53	45	49	46	42	44	61	58
Alliteration.....	7	6	5	10	4	4	17	9
Consonance.....	15	23	16	24	20	5	32	36
Equal termination.....	19	15	9	18	18	14	33	36
Inner associations.....	15	29	23	20	16	20.4	7	3
External associations	78	65	67	64	60	70.4	59	59
Sound reactions.....	5	4	11	12	22	5	27	32
Number of associations.....	100	100	100	50	50	78	78	78

(In the tabulation of the results with patients, it is obviously unnecessary to make all the above discriminations unless there should arise special indications. The points of differential importance will be brought out in the reviews of studies with the imbecile, epileptic, hysterical, manic-depressive, etc.)

senile dementia, of progressive paralysis, and by the flight of ideas of various origin.

6. The cause of sound associations in manic flight is the disorder of attention and not the motor excitation as Aschaffenburg thought.

7. By artificial reduction (splitting) of attention, a mode of association is produced which cannot be differentiated on the surface from that of flight of ideas, of fatigue, of acute alcoholism, etc. (marked

tendency to external and sound association). Actual motor excitation was completely excluded by the arrangement of the experiment.

This brief summary by Jung hardly does justice to the numerous hints in the discussion of individual persons and in the differentiation of reaction types. To the brief notes inserted in the review of the analytical classification I add here :

While, among women, the inner associations are numerous and even larger in the second hundred, there is certainly an increase in predicative connections, and it would seem that with the increase of (verbo-motor) sound reactions and of residual types, there is a decrease of the congruity of grammatical form.

Prevalence of egocentric reaction is probably connected with a tendency towards perseveration, especially when there are reactions of marked emotional tone.

Men have nearly twice as many indirect associations as women, also a higher average of egocentric reactions, especially in the form of judgments (with a fairly parallel number of perseverations) and a slightly greater number of sound reactions.

The less educated (attendants) with their greater feeling of duty of attention showed more frequent correspondence of grammatical form and number of syllables between the two words, fewer senseless reactions, a greater number of coördinations, coexistences, only half as many egocentric reactions, only one seventh of the number of sound-reactions of the highly educated. Hence the above conclusion concerning the importance of attention. The word is apt to have the meaning of a question to them.

Individual dispositions assert themselves in two well characterized types :

1. A type with frequent use of subjective, frequently emotionally accentuated reactions (personal memories) ;
2. A type with more objective impersonal reactions.

In the first type, Jung and Riklin distinguish three groups of preponderant traits :

(a) A type which is apt to be reminded of some constellation or complex of distinct emotional value; the emotional color of the first word rouses the memory of the complex and influences the reaction, *e. g.*, by the desire not to betray a secret undercurrent: complex constellation type. Even in persons with great self-control, the existence of such complexes is apt to be betrayed by prolongation of the reaction-time, unusual construction (in the form of a sentence, frequent use of the definite article, etc.), by repeated and not otherwise accounted for

superficial associations to similar words (phenomenon of absorption of attention by the complex), by lapses, by perseveration (in the reaction to the word following the one which arouses the complex), occasionally by repetition of the word, or by peculiar indirect associations in which the following first word is mistaken in the sense of the complex: Mitleid-arm; gelb-(geld, referring to 'arm')-viel. Excellent instances of this type are given on pp. 204-214, 284-288, and Vol. IV., pp. 41-43; an excellent instance of indirect association, Vol. IV., pp. 50-51.

(b) A type in which the first word recalls an individual memory of some fact of daily life — simple constellation type.

(c) The egocentric form of the predicate type which reacts with an attribute of the first word.

No fundamental difference could be established between the sexes. For women the inner associations were slightly more prevalent, and the influence of distraction less readily obtained; especially the indirect associations are very rare.

The change of each association type under the influence of distraction is fully discussed, also the remarkable resistiveness of the characterologically most interesting and fundamental predicate-type (with its large number of egocentric reactions and relatively large number of lapses).

The influence of the grammatical form of the stimulus-word on the reaction is rather striking. Verbs seem to call for nouns in all the groups except the male attendants who search for a similar verb; most of the reactions are inner associations. The adjectives have a similar influence on the type of reaction. The predicate-type reacts to verbs largely with nouns, all the non-predicate types react with twice as many verbs to verbs, but in all the internal associations to verbs are 16-17 per cent. above the general average of internal associations. The predicate-type associates even more nouns than adjectives with adjectives; in the non-predicate types the adjectives are very numerous.

Of the practical application of this method of association studies, there are already some studies by K. Wehrin, Jung and Riklin, on idiocy and imbecility, on epilepsy and on hysteria; and there is a large material on dementia præcox in preparation. It is difficult to say whether the method will need much transformation to be as efficient as possible in psychopathology. Even in the present form, it is a great step towards systematic objectivity in a field in which impressionism has so far been considered as sufficient as the color of the con-

junctiva as a measure of anæmia before the study of a drop of blood had become a matter of routine.

From all that can be seen so far from this method of study, it would seem to be destined to form a very essential link between the excessively quantitative tendencies of a great deal of laboratory psychology and the excessive tendency to measure symptoms in mental disease merely by the anomaly or absurdity of the content. It studies strings of activities and opens a more optimistic outlook for the analysis of developments and characterization of diseases from what is going on. It aims to specify the permanent determining factors in the course of the psychological chain, and puts at our disposal concrete data which are bound to be better material of study than the impressions on which the alienist has to depend to-day. It brings us nearer a conception of the actual multiplicity of psychic activities, and whether or not Breuer and Freud's theory is going to play the important rôle which Jung and Riklin's studies point to in many places, the concrete experiences will, nevertheless, do a great deal to eradicate much of the mysteriousness of the activity of 'sub-conscious' undercurrents. We have reason to hope that a certain pessimistic attitude concerning scientific penetration into psychological analyses will be dispelled, and that the aversion to psychological analyses shown by Kraepelin's school in its fatalistic hypothetical conception of disease-entities will no longer be forced to ascribe to any such attempt an inevitable fault of character, such as I referred to in Vol. I., page 237, of this BULLETIN. A. M.

Ueber die Assoziationen von Imbecillen und Idioten. K. WEHR-
LIN. Journ. f. Psychol. u. Neurologie, Vol. IV., pp. 109-
123, 129-143.

Wehrlin reviews first the study of Wreschner, who had worked with Sommer's scheme and found prevalence of adjectives, poor quality of associations and prolongations of reaction-time, open to improvement by practice. Sommer emphasizes the poverty of scope of associations. Fuhrman found idiots unable to produce subordinated and subordinating concepts.

The examination of 13 cases, 17-68 years old, is reported with examples of each case. Wehrlin found a great prevalence of replies with a sentence, or at least several words (school-habit, or assumption that the word implied a question), with a tendency to definitions; instead of the direct utterance of the first word presenting itself, the patient speaks from a construed constellation.

The definition is in its simplest form a tautological statement (cat—

kitten; mountain — the high mountain), or a formal statement (prison — consists of cells where one locks up useless people), or the word is subordinated to a wider concept, either appropriately (cat — domestic animal; table — furniture), or insufficiently (head — part, tree — thing, father — a man), or the too general term is made more definite by a term expressing place or purpose (cherry — garden thing; star — celestial part). Or the definition is an expression of time, place, means, end, origin, etc. (book — to read), or it gives the chief quality or activity (bird — flies). If the first word is an adjective or verb, the second word is usually illustrative (swim — the fish swims; blue — the sky). Examples, of a more or less general or more special, especially subjective nature, are illustrated by: sick — I have been sick; pay — that is when you work in a mill. Beside this formal aspect, the results of Wehrlin's test show intrinsic limitation of thought, often enough of a ludicrous character.

A. M.

Analyse der Assoziationen eines Epileptikers. C. G. JUNG.
Journ. f. Psychol. u. Neurol., Vol. V., pp. 73-90.

The epileptic character shows:

1. Intellectual dementia, slowness of psychic reaction, circumstantiality, reduction and poverty of range of ideation, poverty and stereotypy of speech, and frequently abnormal prevalence of imagination; and

2. Emotional irritability, moodiness, marked egocentric effusiveness of all intellectual feelings, especially religiosity.

These traits are usually much less developed in cases with few attacks. Hence the efforts of Colucci and Breukink to determine special ergographic curves, and Fuhrmann's test with associations. Fuhrmann noted prevalence of predicative association and of the egocentric factors; moreover, especially in the beginning of tests, random association. (The latter occur in all defectives in a state of 'emotional stupidity' or perplexity.) In his second case, with four repetitions of the tests within eight months, there was marked limitation of the scope of association and monotony of reaction. Comparative tests in two idiots showed that the latter had no supraordinated (collective) notions. (Wehrlin found them at least primitive in idiots.)

Riklin established in epileptics perseveration in content of reaction and in grammatical form, marked egocentricity, personal constellations, frequent emotional guidance of the reactions and poverty of scope of ideas.

Jung and Ulrich have studied 158 epileptics with 18,277 reactions. Every test is preceded by some instructions, that a word would be

called out and that the subject should reply at once, without any meditation, with the first word or idea. It is especially necessary to put the patient at ease, and to dispel the emotional stupidity, or any strained effort to limit the type of reply to one word or any special kind of response: each subject should be allowed to find the most natural form. The list of words used consists of 75 concrete and 25 general nouns, 50 adjectives and 50 verbs, in the sequence: noun — adjective, noun — verb.

The present report is a complete analysis of one typical case, free of idiocy or imbecility: normal development and efficiency as a mechanic until his wife developed a psychosis and died, when he was thirty years old. Then transformation of character, tramp-life, thefts, alcoholism, delirious episodes, absences; few convulsions. Jung gives in full the account of 65 consecutive associations with time-measurement and interweaves his interpretations.

He sums up his results as follows:

I. Traits in common with the associations of the normal:

(a) The patient adjusts himself to the meaning of the first word, as the uneducated subjects generally do; consequently there are no superficial associations.

(b) The associations are partly determined by a constellation of a morbid complex.

II. Traits in common with the associations of imbeciles.

(a) The adjustment to the meaning of the first word is so intense that a large number of the associations must be explained as 'explanations' in the sense of Wehrlin;

(b) The associations have the form of a sentence;

(c) The reaction times are considerably lengthened as compared to the normal;

(d) The frequent repetition of the first word.

III. Peculiarities different from the normal or the imbecile.

(a) The 'explanation' or definitions have a remarkably clumsy and circumstantial character, which shows especially in the tendency to corroborations and additions to the reaction. The first word is often repeated within the reaction;

(b) The external form of the reaction is not stereotyped or limited, with the exception that the *egocentric* formulation is especially frequent (31 per cent.);

(c) Frequent emotional relations which are but slightly covered up (religious moralizing, etc.);

(d) The reaction times vary most *after* the critical reaction. The

abnormally long times are therefore not found with specially difficult words, but in places which are determined by a persevering emotional tone. One might, therefore, infer that in this subject the emotional tone asserts itself probably later and more strongly, and longer than in the normal.

There are, however, many forms of epilepsy, and Jung ascribes to this statement hardly more than casuistic value. A. M.

Ueber die diagnostische Bedeutung von Assoziationsversuchungen bei Hysterischen. F. RIKLIN. Centralbl. f. Nervenheilkunde u. Psychiatrie, August 15, 1904, pp. 554-556.

In this brief review, Riklin starts from certain reaction-types in the normal, the type with an open complex of strong emotional value (associations tending to feed on an emotional experience), the type with plainly displaced or dissociated complexes, and the type with merely slight retardations of reactions. The types with a dissociated complex in the sense of Breuer and Freud, is marked by the use of quotations, of the definite article in the reaction, reaction in the form of a sentence, perseveration of a concept once roused, assimilations of the stimulus in the sense of the complex, conscious or unconscious misunderstanding of the stimulus, frequent repetition of the same reaction in one sitting, occurrence of lapses or absence of all verbal reaction, and mimic reactions (flushing, pallor, laughing, crying, movements, low response to certain words), and especially slowness of the reaction, sufficient to rouse suspicion in otherwise apparently trivial responses. The hysterical type is an exaggeration of the type with a dissociated complex; it shows more complete gaps (lack of all verbal reaction), prolonged reaction times, more sentences, quotations, perseverations, mimic reactions, and much more reactions pointing to undercurrents. The complexes are more independent, and, as patients said, act as the small soul in the large one poisoning it when it awakes, or the personified evil spirit, much more personal, apt to usurp a motility of its own, etc. A. M.

Analytische Untersuchungen der Symptome und Associationen eines Falles von Hysteria (Lina H.). FRANZ RIKLIN. Psychiatrisch-neurolog. Wochenschrift, No. 46-52, 1905.

Riklin has subjected a case of hysteria with preëminently physical symptoms to a searching analysis following the method of Breuer and Freud.

The patient, born 1876, is the daughter of an alcoholic, guilty of repeated incest with the two sisters of the patient and the patient her-

self. About the age of twelve she was in a hospital with an hysterical heart-disorder; she also had attacks of hysterical rigidity. At seventeen she had an illegitimate child, another one at twenty (during the second pregnancy her father attempted incest); after that she served in hotels and frequently prostituted herself; a third child was born October, 1897, in the woods and died for lack of care; the patient served one year in the work-house, considered guilty of the child's death. A society for discharged female criminals provided a place for her; she worked well but soon became depressed, had ideas of suicide, and was committed March, 1899. She was a rather striking person, delicate, pale, with a certain refinement, not very bright, but without symptoms of imbecility. She coughed occasionally without any objective cause or bacilli in the sputum; she complained of ovarian pain and had slight retroflexion and reposition of the uterus (1900); she had prolonged attacks of vomiting, and, 1903, hyperacidity of the gastric contents during a period of anorexia. In contrast with these scanty objective data there was a flood of subjective complaints: great fluctuations of elation and depression and moroseness; pains in the side, sleeplessness, inappetence, with craving for therapeutic attentions; between the exacerbations she worked well, and was jolly, only to relapse again. Especially at the time of menstruation, she demanded to be discharged, and to get all kinds of attentions.

She was successfully hypnotized on account of insomnia; she showed amnesia and fine post-hypnotic effects. The analysis was begun spring, 1903, during a prolonged hypochondriacal exacerbation following a dance. Riklin succeeded in tracing the individual symptoms to the sadly rich fund of experiences in her sexual life made accessible by hypnosis, while in the wake condition she had merely trivial explanations.

In examining such a symptom as her frequent vomiting, Riklin would first get at some of the more recent determining causes, but finally, after much resistance, crying and reaction of shame, elicit the more fundamental and otherwise 'forgotten' episodes. After such a reaction the symptom would disappear. The vomiting would come in attacks, at times to an alarming extent, resisting all efforts, but leading to remarkably little loss of weight. It was possible to show that the attacks were not infrequently the sequel of masturbation, when she thought simultaneously of definite individuals and connected it with a feeling of disgust. After a visit by her father, she began to dream of the incest and would become morose and vomit. Her distaste for milk was traced to an unsavory episode in a stable at the age

of about eleven. She gave a partial account in a first hypnosis, and was much worse for a week after it; then, in a second hypnosis, she gave a complete account of the happenings (contamination of the milk during an assault by a cousin), and after that she drank milk freely and never vomited from it. A distaste for meat was accounted for by successive strata of reminiscences of a similar nature; first by her having got bad meat one day, then that she took care of a patient with venereal sores that day and thought, without reason, that the meat had a bad odor; finally she related an exhibition scene that had taken place during a lunch, which she associated more definitely with eating meat. Later the patient again relapsed one day, and asked for eggs instead of meat; disappointed over not being visited by her sister, she recalled a visit by the father in torn clothes, and that had suggested the exhibition, and thus revived the disgust of meat. Since the hypnosis which brought out this explanation there has not been any relapse. The pains in the chest, certain attacks of pain in the back with vomiting, etc., a period of abasia, pain in the right arm, heart symptoms, were traced superficially to masturbation, and finally to certain events connected with an abortion. Attacks of ear and headache had their link — unappreciated by her wake consciousness — in a jacket she would wear on cold days and which she had worn when she gave birth to her third child in the woods, and actually had earache. She would explain the pain by the cold weather, but it was easy to show that the jacket was the eliciting factor of this recurrence of symptoms.

Menstruation would be most apt to bring about relapses and new traits of displaced concepts, of which the original gives many interesting examples.

As a sample of new symptoms I merely mention — pain in the heel when she ran away from a nurse in fun and the latter twitted her on some love-affair, or even better, pain in the hip when a nurse, who had her arm around her waist and hip, made some sexual allusion. The patient had evidently used the mechanism of dissociation and 'conversion' for most unpleasant events since the age of ten. Notwithstanding slight subjective effort to get better, the patient improved lastingly and considerably, and might have been discharged but for fear of her moral instability.

In the general part, Riklin furnishes some evidence of the veracity concerning the various sexual traumatismes and other events. He considers the control sufficient to exclude pseudologia. There were no contradictions.

The exhaustion of the wide range of symptoms and traumatisms took an enormous amount of time in this patient. In others, in more casual than constitutional forms, the method is much more directly beneficial.

The principle is that some emotional (frequently sexual) traumatism is suppressed, never thoroughly reacted to or disposed of; the topic becomes split off, and replaced by or converted into the various symptoms of disgust for certain foods, pains, and other physical and mental symptoms, in this case largely physical complaints. Usually the patient is no longer aware of the connection of such symptoms with a dissociated complex; she gives superficial and erroneous explanations in her wake state. The affective attitude of the patient concerning what is being disclosed by search, is peculiarly inadequate, a fact that causes numerous difficulties in the examinations of such patients. Riklin quotes the case of a boy of five who had gone through a nocturnal delirium, and the next day spoke freely about the toys, etc., but affected sleepiness or asked for books or water when he was questioned about the night. Lina H. often remarked she had no time to think further, became distracted, and indifferent as to the partially recovered data; at times she strongly resisted further inquiry with the force of a catatonic negativism, even after a change of expression had passed over her face such as usually indicated the reacquisition of a new point. An incomplete 'reaction' would occasionally aggravate the patient's condition; resistance (in the form of indifference, etc.), would greatly delay the inquiry; only the complete reaction (*i. e.*, recapitulation and true emotional reaction to the event of the traumatism) would bring lasting relief.

Of late Freud has developed a method of analysis in the wake-state, following principles laid down in his work on the interpretation of dreams and interpretation of forgetfulness and slips of speech, etc.

Riklin next shows how *association tests* furnish excellent material for the discovery of undercurrents and, indeed, a conception of the phenomena of conversion and hysteria generally which promises fair to throw more light on all the psychogenous disorders, and even dementia præcox. Sets of associations with notation of reaction-time and other peculiarities were taken in the wake-state and in hypnosis and compared.

Referring to his communication concerning the diagnostic importance of association-tests in the hysterical (see p. 253), he furnishes excellent illustrations of the frustration or retardation of associations wherever an undercurrent complex was evoked. To 5 out of 100

words, the patient could not find any association, would claim that she could not understand, or be surprised that she had no thoughts, but in hypnosis the traumatic complex could be found: To 'lang' she found no word, and finally in hypnosis 'langsam,' a mere superficial addition — because she had lately read of a painter Lang who reminded her strongly of her first love-affair with a painter and a number of 'traumatic complexes.' To 'bö's' (disagreeable) she had been on the point of associating 'artig' (pleasant), but the word slipped away and she had to think how disagreeable and irritable she had been for some time (during an exacerbation). This is a phenomenon of wide importance in psychopathology, the blocking of ideas analogous to the much more radical 'loss or withdrawal of thoughts' of dementia præcox which one of Jung's patients described by the word 'Gedankenentzug' which seems to be so descriptive that such a patient understands it at once as well as one with hallucinations understands the inquiry for 'voices.'

In a great number of reactions, the patient showed retardation (a symptom falling short of complete absence of reaction, but pointing to an obstacle). Not infrequently she gave a fairly quick but trivial association in waking, and a retarded one in hypnosis, with some definite blocking complex at bottom. In other instances associations are indirect with oblivion of the link (analogous to the replacing of a reminiscence by ear-ache owing to association by a link of original coexistence, or some similarity); the verbal reaction appears in form of a quotation, or of a sentence, or a sound association, or a so-called mimic reaction, such as laughing, crying, trembling, pallor, unrest, brilliancy of the eyes, change of expression, all apt to point to split-off undercurrents. Instances are given from this and other cases.

The whole experience with hysteria leads Riklin to replace the somewhat artificial 'short-circuit' simile of Breuer and Freud, the discharge of the original affect in an abnormal *reflex* instead of the normal reaction, and the return of the abnormal reflex by every reminiscence which would touch on the affective complex. In L. R., the smell of burned flour happened to exist when the complex occurred which was later displaced; this odor would be revived by what would normally have revived the displaced complex. The vomiting, the ear-ache, etc., in Lina H. are similarly determined by their original coexistence. Breuer and Freud would think of a conversion of a psychic excitation into an abnormal physical reflex, whereas Riklin would replace the idea by viewing the available data from the point of view of association.

Even in the normal Riklin and Jung have found the existence of inhibitory complexes. The traumatic complexes of the hysterical become automatic complexes, split-off from consciousness owing to incompatibility and consisting of the concept and its affect. When aroused, only part of the complex becomes conscious, and is then felt as independent, not in its true connection, but with plausibly invented explanations, which do not really explain why the patient should be so upset. An hysterical patient claimed to be driven to suicidal thought by a chilly sensation in her lower extremities. This serious reaction became intelligible through the connection of this symptom with a gynecological examination, thought of sterility, marital indifference, etc. In such instances the affect itself is not converted and remains active. In other instances the affect is quite altered, as in the case of an hysterical student whose lover had shot himself in the temple, and who laughingly associated the indifferent word *Gummischuhe* with the word 'putzen' (rub off), while the word suddenly reminded her of the blood on the temple, or who in order to play pranks on the physician would be led to suddenly pop a rose-leaf on his temple. In other instances the touch of the undercurrent would merely lead to 'withdrawal of thought' with the appearance of indifference or distraction. In all these conditions, the dissociated complex acts as an automatism. Its conscious ventilation takes away the automatic nature, and subjects the topic to the 'Usur' or wearing off or assimilation of experience. To react in presence of another person seems to mean more, as in the relief afforded by communication of non-dissociated experiences in personal confession, etc.

Since the dissociated complexes reach the surface merely through trivial associations of coexistence, similarities of the loosest character, Riklin describes them as surrounded by a shell of such superficial concepts; stimulation of the undercurrent rouses merely this surface, deceiving even the patient; the faulty connections become habitual and often difficult to eradicate; hence the dependence of the prognosis on the age and habituation of the symptoms, and the formulation of a fundamental feature of hysteria: dissociation and automatic, independent activity of the dissociated complexes. From this view-point Riklin creates definitions of a number of clinical types of hysteria:

1. Hysteria with physical symptoms (conversion-symptoms): the complex is dissociated and replaced by the superficially associated physical symptoms and symptomatic acts. Association tests furnish an abundance of such superficial connections.

2. Imperative neuroses (*Zwangsneurosen*) show a similar splitting

off, with persistence of the affect. The associative complexes are much more closely related to the fundamental trauma, more painful, and their consequences more serious.

3. Hysterical dreamy states with delusions of fulfilment of the very opposite of the calamity of the fundamental complex. These and other hysterical deliria are usually elicited by something touching the sore point; they are usually followed by amnesia.

4. In dreamy states with Ganser's complex, an attitude of ignorance (or of the characteristic hysterical indifference?), such as is so often seen in reference to the dissociated complex, even spreads over facts which have nothing to do with the complex; the patient gives absurd answers to the simplest questions.

5. In trances, the dissociated complexes may be developed into complete secondary personalities (Flournoy's patient with the personality from Mars).

6. In pathological hypnosis it is difficult to control suggestions which have a relation to the undercurrent, both with regard to giving the suggestion at all, and with regard to controlling its effects.

In the abasia of fright-neuroses the dissociation of complex and symptoms may not be so complete as in the above 'hysteria with physical symptoms.' Hence the frequent gradual correction.

Riklin also promises outlooks towards a psychopathological analysis of graver psychoses, such as dementia præcox.

Two charts of reaction-types of the normal and the hysterical patient accompany the very instructive study. A. M.

BOOKS RECEIVED FROM JUNE 5 TO JULY 5.

The Approach to Philosophy. RALPH BARTON PERRY. New York, Charles Scribner's Sons, 1905. Pp. xxiv + 448.

Science and a Future Life. JAMES H. HYSLOP. Boston, Herbert B. Turner and Co., 1903. Pp. x + 369.

Manual of Psychiatry. J. ROGUES DE FURSAC. Trans. by A. J. ROSANOFF. Ed. by JOSEPH COLLINS. New York, John Wiley & Sons; London, Chapman & Hall, 1905. Pp. xii + 352. \$2.50.

Psychiatry: A Text-book for Students and Physicians. STEWART PATON. Philadelphia & London, Lippincott, 1905. Pp. xii + 618. \$4.00.

NOTES AND NEWS.

DR. H. W. STUART has been elected to the chair of philosophy in Lake Forest University to succeed Professor Smith, whose resignation was due to illness.

DR. AUGUST HOCH, of McLean Hospital, Waverley, Mass., has taken the position of First Assistant at the Bloomington Asylum, White Plains, N. Y.

THE following have been appointed preceptors in philosophy in Princeton University under the new tutorial system: Roger B. C. Johnson, of Miami University; Wilmon Henry Sheldon and Adam Leroy Jones, of Columbia University; Walter T. Marvin, of Adelbert College; and Edward G. Spaulding, of the College of the City of New York.

PROFESSOR HUGO MÜNSTERBERG has gone abroad for the summer, to return to America about the middle of September. His new book, 'The Eternal Life,' is being brought out in England.

A SPECIAL summer meeting of the American Anthropological Association will be held in San Francisco on August 29 to 31. After the meeting there will be an excursion to Portland, Oregon, to visit the Lewis and Clark Exposition. Here an informal meeting will be held, at which addresses will be made. Members intending to be present are requested to notify the Secretary of the Local Committee, Dr. A. L. Kroeber, Affiliated Colleges, San Francisco. Mr. G. G. MacCurdy, Secretary of the Association (237 Church street, New Haven, Conn.), will give information as to special railroad rates.

THE PSYCHOLOGICAL BULLETIN

APHASIA.¹

BY ADOLF MEYER,²

New York Pathological Institute.

The problem of aphasia, a few years ago, has been treated monographically by a number of writers, such as Wyllie, Bastian, Bramwell and Elder, and, in this country, Langdon and Collins, by Miraillié, Pitres, and Bernard, in France, and the treatises of Mills, v. Monakow, and Dejerine added much of importance to the standard descriptions of Kussmaul, Lichtheim, Ross, Gowers and the pupils of the Salpêtrière. Aphasia has since passed into one of those stages of self-sufficiency which are so apt to retard progress because of excessive faith in the theoretical constructions and the idea that far more is solved and proved than is really the case. Throughout the literature on aphasia certain 'elements' of psycho-physical correlation are taken for granted, often enough without much concern as to the strength of their foundation, merely for plausibility's sake. The appearance of a review of the field by Wernicke furnishes some material concerning the problem of elements supported by the available data of aphasia, because Wernicke is a decided localizer, and yet strongly enough opposed to reading and writing centers to subject them to an extremely laborious and searching discussion. Wernicke gives in this 'lecture' very interesting and clean-cut statements of points which should be within reach of every worker in this rather neglected field; and also psychologically instructive illustrations of his method of combination of analysis and reconstruction, and, with it all, he rouses a new hunger for further casuistic evidence and for greater clearness concerning the concepts with which one works, or which one has reason to think are aroused in most readers.

¹ Wernicke, C., *Der aphasische Symptomencomplex*. 13th lecture of Die Deutsche Klinik (Berlin and Wien, Urban & Schwarzenberg, 1903), Vol. VI., pp. 487-556.

² This number has been prepared under the editorial care of Dr. Meyer.

The central issue of Wernicke's lecture is the relation of spoken and written language and the bearing of the 'word-concept' or 'word-notion.' He begins with a brief statement of a case of so-called pure or isolated agraphia (reported in full, *Monatssch. f. Psych. & Neurol.*, April, 1903). The patient is a woman forty-six years old; the symptoms had developed within nine months, first slowly with increasing weakness of the right hand, then with three more acute exacerbations; the second one brought a transitory loss of speech, leaving slight anarthria, and the third one a permanent picture of right hemiplegia and profound sensory disorders of the entire right side, and complete loss of spontaneous writing; only once the patient had been able to draw, under dictation and special urging, the letter 'a' and the figures 2, 3 and 4. Understanding and speech were perfectly normal, even the reading and understanding of letters and figures and words and of outlines and pictures. Any attempt to write — with chalk and blackboard, *i. e.*, with such movements as the right hand had not lost in the hemiplegia — led to a striking perplexity and expression of exhaustion.

It would seem very tempting to assume that such a condition of 'pure agraphia' would be referable to the incapacity of a special writing center, a loss of the memory of how to write words, just as a lesion of Broca's center is supposed (also by Wernicke) to lead to a loss of the memory of the movements necessary for speech. Wernicke gives, however, good reasons why the accepted views about a speech-utterance center should not be generalized, and that the assumption of a writing center would be premature, if not really erroneous. He predicts a lesion largely of association-paths (the centrum ovale underneath the posterior angle of the island).

Wernicke's historical sketch illustrates splendidly individual differences in the psychology and methodology of investigation. Meynert is given a very prominent position. His teachings are said to have given the clinical and experimental data of Broca and Hitzig the real foundation and to have furnished Wernicke the material for the assumption of a sensory speech center in the first temporal gyrus. 'A happy coincidence soon corroborated this supposition by two autisies' — an excellent illustration of how constructive imagination sharpens the attention needed for discovery. The discrepancy between Broca and Trousseau became intelligible, and the data seemed sufficient to attempt, with the help of diagrams, a synthetic reconstruction of the functions decomposed by the experiment of nature.

Just what should be assumed as safely established elements for

such reconstructions was probably considered too easy a matter at first. Wernicke thought of explaining all the facts out of the function of two centers and their connection, out of some data from the method of learning a foreign language, and the acquisition of language by the child — unfortunately a field of speculation rather than of safe knowledge even to-day, — and out of the rough clinical and localizatory experiences in aphasia. The sensory word center is the place where 'sound-images' have their nerve-cells or cortical elements. He thinks that the sound-appreciation is the first acquisition, to be followed by the acquisition of appreciation of its sense, or 'secondary identification.' What happens in learning a foreign language supports this differentiation. In connection with the word-sound concept, the child acquires a word-utterance concept by manifold practice; and the firm connection of the two is identified with the possession of the word-concept or *word-notion*, or what the French call 'internal language.' (Special decomposition of the words into letters is considered a secondary process.) The acquisition of the word-notion or word-meaning is the most important process in learning a language, and, for correct use of language, the integrity of 'both the sensory and the motor component' of the word-meaning would seem indispensable. Wernicke does not, however, follow Bastian in assuming that all speech function is a recapitulation of how words are acquired (a view which makes the most of the supremacy of the word-hearing center); he claims that after destruction of the sensory center articulated language is preserved; the speech-impulses from the entire remaining cortex reach the 'word-notions' directly, and, where the latter are mutilated, the speech-movement images, so that articulated language remains, though defective owing to loss of the regulating influence. These data 'should be sufficient to understand the clinical picture of sensory aphasia; the chief symptoms can readily be derived from them.'

The scrupulous reader could hardly share such a faith in the safety and definition of the 'elements' offered. For 'sound-images' he is referred to the 'cortical elements of the sensory speech-field' without an inkling as to how they would work. The word-notion is said to have its substratum in the connection of definite elements of the sensory center with the corresponding definite elements of the motor center — a far-reaching claim, considering that there is not, as yet, any evidence of subdivision of the 'center.' Something of a substratum with a 'word-notion' is admitted to persist outside of this complex of direct connections, because destruction of the sensory center

does not necessarily abolish articulated speech or utterance. Wernicke is not explicit as to the make-up and localization of the substratum and nature of the 'word-notion.' He merely says: "Such a firm connection of memory-images which belong together constitutes the essence of 'Begriff' (of the idea, concept or notion)." The question is whether that which lies outside of the speech-field should or should not have a definite share in the 'word-notion.' This is, undoubtedly, a crucial point for any attempt at explaining language in terms of activity of special cortical *elements* of clearly limited speech-centers. Considering the revival of difficulties of histological definition of 'nerve-elements,' and the logical or verbal rather than functional abstraction of 'elements' in speech function, it seems hazardous to promise the possibility of deduction of the picture of sensory aphasia from the few elementary conceptions given. It should certainly be clearly understood that, so far, we can only contrast very broadly the apperceptive and the emissive functions as Ross called them; and that a discrimination of the actual 'elements' and the concept 'word-notion' is a merely temporary contrivance.

Wernicke's characterization of the clinical types is lucid and definite, and rendered here for comparison with the claims of other writers. He begins with *sensory aphasia*: Although there is no deafness or not enough to account for the disorder, the patient presents a defect of understanding of the word-sound and of the word-sense, as far as the patient depends on the interpretation of sound, while gesture and non-auditory signs are easily grasped (and must be guarded against in tests!). Articulated speech is preserved and even excessive, 'perhaps owing to the numerous misunderstandings.' "For although the patient uses a fairly rich vocabulary and good form of speech, he frequently blunders in the choice of words, and even uses wrong or disfigured words without being aware of it; under affect he usually speaks better."

Objects shown are usually wrongly named, often with paraphasia. The confusion of words in spontaneous speech may reach the degree of true unintelligible jargon-aphasia. What the patient replies does not start from words heard; loss of understanding of the word sound necessarily also frustrates repetition. Written language, depending on the word-concept or internal language, is always strongly affected in sensory aphasia. It is, however, not well studied, since it is not common property of all persons. *The onset* is usually acute, through occlusion of a vessel, usually with very slight shock and often without any hemiplegia. As to prognosis, Dejerine thinks it to be a lasting

defect; Wernicke, with most writers, accepts *restitution by reëducation* from ordinary life; difficulty in the understanding of rare words — he mentions vertebral column, knee-pit, arm-pit — and also in the *naming of objects* is the most persistent residual. The restitution of *written* language is not sufficiently studied to allow of generalization.

With a little consideration one is struck by the haziness of the elements, loss of which should account for the variations in the extent of individual clinical differences, the varying affections of the word material or word-concepts, and the individual differences in restitution, and such matters as the difficulty of naming objects after recovery of spontaneous speech. It is also striking how sadly deficient the literature is in such a simple matter as a good description of the accurate extent of lesions in terms which should stand the critical attitude of a Flechsig. With all the observations collected by Miraillie and Bastian (Wernicke does not dispose of all the cases opposed to his views), we still are in a very vague position, far from being able to deduce the concrete symptom-complex from a simple scheme.

Motor aphasia or aphemia is 'equally easy to describe.' (1) Articulated language or the mechanism of articulation is 'forgotten'; hence there is mutism with but few residuals, often only of senseless syllables or words, and even these are not used at will but automatically (recurrent utterances). In emotion or in sleep, words not otherwise available may be produced. There is no bulbar palsy, but frequently a slight hemiplegia, or slight hypoglossal palsy, not sufficient to explain the aphemia; for some time the patient may be unable to show the tongue, to puff the cheeks, gnash the teeth or even open the mouth to order without sticking out the tongue; these disorders are, like the aphemia, a defect of the memory of the way to do things, and often exist only in the first period of the aphemia. (2) The *understanding* of speech is largely correct; orders are correctly carried out, and mimic well responded to; but Wernicke admits now that there is *at least some difficulty for longer sentences* as Dejerine has shown; but this difficulty is usually open to improvement. This disorder of understanding is explained by the fact that the acquisition of speech-concepts is a fundamental phase in the learning of a language, and that their loss, in turn, has a variable influence on language as a whole. In this respect there are evidently individual variations (not further specified). (3) *Writing* keeps pace with articulated speech. *The onset* of motor aphasia is usually with a more marked shock and more or less right-sided hemiplegia. *The prognosis* is on the whole unfavorable except where the insult is merely slight or the interfer-

ence merely indirect (due to a lesion of a neighboring part, or not very infrequently a very severe insult of even the *right* hemisphere with left-sided hemiplegia). Restitution usually leaves much exaggeration of motion and slowness; a certain awkwardness and exaggerated effort resembling that of deaf-mutes who have learned to speak, and syllabic stumbling always remain even in favorable cases. *Repetition* remains as deficient as spontaneous speech. *Training* by optic methods, as in deaf-mutes, seems to give very favorable results (in six weeks — Dejerine and Thomas). In relatively rare cases the motor defect is not so complete. The patient may succeed in repeating easy words, or short sentences, but *never* more complicated words or sentences; vowels or syllables without any resemblance will be substituted, or the patient's own name, or an 'ach Gott.' *Partial motor aphasia does not seem to exist* beyond these exceptions.

This presentation gives a much more exclusive definition of the functional picture and its clinical evolution than is suggested by most English and American writers, who describe several types of cortical motor aphasia, and in turn, are more hopeful about the anatomical focal subdivision of the motor speech-field into a propositionizing and utterance center. One of Wernicke's claims, especially worth reiterating and testing, is the non-existence of partial motor aphasia. The function of the 'center' evidently is considered one 'en bloc,' not a sum of many individual word utterance memories.

Wernicke still inserts here his hypothetical *conduction aphasia*. The available empirical data are admitted to be scanty and not consistent. Paraphasia is not sufficient evidence of the interruption of the connection between hearing and utterance center. It can result from more causes than Wernicke first assumed. Nor does repetition of words heard prove the integrity of this simple path. The sound-picture seems to be sufficient for an understanding at least of ordinary words (Wernicke explains the recovery from sensory aphasia on this ground, *i. e.*, without the creation of a new auditory word-center!), and motor utterances may be roused spontaneously without a previous rousing of the sound-picture; therefore, destruction of the connective path will not necessarily frustrate the repetition of words to order, as long as they are *understood*. Some paraphasia will then occur, realized by the patient. Evidence of the *integrity* of the oldest and original conductive path would be furnished by automatic echolalia and by *repetition of foreign or senseless words*. Wernicke, therefore, looks for a case in which *merely* echolalic repetition would be *destroyed*, with preserved understanding and execution of speech, and

a paraphasia with realization of the mistakes. The recorded cases of lesions of the island demand such a restriction of the theoretical deduction if they are not directly opposed to the whole conception. And what becomes of the simplicity of the notion 'word-concept'? In conduction-aphasia it should be destroyed; but Wernicke explicitly admits the existence of a long-circuit substitute.

Convinced of the anatomical and clinical demonstration of a sensory and a motor speech-center, Wernicke proceeds to the construction of pure or subcortical aphasias as 'a necessary logical consequence.' There must occur cases in which the projection-system of the one center or the other is destroyed without interference of the centers themselves and their connection; these cases too show a loss of understanding of the word-sound, or a loss of articulated speech, but 'preservation of the internal language or intact word-notions.'

In *pure aphemia* (not infrequent, especially with hemiplegia), Wernicke finds some evidence of the correct intention of utterance, and the attempt at repetition is never so completely miscarried as with cortical destruction. Understanding is intact even for complicated sentences. *Written language* is quite *intact*. Dejerine published the first convincing cases with a lesion just beneath Broca's convolution, above the internal capsule, and demonstrated on them the fallacy of Charcot's view of a special writing center. Integrity of the word-concepts becomes the formula for the fact that the patient can write. In cases of illiteracy, Lichtheim has suggested the test of counting the syllables to demonstrate the integrity of the word-concept. The best sign, according to Wernicke, is the correct intonation of the speech rests, which should be in harmony with the rhythm of the intended utterances. Since the intonation-test necessarily fails where the patient has no speech rests, on which to produce the intonation, or where he does not grasp the issue of the test, one would welcome the simple contrivance of Onuf and Fraenkel, who merely depend on simple counting (turning over every sixth card of a pack) as evidence of integrity of internal language. I have, however, just recently had a chance to examine a patient of Doctor P. L. Murphy of Morganton, N. C., with motor aphasia in a state of partial reconstruction, who succeeded at once with the card test, *although* he has not recovered his writing as well as his speech, and gives no introspective evidence of knowing the words which he is not able to produce. This simple test can, therefore, no longer be accepted as sufficient evidence of what it claims to demonstrate clinically, not to speak of the danger of using it for anatomical inferences. The number of clinically and anatomi-

cally well established cases of subpictorial aphasia with really purely subcortical lesion is actually very small, and hardly larger than the number of cases in which the same clinical symptoms coexisted with destruction of the cortex itself. This is a serious objection to Wernicke's categorical attitude. It should be understood that the *collection and publication of such cases with all the clinical and anatomical detail is still urgently to be desired.*

Pure word deafness implies simple loss of understanding of words notwithstanding sufficient hearing, with integrity of word-concepts and all modalities of speech. Of this disorder Wernicke admits only one case of Liepmann as clinically and anatomically beyond doubt.¹

Wernicke next passes to a *plea for the transcortical aphasias* due to interruption of the 'connection of the motor or the sensory word centers with the concept regions.' Such a center for the 'word sense' or concrete concepts is here explained as a mere fiction, representing the firm connection of the visual, olfactory, auditory and tactile memories, which necessarily are complete inter- or transcortical complexes. (Wernicke declines to accept Flechsig's association or coagitation centers; all these fields have projection systems; 'the island and its claustrum might alone pass as association organ,' in faithful allegiance to Meynert!) *Transcortical sensory aphasia* is a loss of the word-sense with preserved appreciation of the word-sound — the active component of audition, repetition, is preserved (with but moderate para-

¹The other spurious cases are made the basis of a discussion of some interest. Another of Wernicke's pupils, Freund, had tried to trace pure word deafness to a peripheral affection (of the labyrinth); this led to the utilization of Bezold's statement concerning the necessary range of sounds needed for the perception of words. A range between $b'-g''$ was found to be the necessary minimum, and at the most an octave below or above is used, according to Liepmann. Freund's case had this range, and *must* depend on a central lesion. Wernicke uses these data for further considerations: Our hearing covers eight octaves; only a small part is needed for the recognition of speech, and only about one fourth to one fifth of the projection fibers 'need' end in the speech center itself to make the hearing of speech possible. Hence its limitation to the posterior third or half of T_1 and the neighboring part of T_2 , whereas the rest of the temporal lobe must also very largely be a terminal auditory station (on what evidence?). The possibility of a pure auditory aphasia from a double-sided lesion (Pick, etc.) limited to the entrance zone for these sounds could not be excluded, if the above reasoning concerning localization of the tone-levels were correct. A patient might indeed lose both centers for the *tone-levels* of language. But Pick's cases really were completely deaf and would seem to belong to Bleuler's pseudo-word-deafness through insufficient hearing. The right-sided path would seem to play a rôle in *restitution* since it did not take place when both sides were affected (O. Berger).

phasia), and is enacted either on request, or as repetition in the form of a question, or in states of greater general reduction, wholly automatically, as echolalia. (Bastian speaks in such cases of isolation of the auditory word-center.)

Transcortical motor aphasia is a suspension or very considerable reduction of spontaneous speech, with correct repetition and understanding of language. The utterances are not always the same words or syllables as in cortical motor aphasia, but limited to expressions of displeasure, annoyance, helplessness, and the ability to recite memory material and to repeat spoken words shows the vocabulary to be unlimited. Articulation is perfect; yet no replies except an isolated simplest answer can be obtained.

In sensory transcortical aphasia reading is done correctly, only with occasional paraphasia, but without understanding.

In motor transcortical aphasia spontaneous writing is impossible, writing to dictation correct or slightly paraphasic, reading understood, though marred by paraphasia on reading aloud.

Finally Wernicke mentions combined forms: total aphasia with loss of comprehension and utterance, usually with loss of internal language, *always with hemiplegia*; or much more rarely with fairly preserved internal language, as a summation of the two transcortical forms, at times *without hemiplegia*; further mixtures of subcortical and transcortical forms — even more frequent than the pure forms.

Reviewing briefly what Wernicke claims for the speech-function as such, we find an 'auditory word-center' and a 'motor word-center,' and a direct and an indirect connection of the two are referred to under the common term 'word-concept' or 'word-notion.' Partial defects (loss of only a limited number of words) are not admitted in motor aphasia. In auditory aphasia, there is no record of any dropping out of special sounds. The occasionally reported loss of special languages or dialects evidently does not command Wernicke's attention. There are several word-functions; several degrees of identification (from appreciation of the word-sound to that of the meaning), and of verbal elaboration (from recurrent utterance through automatic echolalia to paraphasic utterances and finally free spontaneous speech); but for all of these we are merely given the 'word-concept,' in one place used as that word-function which allows of decomposition of the word into letters (where the ability to write is made the criterion between cortical and subcortical aphasia), in another place as the word-function sufficient for automatic echolalia (which need not even be understood).

We now follow Wernicke to the second part of his discussion

dealing with the question whether the occasional occurrence of isolated agraphia or of isolated alexia warrants the assumption of special reading and writing centers (with Charcot and Bastian and others), or the restriction to a reading center (Dejerine), or neither (Wernicke and v. Monakow).

Written language (symbolization by written signs) is acquired late and not common property of everybody, and therefore not provided with a uniform brain-mechanism such as we assume in the whole race for symbolization by word-sound. Hieroglyphs would have a mechanism different from the method with letters, which makes of reading a process of spelling, as Wernicke maintains with Grashey and Goldscheider, with visual memories only for letters and not for words, except for a small number of very common words (especially one's name). He therefore declines the identification of a visual word picture with an object without some intermediary 'thinking' in which the letters cease to be essential and of direct meaning. Charcot's case of thinking in written words is an extreme exception not fit for generalization, as little as the hypothetical types of 'moteurs, auditifs and visuels.' Nor would it be right to generalize from deaf-mutes. Wernicke does not know visual word-memories, but only twenty-five letters and a few ready-made compounds. He does not think it likely that there should be a visual duplication of what is already available in the sound-formula. *Disorders of reading and writing* are fundamentally distinguished as *either verbal, i. e.*, depending on disorder of the word-concept, *or literal*, independent of any such disorder, but due to non-recognition of the form of the letter. Wernicke specially considers the two cases of Rieger and Sommer in which cerebral traumatism led to imperception of a limited number of letters. The patient of Grashey, who could find the words for objects in no other way but by writing and only after the entire word was written, shows according to Wernicke merely a peculiar trick, and moreover that the letters and even combinations of letters are not directly related to the object but become so only when the material for the sound-equivalent is complete. *Written language*, being merely spelled language, is a *transcortical function* subordinated to the centers of speech, dependent on its integrity, and, in return, the best criterion of the integrity of word-concepts and of internal language.

In the main, the disorders of written language (as far as they are verbal) go parallel with those of spoken language. The understanding of what is read vanishes with that of what is spoken (or at least formulated), and the ability to write spontaneously with the ability to

speaking spontaneously, and paraphasia in reading aloud and in writing to dictation keeps pace with paraphasia on trying to repeat spoken words. Writing may be especially difficult because it depends not only on the ability of finding the word but of finding also the letters belonging to it.

In *cortical motor aphasia* the word-concept is, as a rule, profoundly disturbed, as shown by the *lasting alexia and agraphia* (which Bastian does not accept as due to lesion of the Broca center). The recognition and the copying of letters (even from print into writing) is, however, not involved. Yet, Thomas and Roux found that, in recovery, the patient first re-learns to read complete words, then simple syllables and, at last, single letters. Writing is apt to improve slowly, about as articulated speech, but more slowly for dictation than for spontaneous speech (Dejerine). v. Monakow errs when he minimizes the special importance of the integrity of the word concept for writing and when he claims that the motor aphasic is often able to write better than he speaks. This holds only for exceptions (Banti's case) — and v. Monakow claims for these cases disease of only the opercular lip of the Broca convolution.

Cortical sensory aphasia does not occur without very profound disorder of written language, especially agraphia is apt to be persistent, perhaps partly on account of the neighborhood of a path very essential for the motor act of writing. *Conclusive records are, however, scarce.*

The schematic presentation of the function of written language differs from the Lichtheim scheme of spoken language in the fact that evidently the motor execution cannot be roused directly from the concept-mechanisms (as the motor-speech utterance can be, without the help of the auditory center); it seems that writing always demands the rousing of the optic memory of the letters. On the other hand, the motor component is not essential for the recognition of letters, as is shown by our reading of printed letters.

The very foundation for writing is the existence of notions of direction, since we can write with any part of the body. A special center for writing movements of the right hand does not appear plausible, and is, so far, based 'on material uncritically used.'

A definite one-sided localization of the memories for letters has, however, been claimed with more appearance of justification and is upheld by Dejerine, Bastian, Pick, etc. Wernicke opposes this view with v. Monakow, as he did in his classical review of 1886, reprinted in his *Gesammelte Aufsätze*. Wernicke, to begin with, feels sure that

a visual *word-center* is not to be thought of, but at best a center for letters. Letter-images are distinguished above all other optic images by being: (1) Two dimensional and therefore 'having only one visual form,' not innumerable ones as the three dimensional objects (Storch); (2). used extremely often; and (3) devoid of a direct connection with concrete concepts, and devoid of associations apart from being connected with the one-sided speech-center, especially its auditory part. This alone does not, however, guarantee one-sided localization. Any special localization within the visual sphere is difficult to prove. There is not even a demonstration of any special cortical locality for sharpest vision, and of another locality for the most differentiated oculomotor directive concepts. The functional acquisition of letter concepts does not point solely to the left hemisphere either. Macular vision, which is almost alone concerned in the recognition of letters, is represented in either hemisphere, and large letters are equally soon recognized when approached in the right and the left visual field. Right hemianopsia may cause difficulty in reading, but it does not imply letter-blindness (even directly after the shock), although the latter is always combined with right hemianopsia. Bastian and Dejerine resort to the explanation that callosal fibers reach the specialized, 'visual word-center' from the right hemisphere; but Wernicke sees in this an unjustified extension of the afferent optic path-way beyond its projection-field and a disregard of Meynert's fundamental law of the exclusively associative nature of the callosum. He claims that otherwise even the right hemianopsia would be covered up by callosal fibers from the normal hemisphere to the visual center cut off from the tract of its side (which might be relatively true if Dufour's distinction of hemianopsia with vision nulle or vision noire holds), and that the relation is quite different from that of the auditory afferent path to the auditory word-center, concerning which he says (p. 519, below) that the functional interruption of the auditory path to the left temporal lobe is the cause of the subcortical sensory aphasia, while in the only conclusive case of Liepmann he admits the importance of the participation of callosal fibers. "The facts of pathology refute the unilaterality and narrow localization of a visual word-center; what then creates the appearance to the contrary?" Evidently the close commissural relation with the one-sided speech-field, especially its auditory part, for which two possibilities are to be considered: 1. v. Monakow's view, that the focus underneath the angular gyrus cuts the afferent optic radiation of the left side, and the crossed visual-auditory commissure. The left-sided memories are not reached by stimulation. The right-sided ones

cannot be used because they cannot rouse the sound-component; reading by spelling would be lost, and reading would be limited to a few words read as a whole. Objects would be identified because their cortical representatives are connected with more than the auditory projection field; the frequent difficulty in naming objects will be discussed on p. 276. The recognition of forms, and among them the forms of letters (identification of the same letter in different alphabets and free copying) would remain: Yet in many of these cases copying is reduced to drawing; 'and could this be the effect of a simple interruption of the crossed visuo-auditory commissure?' The sound-component alone gives the signs their sense; and, with its loss, the sense is lost.

Alexia would therefore be a mixture of a left-sided subcortical lesion and the cutting off of the visuo-auditory commissure of the right visual center, whereas the preserved left visuo-auditory connection would remain sufficient for writing.

2. Dejerine's view assumes the principle of economy also to hold in a one-sided presentation of letters, in the left angular gyrus which alone would have a connection with the auditory speech-field.

However the future will decide this dilemma (after a reliable definition will be found for what constitutes the angular gyrus!), the denial of a unilateral letter-center is necessary to formulate the problem of inquiry of the callosal radiation. It would seem that the assumption of a visual word-center would make it easy to explain the agraphia in the case reported at the outset. A lesion just beyond this center, cutting the fibers to both arm-centers, would explain it. But why should the patient have lost at the same time the ability *to draw* the simplest figure?

Redich has found 27 cases of simple word-blindness (literal blindness?) or subcortical alexia. Wernicke adds the case of a man of 62, intelligent, without speech-disorder, who also writes quite well, but who cannot read anything, neither letters nor words, nor numbers (the latter are exempt in some cases of alexia). The patient sees, and is able to copy, letters and drawings, and even then does not understand the letters, while some patients of this type actually gain an understanding by going through the motion of writing. There is right hemianopsia. The patient recognizes objects, but occasionally has some difficulty about finding the right name (without a similar difficulty on palpation?), although he recognizes it at once from among a number of names mentioned to him. (In one of Wernicke's earlier observations a similar patient could not name any objects and

had also difficulty about finding names of concrete things in spontaneous speech — evidence of a true aphasic disorder.) At first the patient had even some difficulty in correctly *recognizing* objects seen — evidence of mind-blindness as a remote symptom of the focus implying the lasting alexia — and also a similar difficulty about recognizing objects merely palpated. Mind-blindness usually implies alexia; isolated alexia is, however, usually not complicated by additional mind-blindness. The lesion in the case is probably embolic; hemiplegic symptoms disappeared again in two to three weeks; but then the patient was found unable to read the paper.¹

Isolated simple alexia would depend on a deep seated lesion beneath the angular gyrus, with destruction of a subcortical (and a transcortical?) path and integrity of a transcortical one, passing nearer the cortex of the angular gyrus. Dejerine saw indeed an extension from the deep lesion beneath the angular gyrus (with simple alexia) extend to the cortex and to alexia + agraphia.

Rieger's patient, a sculptor of 32, developed, six months after a fracture of the skull, loss of *p*, *x* and *y* from the small German alphabet, these and *d*, *h*, *k* and *v* from the small Latin alphabet, and 14 capital letters from both alphabets: the above with the exception of *D*, and *B*, *E*, *F*, *M*, *N*, *R*, *T* and *W*. He could neither write nor identify these; also no numbers besides 0, 1, 2 and 3. He could use the available letters on dictation and copying only, and what he read was without understanding. Otherwise there was an occasional difficulty in finding a noun in spontaneous speech; he also found it difficult to name objects on vision and palpation, but always succeeded after a long while; for letters it took him about half as much time as for objects, but for the above letters there was complete abolition. A defect of retentive memory in all sensory domains was not less marked than in Grashey's case. The ability to draw was also gone; also the recitation of series. With all this there was no reduction of intelligence in a practical sense.

Sommer's case had a similar partial alexia and agraphia after an apoplexy. For several other letters there was a variable difficulty. Moreover, he could not compound even the preserved letters into words. Writing was practically abolished, but the writing of single letters was in many respects better preserved than the reading. The patient was hemiplegic for two weeks, had right hemianopsia, but,

¹ Dyslexia (Berlin) is probably akin to alexia, but merely a great fatigability of the reading-capacity leading to Leseschau (Bruns), and due to atheroma or syphilitic vascular disease. Hemianopsia is not a *condition*, as in alexia.

apart from the alexia and agraphia and a casual difficulty in finding a word, he was perfectly normal.

The loss implicates not only the rare letters. The constancy of the defect 'seems to exclude purely functional factors,' — we should rather say stamps the cases as quite exceptional, with but one further analogy in the literature of cerebral pathology, a case of sensory-motor aphasia with only partial but constant vocabulary, following a psychosis (Heilbronner, *Z. f. Psych. & Phys. d. Sinnesorgane*, XXIV., p. 83). Rieger himself mentions a case of hysteria with loss of the letter *H*, and keeps aloof of localizing conjectures, whereas Wernicke suggests a lesion of paths belonging to the path *ca*, from the 'word-notion' to the visual memories of letters.

Pure isolated agraphia seems to be present in the case reported at the outset. But the internal language is not intact, and the original disorder appears to have been a transcortical motor aphasia. What is left of disorder of word-concepts does not wholly explain the strikingly motor character of the symptoms. The patient has her visual memories of letters but cannot transfer them to the motor apparatus, and since these memories are bilaterally located, there should be a *bilateral* interruption of the path between receptive and emissive centers for letters and drawing. The temporary presence of left-sided symptoms might indeed speak for a bilateral lesion; but other cases seem to have depended on left-sided lesions only; some diffuse damage may, however, have suspended the function not only of the affected but also of the opposite side. Evidence of such diffuse damage would lie in the slightly indicated transcortical disorder of *speech*. Pitres' case had at first general agraphia, but after a while it was limited to the right hand (which had otherwise recovered motility); the right hemiplegia with its profound disturbances had disappeared, leaving behind right hemianopsia, with good visual acuity. The remaining agraphia of the right hand should hardly be called a 'pure (motor) agraphia'; but it is a distinctly one-sided disorder of writing, such as, in *Liepmann's* case, was simply *part of* the right-sided apraxia (the patient wrote in mirror-writing with the left hand). The permanent absence of mirror-writing in Wernicke's patient favors to his mind the possibility of bilateral lesions.

The rare cases of *isolated literal agraphia* would seem to be analogous to conduction-aphasia; all forms of agraphia in which letters can still be shaped are, however, *verbal agraphia*, a consequence of disorders of spoken language, or of connection with the 'word-concepts.' Since writing is an additional task, it may occur that sen-

sory aphasia may recover just far enough to leave out this most difficult reaction, the translation of the word into letters. This is in harmony with the observation that paraphasic disturbances are usually exaggerated in writing, or may persist in writing when they have disappeared in spontaneous speech.

True paraphasia with disfigurement of the individual letters occurs oftenest in general paralysis or other diffuse loss of memory of the forms of letters.

It is easy to understand that Wernicke brings the problem of 'Wortfindung,' *i. e.*, finding the word or naming, in close connection with reading, the finding of the word or sound for letters. The naming of letters, like that of unisensual visual perception, such as colors, took only about one half the time taken by other objects, and in Grashey's case, letters could be named at once, even without the motor help of writing. The path for naming letters would probably be the inferior longitudinal fasciculus for the left and the crossed forceps-tapetum tract for the right hemisphere. To incriminate the same path in Freund's optic aphasia, is probably incorrect. The naming of an object presupposes its secondary identification or recognition, *i. e.*, the association of the optic memory at least with the corresponding tactile memory, which is not necessary with letters. It is certainly necessary to test the naming for all sense-qualities, and to consider whether a concept does not anyhow depend largely on one sense (thunder, waltz on the auditory, and wind, warm, cold on the tactile sense). In Grashey-Wolff's case, the visual projection field seems to have been relatively best preserved; this might perhaps explain the unique fact that he found his words by the way of the letter-compounds.

In the cases of Rieger and Sommer the concepts for certain letters are lost. This has probably nothing to do with the fact that occasionally a patient can read, *i. e.*, name words, but not single letters. One of Bastian's cases could not name a solitary letter, and misread on account of marked paraphasia, but understood what he read. This may in part be an exaggeration of the difficulty caused by unaccustomed attention to a detail act, and in part to the facilitation by secondary identification (reading manuscripts from sense).

Lately Pitres has yielded to a practical need of recognizing a provisional picture of amnesic aphasia (without disorder of understanding, reading and writing). This heterogeneous group would include most cases of isolated word-blindness, and the cases of Grashey and Rieger (which are not explained simply by their defect of Merk-

fähigkeit), and a large number of cases in which the 'amnesic aphasia' is merely a residual of various disorders. In eight of ten cases the inferior parietal lobule was affected similarly to the lesion of predilection of Naunyn's 'indefinite aphasias'; lesion of the Broca convolution is probably least represented in such difficulty of naming. Amnesic aphasia consists solely in a lack of connection between concept and word; it has no definite localization and may be simulated by diffuse memory disorder. It is essential that cases with additional paraphasia should be distinguished from cases with mere difficulty in finding a word, such as a noun designating an object. What may be normal with rare words or words of a foreign language marks a symptom of defect when it occurs in the mother-tongue. In the systematic aphasia of polyglots, a stage of amnesic aphasia is apt to precede restitution. The difficulty of finding words is a special form of transcortical motor aphasia. Its climax may be reached in the actual loss of concepts as in Rieger's and Heilbronner's case, and in other cases there is at least a relative retardation of the rising of the concepts. Only the concept as a whole, not the individual sense-memory, is capable of rousing the word, with the exception of unisensual concepts. It is obvious that difficulties in the sensory spheres are most apt to so diminish the efflux to the concept mechanism as to leave it relatively inefficient in rousing the names. For the tracing of such defects Rieger's scheme is recommended.

Lack of space forces me to put off to another occasion the review of the anatomical considerations of Wernicke. What has been rendered of his general discussion cannot fail to rouse a wholesome desire for convincing observations of patients sufficiently capable of introspection to give more directness to the discussions, and with such anatomical examination as will put an end to the regrettable tendency of so many clinicians to consider the white matter of the hemispheres the cornucopia of all the desirable conduction paths.

The great advances in the studies of asymbolia and apraxia will do their share in shaping new problems for the elaboration of sensory impressions into speech- and writing-reactions, and in this connection Storch's work promises fair to do away with much of the brain-cell mythology with which the theory of aphasia is afflicted, and also the hazy dogmatism about the relation of concept and word.

PSYCHOLOGICAL LITERATURE.

MOTOR PATHOLOGY.

Ueber einige seltene Zustandsbilder bei progressiver Paralyse. Apraxie, transkortikale sensorische Aphasie, subkortikale sensorische Aphasie, sensorisch-motorische Asymbolie. KARL ABRAHAM. Allg. Zeitschrift f. Psychiatrie, 1904, LXI., 502-523.

Studien über motorische Apraxie und ihr nahestehende Erscheinungen; ihre Bedeutung in der Symptomatologie psychopathischer Symptomenkomplexe. ARNOLD PICK. Leipzig, Deuticke, 1905.

Der weitere Krankheitsverlauf bei dem einseitig Apraktischen und der Gehirnbefund auf Grund von Serienschnitten. H. LIEPMANN. Monatsschrift f. Psychiatrie u. Neurologie, April, 1905, XVII. (4), 289-311.

Ueber Störungen des Handelns bei Gehirnkranke. H. LIEPMANN. Berlin, S. Karger, 1905.

As was to be expected, the studies of Liepmann and Pick have become the stimulus to analyze the great mass of inadequate reactions in mental disease, for the occurrence of symptoms which had been successfully referred to definite cerebral mechanisms.

The papers enumerated, and also one of Marcuse¹ and others, have found a very lucid systematic analysis by Professor Liepmann in the little book which has just appeared. Before mentioning its contents I may be permitted to add to the review in the PSYCHOLOGICAL BULLETIN, Vol. I., pp. 277-285, a supplementary statement from the full report of the examination of the brain of the case of one-sided apraxia. The first report did not accentuate fully enough what now seems to have been the fundamental point in the determination of that remarkably lucid case, namely, the finding of the degeneration of the corpus callosum with the exception of the splenium, so that with practical integrity of both left central convolutions there was a sequestration from the cortex of the frontal lobe by a subcortical frontal focus, and another one by a subcortical focus in the parietal lobe from both the occipital and temporal lobes.

The disorders which Abraham, Pick, Marcuse and Liepmann de-

¹Centralbl. f. Nervenheilk. u. Psych., 1904, No. 179.

scribe, and which are the topic of Liepmann's book, are briefly illustrated by the following types:

The patient of Pick is asked to light a candle; he merely approaches the burning match to the candle, but allows it to burn down and finally blows it out; that is, he begins correctly, but the aim concept dwindles down before completion of the act. Another patient of Pick's raises a pistol to his eye like a gun, although he names it correctly as a revolver; or a patient takes a tooth-brush and brushes his moustache instead of his teeth; the aim concept is side-tracked into a similar field (analogous to indirect associations); or the patient takes a cigar and match-box, opens the box and squeezes in the cigar, then rubs the cigar on the side of the match-box; that is, he mixes up the individual components of the complicated complex of activity; or the patient makes the movements of smoking with his mouth, while he has the cigar several centimeters from his mouth—omission of intermediate steps. Another patient is given a shoe-brush, but brushes an excoriated part of his hand; that is, he becomes side-tracked by an intercurrent impression; or the patient who names correctly the box with blacking is given a shoe to polish it; he grasps it, bows and rubs the shoe against his slipper. Also instances of perseveration of activity are given. The patient who has just blown out a match blows at a revolver and a cigar which are handed to him. With these reactions Liepmann compares the peculiar reactions of his cases of true motor apraxia (see last year's review), and after a keen analysis of the process of activity and the various issues under discussion he gives the following final review:

“A number of superimposed levels of the central nervous system coöperate in our activity. Certain regulations are altogether attended to by the posterior columns (with the reflex collaterals in the spinal cord) and the cerebellum without any participation of our consciousness. The connections of the sensomotorium with an intact subcortical apparatus of afferent and efferent paths makes possible the complete coördination and the prompt use of certain synergias. The sensomotorium possesses, moreover, a memory for acquired complexes or series, superimposed upon the synergias. Without the coöperation of the subcortical apparatus (for instance the afferent side of the spinal cord), but still in connection with the brain, it can direct promptly the chief agonists only. The directives of complex activities of life according to appropriate purposes reach the sensomotorium from the entire brain. Which, then, are the various ways in which activity can be damaged by brain disease?”

So far disorders of activity due to focal lesions were traced as

1. Paralysis or paresis; that is, reduction or diminution of motility.
2. Ataxia: faulty appreciation of the force of the excursion, due to defects of the peripheral kinæsthetic directives.
3. Loss of kinæsthetic conception: a picture difficult to differentiate from cortical ataxia, usually called mind-blindness.
4. Agnosia (sensory asymbolia or apraxia in the older sense): loss of recognition notwithstanding preservation of sensation. The identification of new impressions with memories fails to come about owing to the loss of the latter (Wernicke), or owing to an obstacle in the connection between the two (Lissauer).
5. An even more indirect cause of disordered activity is the dropping out of certain qualities and spatial features of sensation: Cortical blindness, hemianopsia, cortical deafness, etc. The corresponding loss for the kinæsthetic field is already described sub. 2.

We now have to insert between 1, 2, 3 on the one hand, and 4, 5 on the other, a sixth type, motor apraxia or apraxia of innervation. The movement is not in harmony with the ideatory process, the cortico-muscular apparatus works, but not in the service of the entire psychic process.

And further — 7. Ideatory apraxia, not a true focal symptom, but determined by diffuse processes, or a remote symptom of larger foci: the movements are in harmony with the ideatory process, but the latter is disturbed in that portion which serves to transform the sketch of the series of movements composing the principal aim concept into sub-concepts. The ideatory apraxia probably is a part of a general disorder of ideation (memory, attention, etc.), and usually accompanies agnosia which again may be merely ideatory.

We therefore have in the chain from stimulus to movement the following causes of disordered activity in brain disease:

1. Loss of optic or auditory or tactile sensation (cortical blindness, cortical deafness, cortical anæsthesia).
2. Loss of kinæsthetic sensations and corresponding centripetal stimuli which do not come to consciousness: ataxia.
3. Agnosia — among which ideatory agnosia.
4. Ideatory apraxia.
5. Motor apraxia.
6. Loss of kinæsthetic concepts = mind palsy.
7. Paralysis or paresis.

Perseveration would enter either sub. 4, or as 8, as an independent source of disorder of activity.

Liepmann's chief point is the differentiation of ideatory and motor apraxia. Most of the instances of 'motor apraxia' mentioned from Pick in the beginning of this review, Liepmann has to refer to the group of ideatory apraxia—that is, they are disorders in which the fault lies with the proper planning and execution of the aim concept in all its details, whereas the movements themselves are really carried out correctly in harmony with the defective results of the ideatory part of the reaction. 'Motor apraxia' should be limited to disorders in which the action itself is side-tracked beyond the ideatory plan—that is, altogether in the innervatory and probably extrapsychical part of the whole biological reaction chain. For the differentiation of the two he gives the following points:

1. Motor apraxia is a disorder of individual limbs, single or in combination. In his famous case the limbs of the right side were affected; in another patient both arms, but the left one more, whereas the legs and muscles of the face were free. In Herzog's case, the muscles of the face, the left leg and left hand were especially affected; and since the right hand was not quite eupractic there may have been a certain general ideatory apraxia besides the motor apraxia. In Pick's cases he would at best see mixtures of motor apraxia, the bulk of the symptoms being ideatory apraxia.

True motor apraxia is certain where only one or a few limbs show faulty reactions, while the patient still can demonstrate the correctness of his idea of the reaction plan by adequate responses with *other* limbs. Whereas we deal most probably with ideatory apraxia where it does not make any essential difference which limb is used.

2. Motor apraxia is betrayed even in our simple acts. His patient could not even show the tongue, make a fist, extend the index or draw a simple line with his right hand.

3. Even imitation is interfered with in these simple activities (an important counter-test not to be neglected). Any attention or memory disorders which would interfere by themselves with such simple imitations would wipe out the very possibility of demonstrating motor apraxia. In ideatory apraxia the perseveration would be the only excuse for disability in such simple acts.

4. Most ideatory mistakes of activity are open to a psychological explanation; whereas motor apraxia proper points more to physical obstacles and a wholly senseless *quid pro quo* (gnashing the teeth before pronouncing a vowel, raising an ink well instead of showing the tongue); the latter instance might of course also occur through distraction in ideatory apraxia. *Amorphous movements* are most

typical, and compare with jargon aphasia. The raising of the ink well for showing the tongue in his case of apraxia might perhaps figure as secondary ideatory apraxia implanted on motor apraxia. The tests might be formulated as follows: If the motor apraxic could speak he would be able to describe his plan and intention perfectly, but explain that even with the greatest effort the afflicted limb would not carry out the plan; the ideatory apraxic, however, would, with sufficient preservation of introspection, be able to say that his arm carries out the plan, but that there are flaws in the plan.

Considering the immense variety of faulty reactions with which we deal in psychiatry, this differentiation is a valuable addition to the as yet scanty means of drawing apparently confused observations into formulas of disorders of distinct mechanisms. While we should not expect that we ever shall be able to get along without psychological descriptions and references to the relatively vaguer concepts of attention, association, etc., and while we have, therefore, no right to belittle the latter and to try to discard them, and still less to use them carelessly, a gain of definition such as Liepmann's work brings us is greatly to be welcomed. It is doing for activities what the studies of aphasia do for language, that is, for a special type of sensori-motor reaction; and as soon as such concrete analyses will be able to more and more replace the very largely imaginative hypothetical constructions of neurological psychology, we may see that neurologists will pay more attention to the actual psychological and introspective analyses of their cases.

A glance at the literature on aphasia shows that a great number of neurologists take for granted schemes of analyses and correlations with brain lesions which go much further than the actual evidence at hand justifies. This unfortunately has gone so far that many physicians believe that the problems of aphasia are about settled, and that it would almost be a discredit and a mere duplication of work to publish new observations. I cannot help but think that there will be a rejuvenation of the interest, a tearing down of many insufficiently supported assumptions; and a great deal of inspiration from the careful work of Liepmann, Pick and others in the domain of pathology of action will again arouse the hunger for similarly conscientious work in aphasia. How much improvement is needed on the anatomical side is effectually shown by Flechsig, whose recent article is considered in the final review (p. 288).

A. M.

Klinische und kritische Beiträge zur Lehre von den Sprachstörungen. GUSTAV WOLFF. Leipzig, Veit & Co., 1904.

As a critical study for any one working on aphasia this little book is strongly to be recommended. It shows very forcibly how the reasoning from a schematic plan of the function of speech has led many investigators to the as yet unwarranted belief that there was such a thing as optic aphasia, dependent on an interruption of the path connecting the visual perception center and the speech center, leading to an inability to name objects seen, although they are recognized. Wolff shows very clearly that in all cases recorded so far, the inability to name objects seen was either due to an inability to recognize the object, or part of a general speech disorder, which referred to the utilization of tactile or other sensory impressions as well, or that the isolated inability occurred only with objects in which the optic impression is subordinate, so that the tactile appreciation was anyhow more likely to be needed for naming. He shows great haziness among the advocates of optic aphasia as to whether the connection of the optic perception center should be one with the auditory or with the motor speech center. Wolff discusses the cases of thirteen other authors and compares them with three cases of his own.

The first one of Wolff's own cases, a man of fifty-nine, practically blind with retinitis pigmentosa, had a slight shock with transitory paresis of the right side, and when two days later he spoke again, he was unable to name any objects felt or heard, although he recognized and used them correctly. The only exception were parts of his body, at least when they were pinched, but not those of another person. Examination of taste and smell were neglected. The patient succumbed to a renewed attack a fortnight later. A subdural blood clot of the size of a fist pressed upon the left parieto-temporal cortex. Wolff mentions this case as an instance of isolated integrity of one set of names, without adequate explanation, but hardly any justification of a special localization of these names.

The second case is one of simple demented general paralysis in a woman of fifty-six, who lost the ability to name objects although she recognized them. The various senses behaved in the same way; but the names of the parts of the body again formed an exception. There was, however, also a great reduction of spontaneous speech while repetition was preserved. The anomia was therefore part of a 'transcortical motor aphasia.' In harmony with most cases of this type, there was merely a diffuse lesion.

The third case, a woman of sixty-six, with senile confusion, came

out of an apoplectic attack with lasting speech defect: great restriction of spontaneous speech to a few simple requests, with preservation of most numbers. She understands, but is unable to name any object, no matter through which sense, although she shows recognition by correct use of the same. The parts of the body are included in this anomia, also articles of food which she eats, although she points correctly to things named to her. Reading and writing abolished; repetition of words perfect. Death in a renewed apoplexy. Besides a fresh hæmorrhage destroying the right basal ganglia, there was a cyst of nearly walnut size in T_3 , just in front of the occipitotemporal notch. The picture was again a transcortical motor aphasia; superficial examination might have led to the diagnosis of optic aphasia, but it was also tactile, acoustic and gustatory. Anatomically the case is an exact corroboration of the finding of Mills. Wolff does not, however, speak of a naming center, but admits the relative frequency of this symptom 'anomia' in abscess formation in this region.

In view of the haziness of the center concept, and of the difficulty of determining what is to be referred to lesion of the cortex and what to the numerous underlying fiber-paths of this region, it would indeed be a mistake to claim more than that lesion of this area is apt to lead to anomia, but that anomia may also be a symptom of diffuse lesions.

A. M.

MULTIPLE PERSONALITY.

Multiple Personality. An Experimental Investigation into the Nature of Human Individuality. BORIS SIDIS and SIMON GOODHART. New York, Appleton, 1905. Pp. 462.

The present contribution of Dr. Sidis, in association with Dr. Goodhart, to the comprehension of personality in its abnormal manifestations centers about the remarkable case of Mr. Hanna; and for this alone the volume at once assumes an important place in the literature of this perplexing topic. The case is noteworthy in many aspects; it is minutely and ably reported; the patient is a man of unusual intelligence and education, as well as a person of normal good health; and the appearance of the altered personality comes suddenly by reason of an accident, while the acquisitions of the entire experience up to the moment of the accident disappear. In contrast with the usual cases in which alterations of personality are developed slowly in hysterical patients, the new order of things following upon more or less protracted periods of psychic incubation, and merging in puzzling ways factors of the old personality with the new development, Mr. Hanna's case is that of the most complete loss of the

personal acquisitions and the memory thereof that has yet been recorded. It is thus in a very true sense the psychologist's case of altered personality, for it corresponds most nearly to the conditions which the psychologist would choose, were he able to experiment in this field; and in the end under Dr. Sidis' skillful management the actual experiment is performed, and successfully, of reinstating the original personality, so that at the present moment Mr. Hanna is substantially the same as before his curious experience. It is difficult to summarize the case itself; but it may be stated that, as the result of a fall, Mr. Hanna found himself practically as a new-born babe, with no language, no comprehension of the meaning of things, no memory-images of what sensations were or how they were to be interpreted, no knowledge of his family, or of his surroundings, or of any of the innumerable factors which constitute experience. He actually had to discover the use of his muscles and of his senses, to be taught the simplest rudiments of that practical education which occupies infancy, and yet went through all this with something of the adult facility, and, as proved later, with underlying remnants of his former adult consciousness. That his acquisitions were gained at an extremely rapid rate the story emphasizes; and the happy ending shows that at no time were the older experiences really destroyed. They had been merely suddenly and mysteriously estranged from voluntary recall, but remained in subconscious possession. The first distinct evidence of this reaction was obtained from such accounts as the patient could give of his dreams. These fell into two varieties; the one concerned with the events and modes of response of his new child-like personality, while the other, which he spoke of as vivid dreams, were traceable to real happenings of his former self. Following this suggestion, the patient was taken to New York city and there subjected to the violent assailing of his senses by means of the complex stimulations of the metropolis, in the hopes that as such experiences were not unfamiliar to the former self, they would serve by their very intensity and complexity to break through the shallow crust that at this juncture separated the conscious from the subconscious acquisitions, and thus to reinstate, even though intermittently, the older life. This actually occurred on awakening from a sound sleep during the first night following these experiences. The patient awoke as the original Mr. Hanna, with much astonishment found himself in strange surroundings, with unfamiliar companions, and at once demanded the sequence of events from the moment of the accident several months before. The new state did not last long; the patient became drowsy, and

awoke in the morning with no knowledge of the night's events, though quite clear as to the experiences of the evening before. Gradually these reinstatements became more frequent and of longer duration, and resulted in an intense and painful struggle which Mr. Hanna afterward recounted as one of the most trying moments of his life, when he really seemed forced to choose between the two personalities, each of which seemed to claim him as its own, and yet with no exclusive right. The saving alternative, which was the issue of the struggle, was to embrace them both, to merge the two, though with imperfect conviction, until they gave way to the normal state of affairs.

The case is important and interesting, not only by reason of its general progress, but on account of the many detailed observations that enrich the account, and suggest at each step well-formulated and specific problems in regard to psychological principles and analyses. These are further discussed in a series of introductory chapters, and in another series of concluding chapters, in which Dr. Sidis presents his general statements in regard to the nature of personality. The trend of these is not easily reproduced, and indeed leaves upon the reader something of a vagueness of impression that is inevitable in our present imperfect understanding of these cases. What is more important is that the interpretation, so far as it goes, is intimately allied with the sanest and safest interpretations of modern psychology, and emphasizes the fundamental importance of the normal subconscious life as the proper starting-point for the interpretation of the abnormal. For all of these merits the volume deserves, as it doubtless will find, a useful place in the psychologist's equipment for the comprehension of the varieties and the variations of personality.

J. J.

NEGATIVE SUGGESTIBILITY.

Negative Suggestibility, a physiological prototype of negativism, of contrary auto-suggestion and certain obsessions. PROFESSOR BLEULER. Psychiat. Wochenschrift, Nos. 27 and 28, 1904.

The finest movements are obtained by combination of antagonists and agonists, representing the excess of the power of the agonists. All the peripheral mechanisms such as the heart, intestines, vessels and sphincters have their stimulant and inhibitory nerves. In psychic activity, too, any topic of thought inhibits all the other noncorrelated concepts. If, after all, thought does not always move in one direction, it would seem that association is not merely a selection of favorable and positive tendencies, but that there is at the very bottom of the

mechanisms of association a provision for the response of directly opposite tendencies. This phenomenon might be classed as association by contrast, but it is so generally present that there is much to be said in favor of the view that there is a special mechanism, a general tendency to associate with every concept also its opposite.

Bleuler gives a number of instances of this principle in the ordinary play of motives in deliberation. In children he notes the balancing of reluctance and eagerness, even where timidity is excluded; he refers to the mixtures of coyness and sexual desire, the balance of fear and eagerness in risks; the tendency to continually touch a painful tooth.

In harmony with their purpose these coupled contrasts appear to arise especially in connection with action. "Those persons who entirely exhaust the pros and cons beforehand and have completely settled their deliberation before they begin to act are rare types." With most people a decision arouses new opposite concepts; but in only a small number a decision suppresses them altogether. In such cases the association of contrasts becomes decidedly undesirable, and it is especially striking that it manifests itself much less in calm deliberation than just before action, where such an elementary mechanism is a truly fundamental protector. In this respect there are profound differences of character.

Bleuler refers to analogous contrasts in feelings, such as laughing in an accident, the perverse actions of unfavorable autosuggestions where a person anticipates the possibility of a headache, or of menstruation at an undesirable date; the tendency to acquire mannerisms which one criticises and ridicules in others; the inability to sleep owing to the excessive eagerness to sleep; the peculiarity of a blocking of the very thoughts one needs (in examinations, etc.); a fear of failure does not explain sufficiently the direction of the inhibition. Everything points to a special mechanism which tends to rouse contrasting or antagonistic concepts. It is especially marked in relatively suggestible individuals as a protection against being taken by surprise; but in the abnormal, too, negativism and suggestibility, automatism and echopraxia, frequently go hand in hand (in dementia præcox), or excessive confiding and yielding beside distrust and obstinancy (in senile dements), or suggestibility beside uncontrollable contrary auto-suggestion (in hysteria, etc. Wherever an emotion, or the narrowing of the field of consciousness, or a blocking process, interferes with the course of thought, the elementary process of associative contrasts becomes prominent.

Suggestibility is a certain side of affectivity; as such it is connected more closely with volition and activity than with ideation; the laboratory test leads to fewer contrast associations than actual life with its volition and activity. Timidity and misoneism are affects of negative suggestion. Emotionally important ideas are especially apt to give rise to negative suggestions when the impulsiveness of activity makes one more in need of this control. As suggestion generally, and affectivity, negative suggestion has an enormous influence also on the physical functions.

Bleuler promises perspectives for the explanation of many symptoms of dementia præcox as qualitatively and quantitatively disfigured mechanisms of normal mental life (through predominance of this fundamental appeal to contrast). He also points to many obsessions, to the contrary autosuggestions of hysteria, and finally refers to some explanations of this phenomenon by other writers.

A. M.

METHODS OF BRAIN RESEARCH.

Einige Bemerkungen über Untersuchungsmethoden der Grosshirnrinde, insbesondere des Menschen. PAUL FLECHSIG. Sitzungsberichte der Akad. Wiss. Leipzig, Math.-phys. Klasse, Sitzung vom 11. Jannar, 1904. Pp. 50-104 and pp. 177-248 (with 4 plates).

Flechsig herewith presents to the central committee of brain investigation a critical comparison of the various methods of neurological research, with special reference to his myelogenetic method. For some reason Flechsig has met with emphatic opposition at the hands of most neurologists. By making certain peremptory claims, and by an unfortunate personal vein, he brought upon himself a flood of bitter attacks, which does not reflect very pleasantly on the brotherhood of neurologists. His latest paper gives a rather fair comparative estimate of the fundamental methods of research and an outlook towards better dovetailing of the accessible methods.

In view of the fact that there is already a full review of the essentially anatomical part of the paper of Flechsig, with a copy of several illustrations, from the pen of Florence R. Sabin, in the *Johns Hopkins Hospital Bulletin*, Vol. 16, Feb., 1905, pp. 45-49, we can limit ourselves to a few remarks concerning the present status of neurological and neuro-pathological problems.

Flechsig acknowledges the need of a comparative study of all the types of nerve cells and their combinations (such as has its principal representatives in Cajal, Campbell, etc.). He recognizes that most of

our anatomical data refer to the theory of *conduction*-paths which does little for the explanation of the intrinsic activity, for which, he thinks, we may have to await a greater development of our knowledge of histo-chemistry. In the main he stands by His's conception of neurones without deciding for or against continuity *vs.* contiguity. For the study of lamination of the cortex he prefers Ehrlich's methylene blue method to the Golgi method; and for the division into histologically characteristic fields or areas, he mentions the lower monkeys as especially favorable objects. He at once passes to his division of the human cortex into myelogenetic fields based on serial sections of 56 human brains at various stages of development, and leading to a division into twelve areas medullated before birth and 24 additional areas medullated after birth. His plates cannot fail to convince one of the fact that the myelogenetic subdivisions might mark rather fundamental entities. The demonstration of a zone like the field twelve, an isolated area at the transition of T₂ and the lateral occipital gyri (gyrus subangularis Flechsig), in the midst of a large area of tardy evolution (the posterior 'association-field'), and not specially isolated by any other method so far, should suffice to serve as a vindication of the method as a pathfinder. On the other hand, the subdivisions fail to differentiate zones which we know to be quite distinct, as the anterior central and the posterior central gyri, which Flechsig's method brings out as a unit. The definition which the method gives to the visual and auditory areas, and the striking coincidence with the results of other trustworthy methods, vindicates an important position to the researches of Flechsig. His results appear to do justice to a hunger for definition of areas which the literature on coarse surface anatomy failed to satisfy as soon as it had passed the stage of blindly accepted schematic drawings, and encountered the differences of individuals and races without really establishing any decisive types of gyration. To-day, Flechsig's scheme has the advantage of being in the simple schematic period. Up to a certain stage, myelinization picks out the very foundation lines of the architecture of conduction paths. But the method soon reaches its limitation, as the history of our knowledge of the cerebral afferent path (fillet) shows. Flechsig thought it to be continuous from the nuclei of Goll and Burdach to the cortex, while we know that hardly a solitary fiber of the fillet passes beyond the thalamus. As long as a bundle of fibers shows its base in a definite cell-cluster and a free cone of growth, the method is excellent; but when the bundles become entangled, the difficulty shown by the history of the fillet is repeated, and, in the jungle of fibers of the centrum

ovale, brought to a hopeless climax. Another difficulty is that the method deals with the delineation of transitory conditions and that it is not always possible to find evidence by the same method as to when to consider the decisive stage to be completed. The hope that comparison of the maturation of *function* would help in the determination of the moment, would be precarious considering the fact that the newborn rat has *no* medullated fibers, but at least an organized sucking-reflex, and that in an encephalic monster fibers become medullated in which function was wholly out of the question. For this reason it would seem safer to encourage a mapping out of the cortex with lasting conditions as a guide, such as the distinctions in lamination and cell-types determined by Campbell (*Journ. of Mental Science*, 1904, pp. 651-659), Brodmann, Bolton and others.

The very instructive summary of Dr. Sabin could easily be shown to have derived some of its most sharply defined data from the results of methods outside of the domain of myelogenetic studies. I refer to her abstract of the description of the pyramidal tract. On p. 184 Flechsig begins with erroneous interpretations of Dejerine's Fig. 49 of Vol. II., bluntly identifying Dejerine's faisceau moyen du pied du pédoncule cérébral with the pyramidal tract. The whole discussion from p. 183 to p. 191 is full of controversies which show that it is less Flechsig's myelogenetic method alone than conscientious correlation of the results of all the methods (and especially the degeneration-method) that allows the anatomical data of Flechsig's review to be formulated as concisely as has been done by Dr. Sabin. Considering that the personal element will play an important rôle in the interpretation of the rather delicate shades of myelinization, and considering the discrepancies of the results of the degeneration-method, one might fairly dread the day when the myelogenetic method would pass from Flechsig's practical monopoly into the hands of as great a number of men as would seem to make the method of degenerations unsafe to-day, according to the verdict of Flechsig.

Flechsig's searching criticism brings out valuable methodological hints. Most of the controversy about Türk's bundle, the supposed radiation from the angular gyrus and other parts, demonstrates conclusively how essential it is that pertinent cases should be published in full, and with ample illustrations, and interpreted with much more reserve than seems to be customary. Flechsig's paper is indeed a most convincing document in favor of greater systematization of central institutes for the study of the brain, with adequate funds for publication. Over and over again he can demonstrate that illustrations

and descriptions of Dejerine and v. Monakow fail to establish the proof that certain fibers are entering cortical areas because they do not allow one to judge how deeply the actual lesions cut into tracts merely passing in the depth. Full publication only will make it possible to determine the relation of the actual lesions and the fields of Flechsig or the subdivisions of the cortex on ground of architectonic studies of the permanent differences, and give the material permanent value.

As is well known, Flechsig establishes primordial zones (the primary sensory areas and certain as yet uncorrelated 'automatic' zones), which alone are said to have projection-fibers (including the cortico-thalamic connections, etc.), and each of these zones is surrounded by a ring of marginal zones whose medullation is not merely a concentric enlargement of the primordial zones but takes place in definite fields. There remain 3 larger fields, the central areas or terminal fields of the parietal, temporal and frontal lobes.

Each primordial zone probably has its corticopetal sensory and its corticofugal motor paths (the terms sensory and motor used in an extremely vague manner!). The marginal fields have their principal connection with their primordial zone, and belong to that sense quality. The large terminal areas are, however, collaborators of more than one sense, and essentially provided with long association-paths, without any connection with the nuclei of the thalamus.

Flechsig accepts as limit of the motor area Sherrington's outline in the gorilla (the anterior central gyrus and paracentral lobule), the central sulcus forming its posterior border. The posterior central gyrus alone forms the equally sharply limited sensory zone for skin, muscles, and joints. (Lesion of the parietal cortex 'never' produces sensory disorders.) The visual area is limited to the zone with Vicq d' Azyr's stripe. The 'higher visual center of many writers' is a polyæsthetic field. Eye movements are obtained only from the zone with Vicq d' Azyr's stripe and by no means from the inferior parietal lobule (the frontal center for eye-movements seems not to belong to the motor area; it has no projection-fibers and behaves in other ways differently from a motor center — p. 217).

A brief discussion of aphasia brings out some points of fundamental importance. Flechsig identifies the auditory word center with the transverse temporal gyrus, but only for pure perceptive word-deafness without affection of the word memory. Associative word-deafness may occur with complete integrity of the left auditory sphere. In this connection he would think of the marginal fields of the auditory sphere in the insular, temporal and parietal lobes, and also of the

terminal or central fields of these lobes. The Broca convolution consists of an upper (or really posterior) third, field 18 δ , which is the marginal zone of the facial hypoglossal accessory region of the anterior central gyrus, and of a 'middle third' (field 27), the transition into the orbital part, much more strongly developed in man than in anthropoids. In the scheme of cortical mechanisms of aphasia the Broca and Wernicke points may be considered as fixed (however, their function?). Flechsig also considers necessary the assumption that the angular gyrus supplies the union of letter images and sound concepts 'largely an act of memory which can only be conceived as being attached to the gray substance.'

Wernicke and v. Monakow's attempt to explain alexia as merely a disorder of a direct association system between the visual and auditory spheres, is an accumulation of errors, since the inferior longitudinal fasciculus is part of the optic projection and has nothing to do with aphasia. Moreover, Flechsig repudiates Wernicke's assumption that the word memories or auditory images are all dependent on the auditory sphere, even if one should accept the whole temporal lobe for it, as Wernicke does without any evidence. Amnesic aphasia depends on a much more extensive zone, extending to the angular gyrus. Hence the participation of the parietal lobe in the reproduction of auditory word images. Attempts to determine all the cortical regions, lesion of which completely wipe out auditory word images, will probably force us to return to multiple localization of every concept and word notion, in probably as many fields as are participating in the associations of the word-sound. Is this a negation of a real sharply outlined speech-field?

F. evidently does not imply this, as he declares himself to be in harmony with Dejerine. He points out the inaccuracy of Monakow, who sees the auditory word center only in the posterior part of T_1 . (As a matter of fact Dejerine¹ assumes that lesion of T_1 only accounts for pure word-deafness, whereas word-deafness involving also spontaneous speech would depend on lesion of the second temporal gyrus. It is perfectly obvious that even on such an elementary point an agreement is not reached, and that much more careful examinations and reports of cases are needed).

The intercortical association systems have the same principle of myelinization by fields and bundles as the cortex. Flechsig raises the question whether each individual sensory sphere is connected with all the other cortical fields, or their majority, by arcuate fibers and long

¹ *Revue Neurologique*, No. 15, 1904, p. 811.

association systems, or whether each individual sensory sphere communicates with several or all of the primary sensory spheres. He declines both questions. There is no evidence that the posterior central gyrus is directly connected with any one of the other primary sensory spheres, whereas such connections exist with most of the fields 16 to 36. There may be association systems between various parts of the olfactory and gustatory spheres, and between the various segments of the central zone, but there is no evidence of tactile-visual, visual-auditory, and olfactory-auditory connections. The intervening fields are for this reason worth being called association centers. The interpolation may be either two or several marginal zones, or, in addition, one of the terminal or association fields. It is a problem of more conscientious and minute search for loss of definite sensory memories to determine to what extent the association centers have a direct relation to the memory of external sensory impressions, impulses of innervation, etc.

Flechsigt adds a brief argument with Wundt, who shares Flechsigt's opposition to Munk's view that the cortex consists merely of sensory centers, but is afraid of phrenological tendencies. According to Wundt the cortical sensory sphere is not merely a central repetition of the peripheral sensory surfaces, arranged so as to make them accessible to the consciousness which resides there. Flechsigt also declines this view. 'With most physiologists and physicians' he holds that the sensory spheres produce consciousness in connection with sensory impressions, or really out of them. They unify the impulses carried in by the separate elements of the peripheral nerves, preserving the specific energy which depends on the peripheral terminal apparatus. The collaboration of the various senses has anatomical mediators (association-fibers) serving in the psychological associations. The majority of the cells of the second, third and fifth cortical layer of Meynert and their fibers, serve the principle of association, and certain parts of the cortex are made up of them exclusively. This is essential for all compound concepts, and especially for the connection of percepts with words. To avoid unnecessary identification with association-psychology, Flechsigt would feel inclined to concede to Wundt the term of 'higher psychic centers,' for what he calls association-centers in the anatomical sense, leaving the share of each center in the higher psychic functions to the future. Flechsigt does not assign a special independent psychic function to any of the thirty-six fields, but merely assumes for each a specific *share* in the psychic life as a whole. He still favors the opposition of a posterior large association-field, and of a frontal one; but

hesitates about the opposition of a cortical field for the perception of the outside world (posterior field) and those for the ego and somatic personality (frontal field). What he said of the frontal field does not conflict with Wundt's center for apperception; and the possibility of a natural anatomical subdivision of the large posterior field may furnish firm lines worth heeding by the student of psychogenesis whose material lacks principles of equal definition.

In one sense the sensory fields are also association centers, for the impressions of the same sense; but Flechsig withdraws the suggestion that the central (perirolandic) zone might also form a connecting link between all the large association centers; he claims that the long association paths from the three large terminal fields to the Rolandic part of the central zone are in part the paths for voluntary conceptual excitations of the motor centers; in part they conduct in the other direction. That man should have no association-centers but merely enormously extended sensory spheres wholly out of proportion with the sensory nerves themselves would be 'eine Ungereimtheit.' Moreover, the limitation of the projection-fibers to the primordial sensory fields is established 'beyond doubt,' and the existence of polyæsthetic fields (the parietal—visual, auditory and tactile, and the temporal—visual, auditory, tactile, gustatory and olfactory—terminal zones or association fields) is used emphatically for his justification. For the recognition of special marginal zones, the peculiar mode of myelogenetic accession gives some helps to the general need of greater accuracy and practical perspectives.

Flechsig criticises C. and O. Vogt very severely for trying to compare the relations of cat and dog with those in man. Even in *Macacus* he suspects that there are only marginal zones, and no true terminal fields; the anthropoids, however, have large association-centers. He finally refers to a parallelism of the phylogenetic and the myelogenetic data.

The last few years have done a great deal to take the subdivision of the brain out of mere studies of gyration into the sphere of more widely correlated interests. The surface anatomy has gained much by various workers. Among them Flechsig certainly deserves much credit, and his subdivisions will be very useful until they are superseded by more accurate ontogenetic results.

A. M.

BOOKS RECEIVED FROM JULY 5 TO AUGUST 5.

- L'art de vivre.* DR. TOULOUSE. Paris, Bibl. Charpentier, 1905.
Pp. iv + 310.
- A Preliminary Report on the Protozoa of the Fresh Waters of Connecticut.* HERBERT WILLIAMS CONN. Hartford (Conn.), Case, Lockwood & Brainard Co.—Hartford Press, 1905. Pp. 69 + 34 plates.
- Ueber den Ursachenbegriff im geltenden Strafrecht.* ADOLF REINACH. Leipzig, J. A. Barth, 1905. Pp. 69.
- Schiller's Stellung in der Entwicklungsgeschichte des Humanismus.* LUDWIG KELLER. Berlin, Weidmannsche Buchh., 1905. Pp. 87.
- Index Philosophique — Philosophie et Sciences. 2^e Année, 1903.* N. VASCHIDE. (Publ. ann. de la Revue de Philosophie.) Paris, Chevalier & Rivière, 1905. Pp. 464. [Contains 5,367 titles with brief résumé of many of the more important.]
- La psychologie peut-elle être une science explicative?* ED. CLAPARÈDE. (Repr. fr. C. R. 2^e Congrès Int. de Philosophie.) Pp. 4.
- Esquisse d'une Théorie biologique du Sommeil.* ED. CLAPARÈDE. (Repr. fr. Arch. de Psychol., IV.) Pp. 245-349.
- La psychologie comparée est-elle légitime?* ED. CLAPARÈDE. (Repr. fr. Arch. de Psychol., V.) Pp. 13-35.
- Lo spiritismo secondo Shakespeare.* N. R. D'ALFONSO. Rome, Loescher, 1905. Pp. 47.

NOTES AND NEWS.

PROFESSOR CARL WERNICKE, of Halle, was killed on June 15 in a bicycle accident. His death is a great loss to psychiatry. He was one of the most independent and purposeful investigators of the functions of the brain, including psychiatry. When only twenty-six years old he wrote his classical paper, 'Der aphasische Symptomencomplex' (1874). Among his pupils may be mentioned Sachs, Lissauer, Liepmann, Bonhoeffer, Heilbronner and Gaupp. It is a curious coincidence that this number of the BULLETIN contains an exhaustive review and discussion of his recent important contribution on aphasia.

WILLISTON S. HOUGH, PH.D., formerly of the University of Minnesota, has been appointed professor of philosophy in the George Washington University at Washington.

DR. KUHLMANN, now of Clark University, has been appointed assistant in psychology in the University of Wisconsin.

It is announced that Professor Josiah Royce, of Harvard University, will give a course of lectures at the Johns Hopkins University in January, 1906, on 'Aspects of Post-Kantian Idealism.'

THE following are taken from the press:

DR. ERNST MEUMANN, of Zurich, has been called to the chair of philosophy at Königsberg.

DR. H. K. WOLFE, formerly professor of philosophy at the University of Nebraska and recently principal of the Lincoln High School, has been elected professor of philosophy and education at the University of Montana.

MR. WILLIAM HARPER DAVIS, instructor in philosophy and psychology at Lehigh University, has been elected assistant professor, in charge of the department.

DR. J. W. HICKSON has been appointed assistant professor of psychology and lecturer in philosophy at McGill University.

PROFESSOR GEORGE T. LADD, who has resigned from the chair of philosophy at Yale University, has arranged to pass the latter half of next year as professor of philosophy at Western Reserve University.

THE council of the University of Liverpool has instituted a lectureship in experimental psychology. The work in psychology will, for the present, be carried on in the physiological laboratory.

THE
PSYCHOLOGICAL BULLETIN

NORMAL VARIATIONS IN THE SENSE OF REALITY.

BY JUNE E. DOWNEY,

University of Wyoming.

Observations on the loss of the sense of reality have usually been restricted to pathological cases. From the results obtained by questioning healthy people; from references found in works of fiction and autobiography; above all, from my own experience, I am convinced that fluctuations in the sense of reality are, within certain limits, common and that a report on such normal variations might be of value. To this end I have watched somewhat closely my own experiences, with results which no doubt other observers could parallel somewhat in detail; although as individuals we find the predicates real and unreal attaching themselves to certain phases of experience with apparent arbitrariness — to what confusion of the philosopher!

To begin with, how, from the introspective standpoint, shall the feeling of reality be defined? It is, as it were, psychical solidity; not merely vividness of experience but, rather, density of experience, whether that experience be perceptual, ratiocinative, or emotional. With the loss of the sense of reality, tangibility and meaning evaporate from experience.

In my own experience the feeling of reality rises and falls. In certain cases it is easy to refer the fluctuations to physical conditions. Lack of sleep reduces the feeling of reality; so too, in an even greater degree, does muscular fatigue of the eyes. Acute pain, on the other hand, raises the sense of reality, so much so that at times it is welcomed as a relief. Sleeplessness and eye-fatigue, to repeat, occasion a loss of the sense of reality; so too does emotional, but not mental or physical fatigue. At such times the external world seems to lack solidity; it awakens no interest; people appear as trees walking; thought moves sluggishly; indifference to the consequences of actions

ensues; consciousness of self ebbs. Loss of the sense of position I have never experienced except when rousing suddenly from sleep.

Certain sense stimulations produce a similar state, sometimes with abrupt suddenness, a state which vanishes as suddenly. The sound of a fly buzzing, the crowing of a rooster, the sound of hammering not only seem to lack solidity themselves but even swamp contemporaneous experiences in like unreality. The singing of a bird, on the other hand, heightens the sense of reality. The haze of an autumn day that makes objects seem far-off, immense, veiled, has the same effect upon mental experiences. Thoughts come slowly; emotions seem big, but not intense. The roar of a big city, the presence of a crowd of people reduces the sense of reality. The self seems to shrink and to lose interest. Solitude and grand or beautiful natural scenery raise the sense of reality to a high pitch.

Not only do sense stimulations bring on a feeling of unreality that extends from the sense world to the world of thought and emotion, but the reverse may happen. Prolonged reading or thinking on philosophical topics has the same results. Not only do conclusions seem to lack validity, but the world of daily experience also grows thin, dream-like. This state, which is rather unpleasant, seems more akin to emotional than to mental fatigue. Again, the reading of certain sorts of poetry, Yeats' for instance, or of such plays as Maeterlinck's reduces the sense of reality. Exertion seems unprofitable; the world, a shadow-world; people, charming but not vital fictions. This state is languorously pleasant.

Reactions from intense emotional excitement occasion a loss of the feeling of reality. A dreaded ordeal, if long anticipated, brings on such a reaction. The feeling of indifference to results that ensues is in my own case distinctly valuable, since it does away with self-consciousness and fear of consequences.

The predicate of unreality has attached itself to certain things in a seemingly arbitrary and uncomfortable way. A voice over a telephone has no body, messages so received make no impression upon me. Again, letters written by myself seem unmeaning and futile. That a letter will reach its destination and convey my message is matter of reasoned conviction; but no feeling of reality attaches to a correspondence. Social invitations fail to convince, particularly if given orally. I always experience a feeling of surprised relief when I find that I didn't 'dream it.'

The sense of reality in dreams is for me not intense, as a usual thing. A dream has, however, given me the most poignant feeling of

reality I have ever experienced. This dream affected my waking mood for days afterward.

Related to the experiences described above as loss of the sense of reality and yet unlike them in certain respects is an experience that comes at long intervals. The underlying support of the universe, as it were, drops away; in religious terms, God ceases to exist for me. This state is not brought about by speculation; philosophical conclusions have nothing to do with it. At such times the objects of the external world seem unusually well-defined and brightly-illuminated; my thoughts, unusually clear and coherent. The state was last experienced on a hot Sunday afternoon when the wind was roaring in a most lively fashion. I fell into a deep sleep in which I seemed to be tossed on the wind as on ocean billows. When I awoke the sense of some great loss, of an unsupported universe, was upon me. The sharpening of objects and the acuteness of thought were noticeable.

Unfortunately, I can cite no experiments on sense or organic reactions made at the time when the mood of unreality is present. I am aware, however, that at such times sensory and motor automatisms manifest themselves. I sometimes, for instance, write verses half-mechanically or, even, philosophical squibs which represent no conscious process of reasoning.

That the sense of reality leaves those acts that one comes to perform more or less reflexly is a common experience. In teaching one often hears one's self talking without realizing what one is saying. One may stare a word out of countenance. It is also a common experience that reality fails to attach itself immediately to experiences so out of harmony with formed habits that consciousness cannot assimilate them. A great and sudden sorrow is not realized, as we say; neither is a sudden great joy. One would also be inclined to think that a life that obeys the promptings of instinct would take on a tinge of reality that with difficulty suffuses a life that violates the most deep-seated racial instincts.

In explanation of the feeling of unreality, the theory that we have to do merely with disorders of organic sensation does not seem wholly satisfactory, although it would seem that such disorders can induce such a state. The states are often so fleeting; or, again, the feeling attaches itself to certain objects in such a way that one doubts the possibility of an explanation solely on the ground of organic disturbance. Is it not possible that we have here to do with cases of diffused or distracted attention, which may be very variously conditioned?

PSYCHOLOGICAL LITERATURE.

FEELING AND EMOTION.

La Logique des Sentiments. TH. RIBOT. Paris, Felix Alcan. Pp. x + 200.

In this volume Ribot has expanded the papers already published in the *Revue Philosophique* for June and July, 1904, under the same name and reviewed by Gardiner in No. 12 of Vol I. of the *BULLETIN* and has added to them a chapter on 'L'Imagination Créatrice Affective' developed from his work *L'Imagination Créatrice*, reviewed by the present writer in the *PSYCHOLOGICAL REVIEW* for January, 1901.

We have before us therefore in complete form what, in contrast with the author's earlier work, *Psychologie des Sentiments*, may be described as his dynamics of feeling, and it is in this light, as a completion of his earlier work (see preface), that the author would have it considered. In view of the previous reviews referred to (to which the reader may turn for details) we shall confine ourselves to an estimate of the work as a whole.

The dynamic, functional point of view has been steadily gaining upon the analytical and descriptive in Ribot's recent work, and feeling is the dynamic moment. At a time when Wundt has been rewriting his psychology with a view to putting feeling at the center of his systematic analytical treatment, it is significant that the French psychologist, approaching as he does the subject with such different methods, has gradually been showing the primacy of feeling in regions formerly given over to intellectualism. Always disposed to emphasize the rôle of feeling as a determinant of associations, in these later works, he is concerned to show 'an influence of sensibility upon intelligence,' '*supérieure*,' which presupposes association but transcends it—types of continuity in which process is controlled by an immanent end where the end is wholly or almost wholly emotional, in other words a *logic* of the sentiments.

To Ribot's systematizing intelligence—and he is nothing, if not systematic—all those mental processes which by reason of their immanent continuity may be contrasted with association, are conceived as distributed in a number of classes between two opposite poles, the exclusively intellectual and the exclusively affective or

emotional. At these extremes we have, on the one hand, a pure logic of ideas, a reasoning practically without feeling, on the other hand, a continuity or logic of pure feeling (an emotioning or passioning, if we may use terms recently introduced by the poets) without ideas or with ideas of so little significance for the continuity as to be negligible. Between these extremes we find a series of phases which shade into each other. Beginning with the logic of ideas, we find first a type which is described as 'mixed reasoning,' that of the orator or pleader, which, while superficially a logic of ideas, assuming its forms, is in reality determined in its continuity by the emotional or value coefficients of the concepts employed. Its procedure consists in the accumulation and gradation of the concepts used, in such a way as to produce an emotional effect of conviction. Still more emotional in type are those continuities of thought wholly controlled by the emotional coefficient of the concepts employed — (*a*) the passionate reasoning of love, hate, etc., (*b*) the relatively unconscious reasoning involved in transformations of sentiments, as in conversion, (*c*) imaginative reasoning, as in divination and magic, and justificative reasoning as seen in the emotional process by which the believer, for instance, seeks to justify himself or providence, or in processes by which we seek to console ourselves. These are the forms of the emotional logic in the narrow sense. In them the mean term of transition from concept to concept is predominantly the emotional coefficient.

If, on the other hand, we start from the other extreme, the logic of pure feeling, we may pass by gradual stages to the last type of emotional continuity we have been considering. The phenomena in which the purely emotional unity and continuity are found are the æsthetic states of appreciation and creation of music. The 'content' of this type of consciousness is conceived to be pure feeling, emotional abstracts, feelings abstracted from ideas and combined in a purely emotional unity. While recognizing the existence of types of mind in which ideas do play a rôle in the hearing of music, Ribot finds that rôle to be insignificant and the cases are so few as to be negligible. Next in order appears the poetry of the symbolists where the material is indeed words, the symbols of thought, but by means of unusual combinations of these words, unusual emphasis upon their sound suggestions, revival of obsolete forms, their function as vehicles of thought is minimized and their unity and continuity lies largely in their emotional connotation. Finally we have the love trance of the mystics with its emotional exaltation. This may be viewed as a transition stage between the æsthetic phenomena we have been considering and the emotional logic

of the passional, unconscious and other types. With the æsthetic states it shares the unity which comes from (a) the magisterial rôle which the emotional abstract, *émotion fixe* plays, and (b) the poverty of ideas (a characteristic of the love trance which Ribot has properly emphasized), while with the passional reasoning it shares the reality which comes from the dominance of a real passion and which is absent in the æsthetic states. The series of transition stages between the pure logic of ideas and the purely emotional continuity is thus completed.

Into the details of the analysis which underlies the classification here presented we cannot enter. Nevertheless certain fundamental questions inevitably arise. We shall confine ourselves to two. In the first place, are these types of continuity, referable according to the author neither to association nor to ideational activity but rather to emotional mean terms, clearly made out? In the second place, are such types of emotional unity and continuity properly described as a logic of the sentiments?

As to the first of these questions, there seems to the present writer no manner of doubt. While as to the details of the classification of the intermediate stages there will doubtless be room for change — indeed it is a question whether the classification into the passional, unconscious, justificative, etc., is not merely superficially descriptive and not functional, whether uniformities in change of functional pre-suppositions would not afford a more scientific basis — nevertheless the important point is certainly established — that there exist continuities of meaning in which the thread of meaning is largely if not wholly emotional. The case which in an earlier work the author made out for the purely affective imagination which he called the *diffluent* (in music and symbolist poetry) the present writer then considered convincing and a more or less continuous study of the problem in the meantime has not led him to change his mind. The other thesis of the book, that there are types of continuity of ideas, of concepts where the continuity lies in the emotional coefficient, the value suggestion of the ideal content, seems equally well established.

The answer to the second question can scarcely be so unqualified an affirmation. To be sure the question whether we shall call such types of unity and continuity a logic of the sentiments is partly merely a question of definition — and yet precisely for that reason it is important. The definition of reason upon which the terminology is based is that of Boole which describes it as ‘an elimination of a mean term in a system which has three terms,’ and the question as to whether

we have an emotional or an intellectual reasoning reduces itself to the question whether the mean term is the emotional coefficient of the concept, its value, or the ideational coefficient, its meaning. Nevertheless, for the very reason that historically the words logic and reasoning have been applied exclusively to those processes where the mean term was taken wholly in its ideational connotation, it is a question whether the case for a purely emotional unity and continuity is not prejudiced by the use of these terms. Ribot himself raises the question why the rôle of the affective abstract as the principle of æsthetic and quasi æsthetic unity and continuity remains to such a degree unrecognized and finds several plausible reasons therefor (the undeveloped state of the psychology of feeling and, that which goes with it, the predominantly objective and intellectual cast of the concrete imaginative products of the past). All this is doubtless true, but it is possible that an equally serious difficulty in the way of the recognition of the essential fact lies in the terms with which those who believe in its existence have chosen to describe it. Moreover, as Gardiner has suggested, the very broad definition of reasoning which constitutes the premise, 'the elimination of the mean term' makes it possible to apply the term to all kinds of process including, for instance, even the development of a plant.

In view of these considerations and in view of the further fact that this whole question concerns what may perhaps without too much presumption or jocularity be described as the N-rays of psychology (since those who have seen — or rather felt — the revived feeling and emotional abstract are still so few in number!), I venture to suggest the need of a more colorless term to include both types of continuity, the predominantly intellectual and the predominantly emotional — let us say for instance Mental Movement, under which might then be subsumed the two types of movement, the intellectual or *reasoning* and the Value Movement, a term already made technical in the works of the worth psychologists, or (if we do not balk at a new term) *emotioning*, to correspond to reasoning. With some such modifications of terminology certain misunderstandings might be avoided.

But whatever may be said of the difficulties of the terminology employed, it nevertheless remains true that Ribot has thrown light upon an important though obscure region of mental life, the significance of which lies in the contribution it makes to that new chapter of a larger epistemology which a developed psychology of values will constitute. This larger significance Ribot recognizes in his only par-

tially successful attempt to correlate the products of his own method with the results of this psychology, and, perhaps, still more in his emphatic insistence that this logic of the sentiments is not merely a chapter on fallacies.

WILBUR M. URBAN.

TRINITY COLLEGE.

Wundtian Feeling Analysis and the Genetic Significance of Feeling. MARGARET WASHBURN. *Philos. Rev.*, 1905, XIV., 21-29.

The author sharply criticises Wundt's method of feeling analysis as set forth in the fifth edition of the *Grundzüge*, and maintains that there is an irreconcilable contradiction in point of view between the doctrine of the unitary character of feeling and its analysis into a qualitative manifold arrayed in ordered classes.

In opposition to Wundt the author holds that 'sensation and feeling are not separated by an impassable gulf, and that transitional forms between the two are conceivable.' These transitional forms belong fundamentally to the sensation type because they lie within the zone of possible introspective analysis. Wundt's 'strain-relaxation' and 'excitement-tranquilization' processes are placed here, while the 'pleasantness-unpleasantness' series are regarded as the only ones that meet the test of absolute subjectivity, which entitles them to be classed as pure feelings.

This region of transitional experience lying between the purely objective on the one hand and the purely subjective on the other, has its physical stimuli within the body, and the comparatively undeveloped power of analyzing such experiences is explained on the basis of the needs of living beings. In the course of phylogenetic growth this power has reached a high degree of development with reference to stimuli originating outside of the body, but with reference to stimuli located within the body such qualitative analysis has become necessary only when these processes have departed from the normal and taken the form of pain.

Those bodily processes, on the other hand, which are incapable of giving rise to the experience of pain are regarded as the stimuli for the experience of pleasantness and unpleasantness, and are supposed to be largely concerned with the vaso-motor system.

UNIVERSITY OF CHICAGO.

F. H. HAMILTON.

The Problem of the Emotions. GUSTAV SPILLER. *Amer. J. of Psychol.*, 1904, XV., 569-580.

The author finds himself dissatisfied with either the Lange-James theory, or the theory of Professor Irons that an emotion is irreducible.

After introspection, he is inclined to assert that an emotion arises when "a more or less urgent need, aroused directly by some definite object or idea, is eagerly and vainly seeking to be satisfied. In so far as there is, as a consequence, mental excitement, a more or less turbulent endeavor to meet the situation in a satisfactory manner, so far the state becomes emotional. * * *" 'Physical excitement is present in emotions as an essential constituent,' but 'it is not a question of bodily excitement giving rise to mental excitement or mental excitement giving rise to bodily excitement, since they are both substantial parts of one act.' As to a classification of the emotions, the author feels that the classification cannot be an independent one, but must depend on the ultimate classification of the other facts of mental life, for 'perhaps we shall find * * * that there are strictly speaking no emotions, and that what we call emotions are directly aroused attitudes in a state of excitement.'

A part of the article is devoted to a discussion of the changes in the emotional life due to human development. Many emotions are too violent and are eliminated in the advanced social stages; only those persist which are adapted to the larger and more organized life.

BELLOTT COLLEGE.

R. H. STETSON.

De la nature du sentiment amoureux. S. JANKÉLÉVITCH. Rev. Phil., LVIII., 353-378.

The author's problem is to account for the mental element in the tender passion, apart from the satisfaction of a particular need or the instinct to continue the species. This he finds in the tendency toward the absolute or infinite. The propagation of a species is a constant illustration of the tendency from unity to infinity. The single cell in the lower animals divides and the process of division continues to infinity both in number and in time. There is a consciousness of similar communing with the infinite in the ecstasies of passion that come to a few rare geniuses. This is compared with the communings of the mystics with the deity. The closeness of the relation between the two processes is also shown by the platonic affections of Michael Angelo, Dante and Petrarch, which served as continual spurs to works of genius. The whole argument seems to turn on an undistributed middle in the word infinite. Even if we overlook the initial fallacy, there is no particular reason why a consciousness of the absolute should occupy an individual at one stage of the process rather than another. But the argument is poetry, not science, and scientific criticism is unavailing.

W. B. PILLSBURY.

UNIVERSITY OF MICHIGAN.

ÆSTHETICS.

Psychology of Æsthetics. I. Experimental Prospecting in the Field of the Comic. LILLIAN J. MARTIN. Amer. J. of Psychol., 1905, XVI., 35-118.

In the series of experiments here reported Miss Martin had for her purpose to become acquainted with some of the problems involved in 'the comic' and to ascertain the possibility of applying to them certain well-known psychological methods.

The methods employed are summed under three heads: (*a*) undirected introspection, (*b*) psychophysical methods and (*c*) directed introspection by means of a questionnaire.

The experiments under the first head consisted in presenting comic pictures to the subject serially, in pairs and singly for a period of 5 minutes. The results indicate that the judgment is affected by physical and mental conditions, that by the serial method successive pictures lose in funniness and that one picture palls with time.

Under the second head six methods freely adapted from the psychophysical methods were employed.

I. By method of impression with serial judgments it was ascertained that (1) fun decreases with successive exposures at a given sitting and with a given exposure at successive sittings; that (2) the interspersing of new pictures has varying effects on the judgment of different individuals; that (3) forced or spontaneous laughter enhances the comic; that (4) a coffee stimulant helps, while (5) sickness or low spirits decrease the comic effect as does also (6) a rigid holding of the body; that (7) putting aside the pictures for reëxamination after several months tends to restore their effectiveness.

II. The method of constant differences to investigate time and space differences showed the time effect to be very slight, whether a picture as compared with another preceded or followed it. With respect to space differences, positions to the right seemed more effective, apparently due to a natural tendency to look to the right rather than to the left.

III. By the method of averages pictures of sad and comic intent were made to precede the comic pictures being judged. The sad pictures in most cases caused a decrease in funniness of the succeeding pictures, while preceding funny pictures were effective in the opposite way, though not to such a degree. The effect of sad and gay music accompanying the presentation of comic pictures was then tested. It was found that gay music may enhance the comic, but sad

music is less effective, just contrary to the preceding experiment. The contrasts here made use of were on the whole ineffective for increasing the comic effect, which shows that a careful arrangement is necessary to make contrast a cause of fun.

IV. By the method of choice we find that fun increases as the smile on a face broadens or as a down-cast face becomes more doleful, the former of the two being relatively more effective. Large pictures are more effective than small and the introduction of movement in the picture enhances the comic materially.

V. The method of gradual variation points a way to investigating the effects of exaggeration. However, the results at hand are not very clear and show great individual differences as to the comic effect of objects which are shortened or lengthened from their normal proportions.

VI. By the method of expression certain pneumographic and sphygmographic curves were taken but they revealed no very significant characteristics.

The questionnaire brought forth considerable introspective evidence as to the nature of the comic, unfortunately it is not very adequately worked over. The importance of details and 'fun centers' in a comic picture is noted; also the attitude of the observer. An imitative laugh even before the point of the joke is comprehended helps the total effect considerably. Imitation, muscular movements and organic sensations seem to play a large part in determining the comic. The number, intensity and character of the imitative tendencies are all important factors. Association is very important and may make a comic situation out of one not essentially so. The proper subordination of non-comic factors may give rise to an alternation of feelings on the whole pleasurable and adding to the total comic effect. Any attempt to inhibit laughter or other muscular demonstration weakens the effect of the comic. Novelty, suddenness and contrast or incongruity seem the most important factors in determining the comic when they are brought in contact with a peculiar mental receptiveness.

It can scarce be said that this work has materially enlarged our knowledge of 'the comic,' though it has 'prospected' to some purpose in showing up the relative merits of the various methods employed. The lack of any definite theoretical basis or conclusion must be felt by most readers. In the opinion of the reviewer this work may be said to typify a certain kind of experimentation which gives no thought as to cost of time and labor but is content to 'prospect' with unbiased mind in hope of discovery. Valuable discoveries have thus been made

and doubtless will again, but in view of the ever-increasing 'material' which such work is dumping almost daily upon us, it appears that time is come when one should husband one's strength to better purpose and work more directly to the end of laying down certain theoretical principles which shall be both enlightening and useful to coördinate the matter which our experiments bring forth.

We have to thank Miss Martin for having verified many of our natural conjectures concerning certain factors which go to make up 'the comic.' We regret only that she did not see fit to append for our benefit such a theory of the comic as her intimate personal knowledge would undoubtedly have enabled her to do.

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The Relation of Æsthetics to Psychology and Philosophy. HENRY RUTGERS MARSHALL. *Philos. Rev.*, 1905, XIV., 1-20.

To the nineteenth century must be given the credit for having stated the problem with which the æsthetician of the present century is chiefly concerned. The task of throwing light upon the most fundamental of æsthetic questions is left to psychology. It must find some explanation for that phase of consciousness in man that we call his 'sense of beauty.' This achieved, our psychological foundation firmly established, it remains to the philosopher to find a place in his system for beauty as a part of our experience. Psychology has already made a number of contributions to our knowledge of the æsthetic consciousness. Not the least important of these is the distinction it has pointed out between the attitude of the artist as the creator of beauty and that of the appreciator or beholder. That the latter attitude is the broader is evident since the sense of beauty is aroused in us not merely by objects related to the fine arts but by natural objects as well. Experimental psychology has done much toward clarifying our ideas with regard to certain relations inherent within the beautiful object itself. Especially valuable have been its investigations with respect to the 'golden section,' symmetry, order, rhythm, tonal relation and melodic succession. The active part played by the mind itself in the experience of beauty has been subjected to analysis. Fechner's principle, 'the unity of manifoldness' and the principles advanced by Lipps of sympathetic introjection, 'Einfühlung' and of 'monarchic subordination,' though they cannot be regarded as ultimate solutions of the problem, are nevertheless important additions to æsthetic theory. A truer principle than these, according to the author, is to

be found in 'relatively permanent pleasure in revival' as a quality which differentiates the sense of beauty from all other mental states, in all classes of people and under all conditions. Relative permanency is a characteristic peculiar to the type of pleasure known as æsthetic, and is due to the play of attention about a variety of pleasurable elements. In the art instinct we find the source for all æsthetic activity. Training, knowledge of technique are but tools, the best work of the artist is the spontaneous expression of his impulsive nature. The study of æsthetic problems by the philosopher from the genetic point of view has brought to light many significant facts with regard to the relation between the art effort and other human activities. Its function is seen to be that of social consolidation. Its dependence upon economic conditions is clearly shown. This genetic study moreover reveals the fact that the evolution of the art instinct has been accompanied by a gradual differentiation of the various art types. From the earliest time of which we have any record the arts of hearing and the arts of sight have been distinct. But in many animals we find rudimentary art instincts in which rhythmical movement, an art of sight and tonal accompaniment, are invariably combined. So, too, they are found closely related in the song and dance of the savage. As the process of development has gone on we find differentiated within the arts of sight, the graphic arts, painting, sculpture, and architecture, within the arts of hearing, rhetoric, poetry, literature and music. Each of these arts as the inevitable form of expression for a special content yields a special kind of æsthetic delight. Each will develop freely in the degree to which it maintains its independence of the others. The relation of the Real of Beauty to the Real of Truth and the Real of Goodness is still an open question. The error of the æsthetic realist lies in using the term 'True' in too narrow a sense. Beauty, Truth and Goodness are all parts of the Real. But Beauty may be said to be the Real as discovered in the world of impression, Goodness the Real discovered in the world of expression, and Truth the Real in the realm exclusive of impression and expression. Only in so far as truth and goodness involve relatively permanent pleasure of impression are they possible elements of beauty.

Über die Methode der Kunstphilosophie. KONRAD LÄNGE. *Zeitschrift für Psychologie u. Physiologie der Sinnesorg.*, XXXVI., 5.

The problem of modern æsthetics is the problem of method. The outcome of investigations into the nature of art and the æsthetic attitude is largely determined by the way in which the investigation is

carried on. Most important among the many methods advocated by different æstheticians at the present time are the deductive, the genetic, the empirical or method of logical abstraction, and the method of psychological experiment.

Of the first of these methods, the deductive, Tolstoi, Laurila and Volkert are the most ardent exponents. The answer to the question, 'What is art?' is to be found, they tell us, in an 'inner ideal' which slumbers in all men and which the introspection of the critic brings to light. Art is the expression of feeling, the '*Gefühlsansteckung*,' the means by which the artist arouses in other men his religious emotions. Art concerns itself with higher realities than beauty and sensuous delight. Its aim is ethical. The value of any art product may be measured by the significance of the moral feeling it expresses. Any activity is æsthetic in the degree to which it conforms to this inner standard. Obviously the deductive method stands condemned by its results. We can place little confidence in a method that would force us to rule out architecture and decoration from the list of the arts, and that would exclude many of the greatest artists of all time.

A more adequate way of determining the nature of art is by the method of logical abstraction. One's conception of art is formed in much the same way as one's general idea — 'horse' for instance — from the outer characteristics common to all the arts that have come into one's experience. At the outset we must understand clearly that the nature of art and not the nature of beauty is the subject of our inquiry. Then we must determine from its usage in speech what the word 'art' means — not to the ignorant nor to the philosopher, but to the ordinarily well-educated, appreciative, plain man of society. Painting, sculpture, poetry, music, drama, dancing, architecture and decoration may be accepted unhesitatingly as the arts of modern times. The essential characteristic common to all of these is found to be not '*Gefühlsansteckung*,' but the power of creating the illusion of nature by means of color, form and movement. This likeness to nature, it is true, oftentimes arouses emotion, but to enkindle feeling or teach a lesson is never the direct purpose of the æsthetic activity.

This common characteristic 'illusion' once discovered by a process of pure logical abstraction, it should be subjected to a systematic psychological analysis. Introspection reveals the fact that illusion is a form of conscious self-deceit, the contemporaneous experience of two ideas, the work of art and nature, the content of the work and the personality of the artist. The aim of art is not the narrow ethical aim advocated by Tolstoi, but that of maintaining and exercising by means of illusion all the faculties man needs in the battle of life.

In order that our criterion 'illusion' may gain universal validity, may become an æsthetic norm, introspection must be supplemented by observation of others. Such observation is peculiarly the work of the experimental psychology. But this method may be used with advantage only in the study of the simplest psychical phenomena — memory, sensation, fatigue and other measurable phenomena. It is limited in its scope to a small number of persons and the conclusions of these are often affected by conventional ideas or theoretical knowledge. Its field is limited to the purely formal side of æsthetics, to the problems of rhythm, color arrangement and proportion.

In the place of this method Lange would substitute what he calls the method of art history. We must question the masters of the golden age of art and the thousands they have influenced. Their answer confirms our introspection. "Truly art dwells in nature; he who can tear her hence possesses her." The art product represents nature and an artistic personality. Finally, through the genetic method of inquiry into the evolution of art, from the study of the beginnings of art in primitive man and the animals, it is found that the higher the stage of development the freer the art from moral and other non-æsthetic considerations and the larger the place held by pure illusion.

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Formprinzip des Schönen. TH. MEYER. Arch. f. Syst. Philos., 1904, X., 338-394.

Mr. Meyer gets a starting-point in the discovery that art demands of its product a unity which life — the content of art — does not possess. Hence the existence of a formal principle in art. Sensuous activity accompanies the perception of an object, and the pleasure afforded by this activity he finds to be quite different from pleasure in the content as such. The principle of the *form-impulse* (Formtrieb) is to be sought in this perceptive activity. The pleasure felt is the more keen, the more energetic and at the same time unconscious of painful effort the activity is. *Æsthetic pleasure on its formal side means, therefore, the natural and harmonious functioning of the perceptive organs forced on us by the structural aspect of an object.*

There are three sources of formal æsthetic pleasure experience of (1) seeing, (2) hearing and (3) the activity of what the writer calls our power of representation through speech. These do not exist in isolation, but represent distinct sense-stresses. Rooted in these special capacities is the one universal category of the beautiful in respect of form: *The Ideal Form of the Beautiful.*

The first office of this category is to fix *unity amid variety*. This is brought about through the proper graduating of differences so that they imperceptibly shade into one another. By such graduating we escape weariness, and by such variety we escape ennui. The writer states that this is the complete conditioning of the one through the other. He distinguishes life and art. Life has variety, art alone has unity. In art the parts maintain distinction through contrast, tension and dissonance; these in discreet measure.

Out of 'unity in variety' arises the demand for *clear and comprehensive structure*. Art is said to consist of such choice from what is called 'Wirklichkeit' (actual life) as allows for design within comprehensible limits.

'*Adequacy of expression*' is the weightiest of all determinations of the ideal form of the beautiful. In the demand for adequate expression, form and content become inseparable, two points of view in the same thing. Adequacy of expression does not exclude a certain measure of ugliness, both formal and material. Ugliness too is a source of formal pleasure if, without painful effort, art is able to mould it into harmony with the total.

Mr. Meyer concludes that in art that is most beautiful which gets the desired effect with the least cost. This he calls the principle of least 'Kraftmass.'

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RELIGION.

The Differentiation of the Religious Consciousness. IRVING KING.
PSYCHOLOGICAL REVIEW Monograph Series, No. 27, pp. ii + 72.

The purpose of this monograph is to offer a preliminary study in the science of religion from a genetic psychological point of view. Psychologically the religious attitude is to be regarded as a specialized form of reaction. Its development is to be investigated as any other reaction of the psycho-physical organism. On this basis it is held that as complete a description of religious phenomena should be possible as is possible of any other observable facts.

The study is mainly occupied with the genesis of the religious attitude in the race. The conception is advanced that it, along with other complex forms of experience, has developed from a primitive unspecialized type of experience. The experience of primitive man is undifferentiated in the sense that its problems and processes are relatively simple, being those growing most directly out of the necessi-

ties of food and reproduction. There may be a question as to whether the modern savage can be properly used in any reconstructions of the life of truly primitive man. To a certain extent this is held to be possible because the modern savage represents a plane of arrest and his elaborate life is the product of a series of differentiations upon a dead level. His customs, in the main, have not been developed with reference to the more adequate mediation of problems, but are rather mere dead accumulations through association by contiguity. If this is true, it would seem that in the savage life of to-day there might be discovered many truly primitive elements of experience. In this way, it is suggested, the first steps in the evolution of the religious consciousness may be traced. That is, among the natural races of the present day there are possibly examples of religious practices which approximate all stages in the differentiation of the religious consciousness.

Religious practices are held to be those that arise under certain conditions when practical activities become complicated by the increased difficulty of attaining their customary goals. The intermediate practices which arise acquire certain values which are greatly enhanced if they are taken up into the social consciousness. The consciousness of value thus arises and is developed within the social body. Those values which are felt by the group as a whole as most intimately connected with its permanence and well-being are religious values. Mediating activities which are mainly in the hands of individuals and with which the consciousness of the group is imperfectly identified may be regarded as only embryonically religious. Customs of Australians and North American Indians are cited which seem to represent varying grades in the definite demarcation of the religious consciousness from mere practical attitudes.

Religious values develop from all aspects of primitive life, as against Herbert Spencer with his ghost theory of the origin of religion. The primitive religious consciousness was probably a diffuse one, in which all acts were regarded with circumspection and hence had an element of religious value. Religion is essentially an attitude toward life as a whole rather than an intellectual theory regarding one of its problems.

Since religious values develop in connection with mediating activities, it is evident that the relation between religion and habit and custom must be very close. The religious attitude is, in fact, secondary, and custom is primary. Illustrations are given pointing to the origin of various rudimentary religious sentiments in the customs of primitive races, *e. g.*, notions of sacred places and objects, regard for ancestors, duty, self-restraint, reverence, sacred ceremonies, etc.

The importance of the social atmosphere in the evolution of the religious type of consciousness becomes clearer when religion is compared with magic. It is held that magic has developed chiefly in the context of the occasional and individual, while religion has come from the more habitual and social.

Since the religious attitude is a specialization out of the life processes, it should have a certain functional relation to these processes. The possibility of such a functional connection is discussed and the question is raised as to whether the religious consciousness is necessarily a universal possession of the human mind. The constitution of modern society certainly is less favorable to the production of the attitude in all alike than was that of ancient society. There is, in other words, more opportunity to-day for individual differences to appear. If one's situation is not particularly favorable for the development of this type of consciousness, he is less than ever likely to acquire it by social suggestion. True non-religious people are much more likely to be found among the culture races than among the natural races where they have usually been sought.

The content of the religious consciousness represents a process of selection, the determining causes of which need to be investigated. The preponderance of elements allied to the habitual, emotional, instinctive, and, in general, the subconscious phases of mental life, is generally recognized by students of religious phenomena. It is suggested that these types of consciousness have acquired a peculiar religious significance because of a certain assumption common to all religions, namely, that there is a possibility of the present physical and mental series of events being susceptible of interpolation by extra-physical and supra-mental elements. This assumption strikes at the roots of the authority of the rational phases of consciousness. The latter become no longer the only, or even the most important means for the attainment of truth. The validity of the logical side of consciousness is impugned by the assumption of the possibility of divine illumination and control. The supposed illuminations from supernatural sources can only be manifestations of the more automatic aspects of consciousness. Those mental states removed from the center of critical examination thus acquire religious value because they are a residuum, concerning which the assertions of the religionist are difficult to disprove.

THE AUTHOR.

Ascéticisme et Mysticisme. B. DE MONTMORAND. *Revue Philosophique*, 1904, LVIII., 232-262.

Asceticism, looked at subjectively, is, says the writer, a process of purification, looked at objectively it is a process of psychological simplification. That is, from the point of view of the ascetic it is a process by which he shuts out the evils admitted through sense and comes into communion with God. To the outside observer it is a process for simplifying consciousness by cutting it off from all external impressions.

The method of procedure is very much the same among all ascetics. There is first a period of emptying or mortification, then that of refilling or exaltation. During the first period man can, by his own activity, assist in bringing about the desired end. The body is subjected to rigorous and often painful treatment, while the soul is, at the same time, reduced to a state of humility and obedience. Though the ascetic considers the second state one of passivity, he does not disregard the influence of bodily attitude on the emotional state. He, therefore, often goes through a series of exercises such as kneeling, prostrating himself, etc.

The two mental activities during this period are self examination and meditation. The latter is all important and is at the basis of the spiritual life of all orthodox mystics. This meditation differs from that of philosophy in that it is not speculative, but has as its end the arousing of the affections.

The mystic gradually shuts out all idea of sensible objects until an absolute unity of consciousness is established and the social sentiment effaced. But the ecstatic periods are of short duration and are separated by long intervals during which the mystic appears as an eminently social being. He seeks a unity in which all humanity shall be joined, according to the words of Christ, 'That they may be one as we are.' The love of God necessarily implies love of one's neighbor. It is interesting here to note that Professor Leuba in an article in the *Revue Philosophique* for July, 1902, has considered that in the great Christian Mystics is found the fullest development of the tendency toward the 'universalization of action,' a tendency which is at the basis of all social life.

The mystics have been misunderstood because only one phase of their existence has been considered. The alternation of active states with those of inaction is simply an illustration of the rhythmic tendency found in all life. Every man of action must have his periods of meditation. Contemplation does not exclude but prepares for action

and determines it. This statement, in just so far as it is true, contains a serious argument in favor of the contemplative life, and, since mysticism is a function of asceticism, is the best apology for ascetic mysticism.

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HISTORY OF PHILOSOPHY.

La Philosophie en Amérique depuis les origines jusqu'à nos jours (1607-1900). Essai historique. L. VAN BECELAERE, O. P. Introduction by JOSIAH ROYCE. New York, Eclectic Publishing Company, 1904. Pp. xvii + 180.

Out of the articles appearing in the *Revue Thomiste* in 1902-03 there grew this historical monograph on a subject which has hitherto been treated in brief resumes only. In an effort to be historical rather than critical, the author gives an excellent, though somewhat incomplete, exposition of the philosophical work that has been done 'in America' in the eight chapters which the book comprises. Chapter I. treats of 'The American Spirit and Speculative Thought'; II., 'The Colonial Period (1607-1765)'; III., 'Scotch Influence'; IV., 'Influence of German Philosophy (transcendentalism in New England)'; V., 'Contemporary Schools — Idealists'; VI., 'The Philosophy of Evolution'; VII., 'Psychology'; VIII., 'The Present Time.' The epilogue looks forward to what philosophy may become amongst us, and in an appendix mention is made of the attitude and achievements characteristic of the thought which is maintained by the thinkers in the Roman Catholic church.

Since Porter's brief but scholarly review of 'Philosophy in America' which appeared thirty years ago, as a part of his contribution to Morris's translation of Ueberweg's *History of Philosophy*, there has not been a more extensive attempt to bring together in proper balance and with adequate historical perspective the facts which go to characterize what some of us are more and more adventurously calling 'American' philosophy. Perhaps the most interesting feature of this book is the fact that it was written by one whose theological training and views are those least allied to philosophy during its entire modern development, and consequently showing least influence in the determinative agencies at work in shaping American thinking. The author's scholarship and the warmth of his appreciation of philosophical developments are so unusual that any student of the subject can be both instructed and entertained by this account.

And to those jingoists who insist that there is such a thing as 'the American mind' there can now be administered the proper tonic which is afforded by this opportunity to see ourselves as others see us.

In explaining the relative absence of speculative thought in America, the author looks to the susceptibility to outside influences and the ready adaptation of realism to practical life as the tendencies which have prevailed in 'the great machine shop' which American activity has been so far. In the hurly-burly of three practical centuries, the philosophical voice could not be heard. While properly assuring us that there is no such thing as 'an American philosophy,' the author daringly looks to the undated future when America will be the modern Greece. He contends that America is like ancient Greece; and, in prophesying our future intellectual developments, he derives comfort for his arguments from the similarity of geographical position, climate, wealth, practical ability and mental qualities between the two nationalities (pp. 12-13).

The antecedents of philosophy in America, which were chiefly religious in tone and individual in development during the first century, are said to be Calvinistic scholasticism and the philosophical spirit borrowed from the contemporary Lockean doctrine of ideas. These two elements were united in Jonathan Edwards, with whom was born in America not *philosophy*, nor *a* philosophy, but philosophical *speculation*. His influence was not to indoctrinate, but to make men *think*.

The range of Scotch influence is traced during two periods, first its reign (1800-1860), and second its decline (1860-1900). The treatment of men and writings is full, but goes a little too far, perhaps, when dealing with contemporaries of to-day in classing most ardent theists and intuitional moralists as direct descendants of Scottish realism.

The influence of German philosophy is adequately told in the full and interesting account of the appearance and development of New England transcendentalism and of the events associated with Concord, our 'transcendental Mecca.' In the academic institutions during this period Scottish thought was chiefly dominate, and, of course, had the widest range of influence.

In dealing with current tendencies, it is noteworthy that the author finds idealism to be the undeniably dominant type of speculative thought, particularly in the domain of metaphysics, and probably in ethics (p. 105). When stating, however, that Lotze, Green and Hegel are the important authorities to American thinkers in this

movement, he hardly does historic justice to the present day significance of renewed interest in the neo-Kantian movement.

Realism and Saxonism (if one may mix logic and blood!), mingled in the American type of mind, lead it to an unusual interest in positive science and in the evolutionary generalization which has been derived from it. The treatment of the philosophy of evolution is grouped about its defenders and its adversaries, and is fairly complete. Just why anthropology, religious philosophy and social science as American subjects are grouped in the same chapter with evolution, is not made plain. This mode of treatment makes it necessary for the author to repeat his treatment of men, and shows the limitations produced by the tendency to cross the historical and the logical developments. Psychology is regarded as a science and not as a branch of philosophy. The historical review is interested chiefly in its experimental developments, from which the author is not inclined to anticipate any great intellectual reformations. He falls back upon Wundt in support of his position.

In reviewing the present tendencies, the account includes a description of the varied machinery that has been produced to maintain and to extend philosophical thinking and teaching among us, such as the periodical press, the higher institutions with their professorial chairs, text-book material, and the several associations recently organized. These agencies give the author an optimistic view of the future, particularly when he is noting the social and political fusion which is being wrought among us. Americanism thus means to him a unified people who have a soul, an inner unity, which needs a rational basis, and possesses a moral and intellectual sanity guaranteeing national existence and duration.

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EPISTEMOLOGY.

Scepticism. A. K. ROGERS. *Philosophical Review*, 1904, XIII., 627-641.

By scepticism the author means 'that somewhat unsystematic attitude whose ground is to be found primarily in an appeal to the fact of error, and a challenge to point out the marks by which we might recognize truth if we once were to stumble on it.' In the beginning the article sets forth the sceptic's attitude, his questions, and his complaints. "How can one," asks the sceptic, "be any more assured of the validity of to-day's conceptions than he was of yester-

day's? Now he clearly sees that those of yesterday were false. May not such be clearly seen to-morrow to hold true of to-day's conceptions? Again, good, sincere, intelligent men hold exactly opposite theories in regard to vital truths. Whence this difference? If truth can be assuredly known, why cannot some man so present his convictions that the presentation will be accompanied by a conviction of its validity?"

These are the questions and complaints of the sceptic. They do deserve some consideration. They are not senseless quibblings. But to grant them a respectful hearing is not to grant them the power of overthrowing the possibility of knowledge. Scepticism is absurd. There must be a new belief by whose standard a comparison is made, else the old one cannot be doubted. Men are naturally and necessarily believers. Scepticism has no right to say this thing may be believed, that must not. All the sceptic may say is that he cannot at present come to any conclusion about the matter. "Scepticism stands primarily as a disinclination to prosecute⁶ further the search for data." No man is a sceptic in every direction. Few are sceptics in their own special field. "The sceptic has no more right to universalize his own attitude than a child would have to demand that everybody should stop playing because he is tired."

"Grant the absurdity and injustice of my dogmatic attitude," says the sceptic; "grant there is truth. How am I to know what particular, concrete thing is true, and what is not? Must not every man admit that any particular belief of his may be wrong? Further, why does every man believe his own conviction to be correct, and the opposite, which his neighbor holds, wrong? Is it not, after all, a matter of feeling that my convictions are true and his false?"

These are sensible questions and deserve consideration. True, at last every man must depend upon his own private assurance. He must be the court of last resort. His belief satisfies him. Hence he is assured of its truth. Further it must be admitted that logical certainty belongs only to the abstract statement of the conditions of belief, and not to a single concrete belief about the nature of things.

These admissions do in no way, however, take away the possibility of deciding in case of conflict. Before one is justified in assuming the rôle of the decider, he must, before rejecting his opponent's views, put himself sympathetically in the place of the one who holds it, and understand why it seems to him true. He must feel that he sees and feels all the other man sees and feels, and sees and feels more. If it were impossible to see as another sees, the state of affairs

would be deplorable. Fortunately, however, men do often see alike and agree on certain things. This agreement greatly increases the probability of the certainty of the thing.

Then, after all, this conviction of certainty is feeling — a feeling of consistency — accompanied by a knowledge of a more or less extended acquaintance with the facts. So, at last, the sense of consistency is the only rational test. This practical assurance which consistency gives is the one thing scepticism cannot touch. It may point out the possibility of the error in any given judgment, but that is not enough. It must show that the given concrete judgment is false before it disturbs the feeling of assurance.

Ethical Subjectivism. THEODORE DE LAGUNA. *Philosophical Review*, 1904, XIII., 642-659.

No theory is more thoroughly distasteful to the scientific observer than ethical subjectivism, which holds that conduct invariably right which the agent believes to be right. Such a theory not only offends common good sense, but runs counter to the teachings of the greatest of ethical philosophers. Plato and Aristotle, while they would likely not identify morality with knowledge, would most certainly not deny that it includes knowledge.

And yet when one attempts to point out the exact place of knowledge in the moral ideal, the task is not easy. If it be claimed that the agent is responsible for the probable consequences of his action, then he will be held responsible not only for the exercise of his knowledge about the consequences of the action, but also for his lack of knowledge. Then if knowledge of the consequences of conduct has no assured place in the ideal, it becomes at least doubtful whether any knowledge is thus distinguished.

The evolution of the moral ideal has been a gradual inwardizing process. This does not, however, identify it with the old popular standard, 'let every man do what is right in his own eyes.' It does not issue in an anarchy of sentiment and practice. Anarchy springs from the opposite source, fatalism, which posits the determination of the morality of the act in some external uncontrolled event, making the agent good or bad despite himself.

Then what is meant by ethical subjectivism? It does not mean that the agent will always conceive the same act as right. It does not mean that he will not often in reflecting see the folly of former acts. It does not mean that he will not regret these acts. But it does mean that the act was nevertheless a good act, and any other act, though

justified by later reflection, would have been wrong. Nor does it mean that a man is to rest self-satisfied, content with his ignorance, trusting to the innocence of his intentions. For the increase of knowledge is one of the ends for which it is right to strive. Because unforeseen consequences and unweighed considerations are eliminated, it does not follow that foreseen consequences and effectual considerations are to be ignored. The value of subjectivism lies in the emphasis it places upon the judgment of the contemplated act.

This theory may be said to treat moral conduct atomistically — separating each man from every other, and making each appear to move in the light of his own conscience. This objection, however, is not serious. Every man is a part of a larger social whole. When he is determining in himself what is right, he is doing so with a judgment which is the result of numerous influences from society. It is from this very conception that the distinctive mark of the moral ideal arises. It is measured by the satisfaction of a self-conscious being as a harmonious totality. A careful distinction between moral and non-moral acts must be kept in mind. The far greater part of our acts are mere impulses, which have no moral phase. This does not mean that the agent has to deliberate on the probable consequences of the action. But it does mean that every moral act is a choice, and that the agent is aware of the choice as right or wrong.

It is often admitted that the formal distinction between right and wrong may be judged independently of the consequences, but its material rightness or wrongness must be determined by the outcome. For a well meant act may turn out ill, and the worst intentions may have a fortunate issue. Then it is asked the subjectivist, 'why do you claim that knowledge of the probable consequences has no part in the ideal?' What has been established as the criterion? The judgment. This judgment is an expression of character. This character is the result of the many experiences of the past. Then it has for its own constitution all the elements of a knowledge of probable consequences.

Another objection to this subjective criterion of moral action has been made. It is that there is need of an exterior criterion to put a stop to individual vagaries. This is a real problem, but not impossible of solution. Though the individual criterion is individual sentiment, yet it must be observed that in this respect, as in others, men are not altogether peculiar. In fact, their opinions of things are quite uniform. Further answer might be made to the effect that men live in social groups and thereby serve as a check on each other. By such the individual moral ideals are largely merged into a common ideal.

Then what has been found to be the relation between knowledge and virtue? Is goodness a mere willingness to be good? It is not; because the willingness to be good is so far from being a trait unconnected with knowledge of the right, that it is only by the manifestation of this trait that knowledge can be acquired. The relation between knowledge and disposition is, moreover, a reciprocal one. Not only is knowledge of the right to be developed by right conduct, but such knowledge is itself an element in the disposition which issues in right conduct.

"For ethical subjectivism, virtue is indeed knowledge, but not any knowledge. It is real knowledge, actual knowledge, knowledge as determining motives of conduct."

JNO. H. KEEN.

UNIVERSITY OF TEXAS.

Meinong's Theory of Complexes and Assumptions. B. RUSSELL
Mind, 1904, XIII. (Nos. 50-52).

The article is a critique upon the theory of knowledge as maintained in 'Ueber Gegenstände höherer Ordnung und deren Verhältniss zur innern Wahrnehmung,' *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Vol. XXI., pp. 182-272 (1899), and *Ueber Annahmen*, Leipzig, pp. xv, 298 (1902).

The initial paragraph states Meinong's contention. "That every presentation and every belief must have an object other than itself, and, except in certain cases where mental existents happen to be concerned, extra-mental; that what is commonly called perception has as its object an existential proposition, into which enters as a constituent that whose existence is concerned, and not the idea of this existent; that truth and falsehood apply not to beliefs, but to their objects; and that the object of a thought, even when this object does not exist, has a Being which is in no way dependent upon its being an object of thought: all these are theses which, though generally rejected, can nevertheless be supported by arguments which deserve at least a refutation. Except Frege, I know of no writer on the theory of knowledge who came as near to this position as Meinong."

The article is given in three divisions. The first objects to identifying the theory of knowledge with logic. Knowledge is psychical and logic has to do with the nature of propositions distinct from questions of knowledge. Meinong's 'objects of higher order,' called *complexes*, are perceptible. Judgment has two elements, (1) conviction and (2) affirmation or denial. Judgments and assumptions have reference to objectives or propositions. These differ not in respect to the objec-

tive, but to the conviction which is present in one and not in the other. These 'objects of higher order' are *superiora* to the presupposed objects or *inferiora*. They are the complexes formed of terms united by a relation. They are built upon objects as indispensable presuppositions. Objections: (1) Logical priority is obscure. (2) It is impossible among true propositions to distinguish those which are necessary from others which are mere fact. (3) Relations, though not complexes, are capable of being thought of apart from terms.

Under internal perception and the perception of time the writer gives no validity to the contention that presentations must be perceptible, because we know of such as have non-existent objects, and the non-existent cannot be perceived. He holds that the Being of the non-existent is often immediately known. Meinong's doctrine of the logical priority of the propositions, *inferiora*, to the cognitive relation or *superius*, places the theory of knowledge subsequent to both logic and psychology.

The second division is a review and a running comment upon Meinong's book, *Ueber Annahmen*. The chapter contents consecutively discussed are first principles, the characteristic functions of the sentence, the most obvious cases of assumptions, inferences with assumptions, the objectivity of the psychical, the apprehension of objects of higher order, the objective, the psychology of desire and value, and elements of the psychology of assumption. While the writer makes some few exceptions to Meinong's positions, he concedes the validity of the main arguments.

It will be seen that these chapters deal with the inter-relations of logic, psychology and epistemology. Meinong distinguishes 'objects of thought' from 'objects of presentation,' the former being non-representable. When objectives occur as objects it is usually the assumptions, not the judgments of them that occur, Meinong confesses that it is only since he recognized objectives that he has known *why* epistemology is not psychology; but he holds that both logic and epistemology must concern themselves with knowing as well as with knowledge.

The third division deals with the old question proposed by Pilate — 'What is truth?' Meinong holds that the object of a presentation is sometimes immanent, but at other times not so; while the object of a judgment, an objective, is always immanent. The writer maintains that an immanent object does not differ from no object. He then discusses the five theories of knowledge:

1. That knowledge does not differ from what is known — that is

to say, there is no *object* of knowledge. This is incompatible with direct inspection and it leads to logical difficulties as to identity.

2. Admitting the distinction of content and object, it may be held that the latter is merely immanent. But when we consider redness it is evident that the presentation and the object are distinct, and if there be an immanent object at all, there is also one which is not immanent. In the problem of the relation of the immanent to the transcendent, identity is the only possible relation. Truth is not merely the correspondence of ideas with reality. There is a difficulty in the supposition of non-correspondence, as an idea can only fail to correspond with an object by being the idea of something else. Erroneous judgments do not have transcendent objects at all. In those which are correct the transcendence is undeniable.

3. That the object is immanent when false, transcendent when true. This is untenable, as it is necessary to suppose that correct judgments also have immanent objects, and it is hard to suppose that nothing is objectively false.

4. That when a judgment is false, there is no object; when true, there is a transcendent object. All objections which obtain against transcendent objects in the case of erroneous judgments, when the immanent object is discarded, obtain in favor of the view that in such cases there is no object at all.

5. That the object is always transcendent. The writer maintains that even erroneous judgments have a transcendent object, in most cases indistinguishable from a complex.

In concluding the article the writer declares that there is no problem at all in truth and falsehood; some propositions are true and some false, just as some roses are red and some white; belief is a certain attitude toward propositions, which is called knowledge when true and error when false; a fact appears to be merely a true proposition. It is good to believe true propositions and bad to believe false ones. This is the ultimate ethical proposition.

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ARTHUR E. BENNETT.

DISCUSSION AND INVESTIGATION.

AN INQUIRY IN REGARD TO MENTAL PHENOMENA CONNECTED WITH ANÆSTHESIA.

While in the deeper stages of anæsthesia mental processes are usually so entirely submerged as to fall beyond the possibility of record, in the lighter stages and in the period of approach to, and most

favorably of all, in the period of recovery from more complete anæsthesia, the power of response to outward stimuli is sufficient to afford ample opportunity for a series of observations which furnish the motive to the present inquiry. The coöperation of surgeons and anæsthetizers is invited to secure data that bear upon any of the questions summarized below, or upon the general problem thus suggested. Special attention is directed to the importance of tracing relations between the phenomena recorded during anæsthesia and the normal, waking, mental traits of the subject. Indeed, the former can in many cases be interpreted only in the light of the latter; and observations become of value in proportion as the subject is able to account for the mental experiences of the unusual state by references to the normal source and trend of his mental processes. To determine these, skillful questioning controlled, where possible, by ingenious tests, will be the most effective instrument of inquiry.

1. *Analogies between the Lighter States of Anæsthesia and Hypnosis.* — Of these the chief trait is *increased suggestibility*: will the patient carry out automatically with enfeebled consciousness suggestions given by the operator to do thus and so, to feel or neglect certain sensations, to follow a train of thought, to carry out a code of signals between subject and operator? Is obedience to such suggestions apparent by facial expressions, involuntary cries, nods, etc., after more controlled forms of reaction have disappeared? Is there evidence that patients respond to similar suggestions not directly addressed to them? Do they react to the conversation of the attendants, to a vague knowledge of their surroundings, to interpretations, correct or incorrect, of what is actually going on? Are there any of these responses that reflect the normal habits, idiosyncrasies, etc., of the waking condition! Do they belong to the experiences immediately preceding or to a more remote past?

Next in importance are the *automatic activities*. Illustrations are desired of automatic talking, mechanical acts, and simple tricks of manner, of the type so common in sleeping persons who walk and talk in their sleep, answer questions without awakening, make movements as of knitting, counting money, etc., or other betrayal of their subconscious thought. In very favorable instances, it may be possible to place a pencil in the patient's hand and secure by questioning a subconscious answer or scribble or drawing that throws interesting light upon what is going on in the mind, even when there is but partial consciousness of surroundings or direction of mental processes. Such observations have especial value and should be accompanied by the actual records.

2. *Analogies between the Lighter States of Anæsthesia and Dream Life.*—If a patient be questioned as to what occupied his mind up to the moment of losing consciousness and again during the regaining of full consciousness, there will inevitably result a valuable collection of data regarding the waning and waxing states of consciousness. Many of these phenomena will be dream-like, and should like dreams be recorded with ample detail to make them intelligible. The nature of the impressions, whether visual or auditory, acted or felt, and most of all the connections between the dreams and the recent or remote experiences of waking are important items. Just as ordinary dreams become interesting when they are connected with normal experiences, so in the dreams of anæsthesia the patient alone can give adequate personal detail to give significance to the narrative.

3. *Other Points of Interest.*—The specific points enumerated are intended to make the matter definite rather than to limit the scope of the inquiry. Evidence is desired that bears in any degree of pertinence upon the general problem thus suggested. As additional points of interest may be mentioned the following: In cases of repeated anæsthesia after rather brief intervals, is it possible to elicit evidence that in the approaching or receding consciousness, details are remembered (or recallable by suggestion) which, though beyond the control of the waking consciousness, are thus shown to connect one stage of abnormal consciousness with another similarly caused. The analogous fact is that in hypnosis the subject will tell in a second hypnotization what happened while he was formerly hypnotized, but cannot recall in the waking interval; or again, in changes of personality the relapse into the altered personality will bring with it the control of memories of the last states of abnormal personality, which were not recallable in the normal state. Dreams and the actions of drugs show similar phenomena. Where records of this kind are available through anæsthesia, they should be recorded in detail, and a conclusive set of questionings and tests be made to elicit how far the two states are connected.

A further point of interest is the correlation of different types of mental states with different degrees of anæsthesia. For this purpose it is desirable that some physiological sign of the degree of anæsthesia be recorded as evidence in general of the depth of anæsthesia during which the mental phenomena were observed. The variations of susceptibility to an anæsthetic are such as to make it important to estimate the susceptibility in each case, as well as to give such general data as the age, sex, occupation, condition in life, physical state, temperament, purpose for which the anæsthetic was administered, length

of period under its influence, degree of nervous shock accompanying the same, and so on.

The general use to which the data will be placed will be that of formulating a consistent account and interpretation of the range of subconscious mental states, including simple states of distraction, absentmindedness, reverie, trance, hypnosis, dreams, the actions of drugs, alterations of personality, lapses of memory, states of confusion, and the reactions to anæsthetics. It is hoped that a sufficient series of data will be elicited by the present inquiry to throw important light upon processes as yet imperfectly understood, and the analogies of which to such artificially induced states as those accompanying anæsthesia are of especial importance. The psychologist has naturally but little opportunity to observe these phenomena and must thus appeal to those who are professionally engaged in their production, to step aside from their main interests to supply in a spirit of coöperation the data so valuable to students of a different and yet not unrelated science.

Full credit will be given to all contributions, and no direct or personal use will be made thereof in print without distinct permission. Those to whom this circular letter is addressed are hereby invited to send records of such observations and to further the purposes of this inquiry in such ways as may lie in their power. The undersigned will appreciate, both personally and professionally, favorable action upon this request.

JOSEPH JASTROW.

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MADISON, WIS.

BOOKS RECEIVED FROM AUGUST 5 TO SEPTEMBER 5.

- Essai sur l'hyperespace, le temps, la matière et l'énergie.* MAURICE BOUCHER. Paris, Alcan, 1905. Pp. 210.
- Saggi sulla teoria della conoscenza. Saggio secondo filosofia della metafisica.* COSMO GUASTELLA. Palermo, R. Sandron, 1905. 2 vols. Pp. 761, 472 + ccxxvi + 349.
- Dottrina di Rosmini sull'essenza della materia.* C. GUASTELLA. Publ. by the author, 1901. 2 fasc., pp. 20 + 17.
- Der doppelte Standpunkt in der Psychologie.* MARY WHITON CALKINS. Leipzig, Veit & Co. (Boston, C. A. Köhler, 149 Tremont St., agent), 1905. Pp. 80.
- J. G. Suizer's Psychologie und die Anfänge der Dreivermögenslehre.* ANTON PALME. Berlin, W. Fussinger, 1905. Pp. 62.
- Du mode de transmission des idées. Conception matérialiste de l'intelligence humaine.* L. LEFÈVRE. Brussels, P. Weissenbruch, 1905. Pp. 51.
- Ophthalmic Neuro-myology.* G. C. SAVAGE. Nashville (Tenn.), The author, 1905. Pp. viii + 221.

NOTES AND NEWS.

THE following are taken from the press:

DR. ALOIS RIEHL, professor of philosophy at Halle, has accepted a call to Berlin.

DR. ALBERT LEFÈVRE, of Tulane University, has been appointed professor of philosophy in the University of Virginia.

THE PSYCHOLOGICAL BULLETIN

THE NATURE OF CROWDS.

BY G. A. TAWNEY,
Beloit College.

According to a well-known view the crowd-mind is a 'disaggregated' personal mind, the ordinary mind of an individual shorn of its sense of responsibility, its reason and its initiative. The crowd-mind is like the hypnotic mind in exposing the suggestibility of a man naked to the influence of those around him. It is said that participation in the life of a crowd has this effect, that a man no longer controls his own thoughts and acts, but carries out more or less automatically the ideas he receives from others. To share the crowd mind is to have less than a whole mind, is to sacrifice for the time being the noble powers of discriminating judgment and reason. This being assumed, the crowd ought to develop the worst side of men and women, and the term has been accordingly restricted by some to those collections of individuals which go to excesses of folly and crime. When this truncated condition is relatively unsteady and transient, we have, according to this view, a crowd-mind, and when relatively steady and permanent, a mob-mind.

This study is not written from that point of view. The crowd-mind is a whole mind acting under a group-influence to which man is remarkably susceptible. In the lynching party and the riot, a man solemnly feels that he ought to strike, that it is the only thing to do under the circumstances. Of course there is a mob-consciousness, and the essential truth of its description at the hands of psychologists need not be called in question here; but we believe it to be possible for a man to enter into the life of a crowd without suffering the least loss of personality. If loss of personality meant nothing more than loss of self-consciousness and the powers of mind dependent upon it, the circumstance would not be characteristic of crowd experiences. Everyone, when excited, that is, when intensely and narrowly inter-

ested in a single object of thought, loses for the time his consciousness of himself, but why should we say a collection of individuals is never a crowd unless they all thus lose their heads together?

Where people meet by accident and not in the carrying out of any one purpose, where they are simply together in time and space without being conscious of sharing any concrete experience, they certainly do not possess the sort of mental unity which constitutes a crowd-mind: and on the other hand, when people are conscious of sharing a concrete and very interesting experience, it matters little whether they are near each other in space or not. The destruction of the *Maine* so unified the imagination and feeling of the American people as to make the entire nation for the time being a crowd. Where people are by accident in one place and share no concrete purpose, their ideas do not take a common direction, they do not feel and act alike, each goes his own way very much as he would do if there were no one near him. If sufficiently numerous they are still called a crowd in the popular use of the term, but not in psychology. What mental unity they possess is too abstract and conceptual, too far removed from concrete issues and circumstances, to give them what is called a crowd-mind.

The question whether a collection of men and women is a psychological crowd is a question whether they share knowingly a single concrete purpose and perceptual experience. On a Sunday morning when people are strolling in groups to the churches on Fifth Avenue, mildly conscious as they pass along that they share the same concrete purpose with the many who precede and follow them, they constitute a crowd just as truly as the same people after they have entered the churches and sit elbow to elbow within sound of the organ and the preacher's voice. We deliberately choose extreme illustrations to bring out the worst side of the theory to be maintained here, namely, its comprehensiveness. There is a lay opinion that the psychological accounts of the crowd are extreme and overdrawn, that in short the crowd-mind is not irrational except where the conditions are such as would render an individual irrational. Such an opinion fails to do justice to the part played by suggestion whenever people are in a position to influence each other directly, but the opinion is psychologically justified by the one-sided devotion with which mobs have been studied to the neglect of such crowds as gathered at the World's Fair at St. Louis last summer, where people were not excited although profoundly influenced by each other's moods and actions.

A classification of crowds is clearly necessary, and it should be remembered that all classification is relative. Nature does not seem

to be interested in classes and any one of several classifications is possible whenever we undertake to divide up a group of phenomena. Whether our classifications are true or not depends upon their usefulness to science, that is, upon the degree to which they help us to understand nature. Different collections of individuals differ in two respects which are for the understanding of their psychology very important, namely, they differ in the kinds of experiences they share and in the constancy with which they are conscious of sharing them. A body of young men are conscious of sharing the student-life which they actually make for each other, and a body of citizens are similarly conscious of their civic solidarity; but students are more continuously aware of the unity of their student-life when they are met for a concrete purpose at an intercollegiate foot-ball game than when they sit apart in their rooms, and citizens are more intensely aware of their statehood when carrying on a foreign war than when engaged in the peaceful pursuits of trade and literature. In both cases we have illustrations of two types of social consciousness, the one abstract, conceptual and reflective, the other concrete, perceptual and active, and the two differ as do the society-consciousness and the crowd-consciousness.

The social consciousness and the crowd consciousness are alike in being consciousnesses of shared experiences, but they differ as the concrete and particular differs from the normative and abstract. The sense, possessed by all normal human beings, that we exist and work under a common moral obligation, is a consciousness of shared experience; so also is our awareness of certain truths, especially those emphasized by the 'philosophy of common sense.' Truth and duty are shared experiences, but the consciousness of them does not constitute a crowd-mind unless they are invested with the perceptual imagery of the religious imagination. It may be that the heavenly hierarchy and the divine world-drama of the middle ages have largely lost their influence in the present because by criticism and analysis they have been robbed of their suggestiveness for the crowd. In place of all that we have certain abstract conceptions which can never become the basis of a crowd-consciousness. It may be that the religion of Christendom has been more largely a crowd phenomenon than we ordinarily think. Such shared experiences as a foot-ball game are concrete and factual; even in anticipation and recollection the game is pictured as an imaginative complex made up of memories of the crowd, the shouting, the field and the struggling teams. In the case of the crowd the shared experience is limited to the crowd, while in a society the experience is universal and

normative. Crowd-experience is particular while ordinary social experience is general. The crowd-consciousness is transient while ordinary social consciousness is permanent. Crowd-experience is collective while ordinary social experience is individual. The ordinary social consciousness centers in an ideal which comprehends the highest welfare of all, while the crowd considers only itself and does not wish to be reminded of the wider reaching obligations of man to man the world over. The ordinary social consciousness is a more or less intermittent affair, while the crowd-mind, so long as it lasts, is continuous.

It must not be supposed that in shared experiences the consciousness of ourselves and others is always clear and definite. Based upon social instincts which men share with some of the lower animals it is often a 'sense,' a vague idea saturated with feeling and represented in consciousness by a readiness to act as though we were associated with others for weal or woe in what we think and do. One of the most important differences between a crowd and a herd lies in the presence of an idea of the group-experience in the minds of the crowd and the absence of any such idea from the herd. The basis of the herd-mind is feeling and instinctive attitude rather than idea, although even a herd of stampeding cattle must have some vague and rudimentary notion of the intense experiences they share. The members of a crowd are always aware of the crowd with its concrete purpose, its physical bigness and power. It is quite impossible for an ordinary man to feel himself one of a crowd of angels, because it is so out of the question to rub elbows with an angel. In the crowd men are conscious of each other's bodily presence and of certain concrete limitations of time and space and circumstance within which they move.

We are now ready to say what a crowd is, namely, a numerous collection of people who face a concrete situation together and are more or less aware of their bodily existence as a group. Their facing the situation together is due to common interests and the existence of common circumstances which give a single direction to their thoughts and actions. Crowds may be classified according to the degree of definiteness and constancy of this consciousness. When it is very definite and constant the crowd may be called homogeneous, and when not so definite and constant, heterogeneous. All mobs belong to the homogeneous class, but not all homogeneous crowds are mobs. A skillful orator makes his audience homogeneous by so stating their problem as to awaken, where it does not already exist, a concrete and lively sense of their common need, thereby rendering his further task of leadership a possible one. Whether a given crowd belong to the

one group or to the other may be a debatable question, and the same crowd may imperceptibly pass from one to the other.

The two classes of crowds differ in degrees of homogeneity, and we may now add that they differ in deliberateness. In relatively heterogeneous crowds what mental unity exists is to a greater or less extent deliberate: their members share a concrete experience because they continually will to do so. They imitate each other and carry out the suggestions of the time and place, not by blind instinct and impulse, but deliberately and with a sense of self-commitment or self-indulgence. In extremely homogeneous crowds, on the other hand, deliberation is lacking, the individual is absorbed in the crowd-purpose and receives direction from a crowd-leader who arises out of the crowd in response to its own demand for leadership. The leader secures the attention of his associates partly because he shares its mental life. He is usually as excited and as lacking in deliberation as they are, and whatever leadership he exercises is really a function of the crowd-mind.

In conclusion, the crowd-mind is not a disintegrated personal mind but a whole mind acting under a strong group-influence; the consciousness of a crowd is perceptual, factual and active, while the ordinary social consciousness is conceptual, normative and individual; and crowds may be characterized according to the homogeneity of the individual minds composing them, the mob being at one extreme and the merely casual collection of individuals at the other. The present writer feels that the theory of crowd-psychology can be bettered by adopting some such broad conception of the crowd as is here outlined.¹

¹ The MS. of this article was received Jan. 2, 1905. — ED.

PSYCHOLOGICAL LITERATURE.

THE LIFE OF REASON.

The Life of Reason, or The Phases of Human Progress. GEORGE SANTAYANA. Charles Scribner's Sons, 1905.

The title of this work is taken from the phrase of Aristotle that life is reason in operation. It aims accordingly to be a sort of autobiography of the human intellect — a history of its progress.

“The life of reason will then be a name for that part of experience which perceives and pursues ideals — all conduct so controlled and all sense so interpreted as to perfect natural happiness.” Reason is thus conceived as efficacious reflection. The life of reason is the designation for all practical thought and all action justified by its fruits in consciousness. To recount man's rational moments would be to take an inventory of all his goods. Accordingly the author's purpose is to trace in outline the elements that enter into such a life of reason.

Reason, he conceives, requires the fusion of two types of life, one a life of impulse, expressed in a life of affairs and social passions; the other a life of reflection, expressed in religion, science, and the imitative arts. In harmony with this fundamental conception the scope of the entire work contemplates five volumes, divided as follows: I., ‘Reason in Common Sense’; II., ‘Reason in Society’; III., ‘Reason in Religion’; IV., ‘Reason in Art’; V., ‘Reason in Science.’ The first and second volumes of the above only have yet been published.

Volume I. contains an Introduction to the entire work, as well as the discussion of Reason in Common Sense. Here it is held that in a life of reason, if it were possible to perfectly consummate it, intelligence would be at once the universal method of practice and its continual reward. “All reflection would then be applicable in action and all action fruitful in happiness.” This is conceived as making the life of reason likewise the sum of all art, for operations become arts when their purpose is conscious and their method teachable.

In attempting to chronicle this history of rational progress the author finds no system of modern philosophy particularly helpful. He enters upon something of a criticism of some aspects of this philosophy, including Positivism, which he finds to be wanting in positive

ideal. Christian philosophy is found to be too mystical, in which it succeeds in expressing ideal life only by misrepresenting its history and conditions. In the Greek philosophy alone he finds straight thinking, and a real basis for the expression of the life of reason. In a summary tracing of this philosophy, he finds its final expression in Aristotle, yet of course needing restatement in each succeeding age.

The author sets his task, not to construct, but to interpret ideals. His program therefore is: "Starting with the immediate flux, in which all objects and impulses are given, to describe the life of reason; that is, to note what facts and purposes seem to be primary, to show how the conception of nature and life gathers around them, and to point to the ideals of thought and action which are approached by this gradual mastering of experience by reason. A great task, which it would be beyond the power of a writer of this age either to execute or to conceive, had not the Greeks drawn for us the outlines of an ideal culture at a time when life was simpler than at present and individual intelligence more resolute and free."

The author's discussion of Reason in Common Sense is carried through twelve chapters, somewhat after the evolutionary method. The topics discussed are: I., 'The Birth of Reason'; II., 'First Steps and First Fluctuations'; III., 'The Discovery of Natural Objects'; IV., 'On Some Critics of This Discovery'; V., 'Nature Unified and Mind Discerned'; VI., 'Discovery of Fellow Minds'; VII., 'Concretions in Discourse and in Existence'; VIII., 'On the Relative Value of Things and Ideas'; IX., 'How Thought is Practical'; X., 'The Measure of Values in Reflection'; XI., 'Some Abstract Conditions of the Ideal'; XII., 'Flux and Constancy in Human Nature.'

The treatment of this division of the work is naturally psychological-epistemological in character. The awakening of the mind in the midst of a complex world of experience, and its attempt to construe and interpret these experiences, and from the raw material of phenomena to work a finished product or rational system, is the history to be traced. Accordingly the elementary psychological principles are somewhat cursorily discussed, in which the experiences of sense and the problem of perception, whereby the natural objects are made concrete and specific, are successively set forth. The treatment is critical and interpretive. The views of Hume, Kant and Berkeley are especially examined.

It is impossible here to more than indicate the general lines of treatment. Relative to the concrete object, he concludes that: "A reality is a term of discourse based on a psychic complex of memories,

associations, and expectations, but constituted in its ideal independence by the assertive energy of thought. An appearance is a passing sensation, recognized as belonging to that group of which the object itself is the ideal representative, and accordingly regarded as a manifestation of that object. Thus the notion of an independent and permanent world is an ideal term used to mark and as it were to justify the cohesion in space and the recurrence in time of recognizable groups of sensations. This coherence and recurrence forces the intellect, if it would master experience at all or understand anything, to frame the idea of such a reality."

From the perception of concrete natural objects the mind has the task of unifying nature as a whole. This it has to do through concepts or ideas. Thus existence reveals reality only when the flux discloses something permanent that dominates it. This permanency is found in the persistence of sensation and the derived ideas. It is here that mind is discovered. It is regarded as the erratic residue of existence, the leavings, so to speak, and parings of experience. The perennial puzzle concerning the nature of the object and the subject, and the elements which each contribute in the problem of reality, naturally arises here, and finds an extended examination.

Because of the mystery of ultimate reality and the confusion of the objective and the subjective elements which enter into the problem, there have been two contesting directions of thought, namely, materialism and idealism. The tendency of the idealist to make even the objective world a product of mind, might find no refutation if solipsism could be maintained. But the existence of other minds than ours brings the whole notion into disrepute. The existence of fellow-minds makes necessary a common world of experience, as well as a community of intelligence. The discovery of such other minds, the author suggests, is obtained from analogies between actions and bodies, and this is the only test of valid inference regarding the character of conceived minds.

The chapter on Concretions in Discourse and Existence is suggestive. Here naturally the author touches pretty deep metaphysical problems. In the nature of reality the difficulty is to properly characterize what is concrete and what is abstract. He concludes that it is altogether erroneous to view an object's sensible qualities as abstractions from it. They are really its original and component elements. On the other hand the sensible qualities can not be viewed as generic notions arising by comparison of several concrete objects, "seeing that these concretions would never have been made or thought to be

permanent, did they not express observed variations and recurrences in the sensible qualities immediately perceived and already recognized in their recurrence. These are themselves the true particulars." Language then, he holds, is a repository of terms formed by identifying successive preceptions, as the external world is a repository of objects conceived by supposing perceptions that exist together. Logical products are not really abstract, but concretions arrived at by a different method than that which results in material conceptions. "Whereas the conception of a thing is a local conglomerate of several simultaneous sensations, logical entity is a homogeneous revival in memory of similar sensations temporally distinct."

The supremacy of logical ideas, which nevertheless have their value dependent on facts and experience, is helpfully discussed, in the dissertation on *The Relative Values of Things and Ideas*. In this and the more practical fields where he discusses the measure of values, and the conditions of the ideal, we think is to be found the most valuable part of the work in its suggestiveness. In the final chapter he seeks to find a ground of progress and constancy for humanity, in the midst of life and death. "Inheritance arrests the flux by repeating a series of phases with a recognizable rhythm; memory reverses it by modifying this rhythm itself by the integration of earlier phases into those that supervene. Inheritance and memory make human stability." Human nature at its core has for its substance nature at large. It is only one of its more complex formations. The main principle is, that nature carries its ideal with it and that the progressive organization of irrational impulses makes a life.

Volume two discusses 'Reason in Society.' The divisions of the work are cast into eight chapters, as follows: I., 'Love'; II., 'The Family'; III., 'Industry, Government and War'; IV., 'The Aristocratic Ideal'; V., 'Democracy'; VI., 'Free Society'; VII., 'Patriotism'; VIII., 'Ideal Society.'

In this volume is made practical the fundamental principles laid down in volume one. The first social instinct is the propagation of the race. This is therefore the primal motive of love. Love may also have a high idealizing function. There is accordingly a warring between mere animal lust and the ideal. The problem is to harmonize the two functions. This is not impossible, for human reason lives by turning the friction of material forces into the light of ideal goods. Two directions of evil have resulted; the one, owing to conventional practices, has led to immorality and duplicity; the other, in its extreme revolt, has sought to make chastity seem to be essentially holy.

Both of these notions are irrational, and love in its rational function transforms the world. "The machinery which serves reproduction thus finds kindred but higher uses."

To foster and protect life when born is a higher good than birth itself. Hence the need of the family. The relation of parents to children is wisely discussed. That children do not remain children, but become men and women, and therefore should be so trained as to fit them for this real goal of their existence; and that parents too often do not recognize the time when their children pass into moral and responsible beings, and so change their method of directing them from the word of authority to that of intelligent moral appeal, seems to be the most common shortcoming. That the family is the place of early experiment and so of fundamental education, which nothing else can give, is self evident. Yet singularly enough the education of children is generally left almost altogether to society to perform. The average bungling regulation of family life is shown. The problem of domestic infelicity, the divorce evil, and suggestions of the possible transformation of the family are well discussed, in which, notwithstanding the present distractions, it is shown there is no possible substitute that offers rational relief. The family indeed serves to keep the race alive, and becomes the point of departure for many other beneficent institutions.

As the family grows, especially the patriarchal family, there arises the necessity of the division of labor. Hence the rise of industries. As the family becomes the tribe, and the individual husbandman becomes able to defend himself, the patriarchal life disappears. The fixed occupation of land turns a tribe into a state. Civilization thus brings three chief advantages: greater safety, greater wealth, and greater variety of experience. Whether it does not bring with it a more complex and therefore more artificial life, may be questioned. As to civilization being a blessing, depends on its ulterior uses. For a life of reason civilization is evidently necessary. The use and abuse of wealth, custom as codified in law, forms of government, are suggestively treated.

War is likewise instructively discussed, in which it is pointed out that pugnacity is human, and that there is an absolute value in strife. Hence the value of modern sports, which embody wholesome exercise of this function. Armies arise from a ravenous horde in a conquered country, yet the cost of such an incubus may come to be regarded as an insurance against further attack. Thus the army becomes a rational device for defensive purposes. Some reflections are offered on the possibility of international arbitration, backed up and compelled by the great and dominating powers.

Out of the forms of government come two ideals, namely, aristocracy and democracy. The causes of aristocracy are natural and their privileges just. They grow out of special talents and the right to their fruits. Inequality has its advantages; it especially lends variety which breaks up the dull monotony of life. If men are to reap what they sow, then there must ever justly be the more and the less eminent. Inequality is not a grievance, but suffering is. Hence no privilege can be granted which imposes a suffering.

The difficulty in aristocratic government is that it is subject to abuse, and therefore becomes non-representative. Mere hereditary rights do not guarantee a proper aristocracy, and deterioration forfeits its claim. There are, however, conditions of a just inequality. The ideal state and the ideal universe should be a family where all are not equal, but where all are happy.

Two forms of democracy are distinguished, social democracy and democratic government. "Social democracy is a general ethical ideal, looking to human equality and brotherhood, and inconsistent, in its radical form, with such institutions as the family and hereditary property. Democratic government, on the contrary, is merely a means to an end, an expedient for the better and smoother government of certain states at certain junctures." Of course the democratic theory would be clearly wrong if it should hold that eminence is not naturally representative, but subject to decay. Modern democracy is largely industrial. If democracy would allow the benefits of civilization to be integrated in eminent men, this would be timocracy — a government by men of merit. This is perhaps the ideal of reason. Public spirit must be the life of democracy.

We may perhaps best make a summary of the discussion of Reason in Society in the author's own words: "We have seen that society has three stages — the natural, the free, and the ideal. In the natural stage its function is to produce the individual and equip him with the prerequisites of moral freedom. When this end is attained society can rise to friendship, to unanimity and disinterested sympathy where the ground of association constitutes at the same time a personal and emotional bond. Ideal society, on the contrary, transcends accidental conjunctions altogether. Here the ideal interests themselves take possession of the mind; its companions are the symbols it breeds and possesses for excellence, beauty and truth."

The author of these series of works has certainly set before him an ambitious task. The first volume seems to us to be disappointing. It seems to lack definiteness of both purpose and expression. There

is certainly nothing new or fruitful either in psychological or metaphysical principle or treatment. As a foundation-laying even for the following works it seems to us to lack point.

The second volume, on the other hand, seems to us to be somewhat original in substance and manner of treatment, and is certainly fruitful in suggestion as well as principle. The work will repay reading, and we may look forward to the completion of the entire series with interest.

GEORGE S. PAINTER.

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MENTAL EVOLUTION.

Natural Selection and Self-conscious Development. H. W. WRIGHT.
Philos. Rev., 1905, XIV., 40-56.

In order to determine whether natural selection is a governing law in self-conscious development, it is necessary (1) to examine the nature of natural selection as it was originally described and held to be operative in connection with the evolution of the organism, and (2) to note the distinguishing characteristics of the sphere of intelligence and obligation, to which it is proposed by some to apply the law of natural selection.

The view of natural selection adopted by the author is the extreme mechanical interpretation of Darwin. From the *Origin of Species* he finds warrant for saying that natural selection depends upon interaction (1) between organism and environment, and (2) between individual organisms. In both cases the interactions are between agencies which are externally related. In contrast with this external form of relation existing between the agencies in natural selection, it is pointed out that the relation of the conscious self to the objective world is not external and physical but functional and organic. This unique relation is so intimate that the self owes its development and existence as a person to its relations with the objective world, and the world owes its character and meaning to its relation to the self-conscious individual. The relation of individuals to each other is also not external, but intimate. The meaning and opportunities of the environment increase as the number of individuals increases.

Such a wide difference in conditions results in the world of self-conscious development, in a kind of adjustment different from that which arises under natural selection. The environment must supply ends which appeal to the individual as worthy of pursuit. Since the

character of the environment depends on the individual, there need be no scarcity of ends, and since the relation of the individuals to each other is so vital there is no occasion for conflicting interests. Consequently there is no 'struggle for existence' and therefore no natural selection as found in the organic world. However, the author disclaims any intention of implying a break in the continuity of the evolutionary process. He recognizes both the physical and teleological factors, but emphasizes the teleological factor in the higher grades of development.

Realizing certain difficulties of this position, the author raises and replies to a number of objections. Is not the adjustment of the individual to the environment imperfect because many of the ends sought are unattainable? In answer it is to be said that the environment is only responsible for the totality of ends. The choice of specific ends rests with the individual. But are not certain ends forced upon the individual, — life, for instance? Mere existence, by the majority, is given a subordinate place among the ends that govern them. Is not organic existence indispensable to the attainment of the ends of intelligence? The environment is sufficiently well adjusted to render existence possible, and furthermore the individual can transform his environment. In the extreme case where existence is cut off, we may say that the true significance of self-conscious life is not to be estimated by the length of physical existence. As to the relation of individuals to each other, the difficulties which arise on account of the fierce competition which actually exists in intelligent society are not discussed, but are declared to be not insoluble.

ESTHER HEMPHILL.

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Essai sur l'évolution psychologique du jugement. THÉODORE RUYSSSEN. Paris, Alcan, 1904. Pp. 382.

This title is misleading, for the book is by no means exclusively devoted to the study of judgment, but discusses all forms of consciousness, in the order of simple and early to complex and late, without in the least making good their claim to be considered forms of judgment. The thesis of the book is well formulated on page 242, where the author says: "In the preceding pages we have considered knowledge (*la connaissance*) as a process, no longer logical but dynamical, * * * as an adaptation of all the physico-mental organism to an external stimulus." Adaptation, the author teaches, implies both the initiation of novel reactions and the repetition of actions already performed. He defines judgment, for example (p. 48), as 'reaction, defensive or

offensive, of the organism against an environment more or less near; or else,' the author adds, 'it is the equally active attitude of the spirit towards its own internal modification.' And he describes belief (p. 328) as 'an adaptation or rather a readaptation, that is, an accommodation of hereditary or acquired habits to new cases proposed by experience.'

It should at once be granted that the book accomplishes, often very effectively, this main object. It shows, in other words, that most of the different modes of consciousness may be regarded as adaptations to environment, involving both initiation and habit. But this result has, strictly speaking, a biological rather than a psychological value. From the standpoint of analytical psychology, moreover, the shifting meaning assigned by the author to the key-word 'adaptation' renders the basal conception of the book a trivial one. Most often 'adaptation' is used in a sense purely biological and physiological to refer to motor reactions. Again, adaptation and attention are treated as if practically synonymous; more rarely, adaptation is regarded as the relation of one self to another. It is obviously futile to define the different modes of consciousness in terms of a unit of such diverse significations.

The confusion of the physiological with the psychical standpoint is shown in other ways. M. Ruysen often treats the physiological accompaniment or condition of consciousness as if identical with it. Thus, he says: "For the child to appreciate a distance is to renew the useful effort to run through it; to recognize a person is to hold its arms out to him" (p. 138). But recognition, so far as it is a psychic phenomenon, is not identical with the arm lifting, though accompanied or preceded by it, and though constituted in part by the consciousness of the lifted arm. Once, at least, the author is even guilty of arguing that because a physical condition is complex, therefore the corresponding psychic state is also complex (pp. 99-100).

Barring these fundamental criticisms, this reviewer has only commendation to offer. M. Ruysen is widely read in the literature of psychology, biology and philosophy. His book abounds in vivid description, often accompanied by keen analysis, of concrete psychic experiences. Almost at random one may cite, as of real value, the definition of the concept as the habitude of attention (pp. 148, 154); the vigorous disproof of the verbal theory of generalization (p. 151); and the decial of 'mental chemistry' (p. 142). The comparison of belief, faith and will, and the analysis of the æsthetic judgment, are particularly full of suggestiveness even to those who do not subscribe unreservedly to the author's conclusions.

M. W. CALKINS.

Materials for the Psycho-genetic Theory of Comparison. F. N. HALES, Brit. J. of Psychol., 1905, I., 205-239.

The materials used by the writer in his investigation are the gesture languages of deaf mutes and primitive peoples, together with the less developed forms of oral language.

The evidence from gesture language goes to show that there are four clearly marked stages of development, through which the expression of judgments of comparison passes. The most primitive method (opposition) consists simply in the assertion of the quality in respect of which comparison is made in the case of one of the objects, and denial of it in the case of the other. The second stage is reached when a quality is asserted with respect to both objects and the difference indicated by the amplitude or emphasis of the gesture, which may be either purely imitative or representative in a rudimentary way. In the third stage (separation), as for example in the comparison of distance or size, a certain arbitrary distance between the hands is made use of to represent a standard of comparison, more or less being indicated by the increase or diminution of the distance between the hands. This is plainly a step forward toward the substitution of one single synthetic judgment for two separate and independent judgments. Finally, from the third stage there is a natural change into a fourth, which is the nearest approximation in gesture language to an adverbial expression. Here the gesture for increase and that for quality become separated. Corresponding to these stages, the gestures used develop from indicative in the first, to imitative in the second, and symbolic in the third and fourth. The author bases the above analysis on the results of answers to a questionnaire widely circulated among those familiar with deaf mutes and upon information from those having first-hand knowledge of the gesture language of the American Indians.

An investigation into oral languages shows that the expression of comparison judgments may be brought under six main principles, some of which correspond somewhat closely with the types found to exist in gesture language.

These principles are those of opposition, exclusion, separation, gradation, apposition and composition. The methods of gradation and separation are offshoots of opposition through exclusion. These methods may be illustrated as follows: I. Opposition. Food good, water no good; II. Exclusion. Water and food, food good; III. Apposition. Next to water food is good; IV. Separation. Starting from water, food is good; V. Gradation. Food is better than water.

Composition is not dealt with by the author, as he regards it of slight psychological significance.

The conclusion reached is that the most primitive experience in sensory discrimination of objects is the apprehension of a novel feature in the one, together with the failure to apprehend it in the other, the experience corresponding to the first and second of the above methods of expression. The simple apprehension of a novel feature gradually passes over to the reference of the novelty to a standard as expressed in the forms of apposition and separation. This reference to a standard is the beginning of a recognition of qualitative continuity, which after several stages of development is expressed by the form of comparison judgment with which we are familiar. Thus we see that the older psychological doctrines of comparison are chiefly founded upon the final stage of a long and complex process of development.

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CHILD PSYCHOLOGY.

L'étude expérimentale de l'intelligence. ALFRED BINET. Paris, Schleicher Frères, 1903. Pp. 311.

But little of the interesting character of Professor Binet's present work would be suspected from its title alone. It is, in the main, an account of some telling experiments upon two young girls of his family—experiments which bring out, as by sharp portraiture, the two contrasting types of mind to which the children belong. The book is thus a contribution to Individual Psychology, and the success with which the author has carried out his intricate study fully warrants a certain tone of rejoicing and of victory, which issues now and then from behind dry lists and cheerless tables.

The girls who were the chief subjects of the investigation here reported were, at the close of the principal experiments, respectively thirteen years of age and fourteen and a half. A great variety of tests were tried upon them, including the writing of groups of words and sentences, the filling-out of unfinished sentences, the description of objects and events, the rapid underscoring of special letters scattered through print, the transcription of numerals, the reaction to stimuli of touch, the memorizing of prose and verse, the recollection of words, narratives and designs rapidly presented, the reproduction of stretches of space and extents of time. One may get, even from this arid list, an idea of the range of the author's experimentation, but no impression of the freshness of his finds.

It soon became evident that the girls were of quite opposite mental character. The older, Marguerite, keeps in much closer touch with the world of actual things and events. She is more precise and 'objective' in the description of objects set before her. Her younger sister, Armande, proves to be more imaginative and emotional: the world of fancy and of feeling is, for her, as real and important as is the world of sensible fact; her ready memories spring from a more distant past than do those of her sister; in describing an object, even when present, its physical features are seen vaguely through an atmosphere of sentiment and of imagery.

Or, again, Marguerite, the more matter-of-fact, shows by various tests a better voluntary control of her attention; she can by sheer will-power hold herself down to the work in hand — she can, *e. g.*, memorize well what is neutral and unattractive; she has a shorter and more constant reaction-time than has her sister; she can more accurately reproduce a given space-extent.

Armande, on the other hand, is more the creature of moods, the thing in hand must of itself interest her or she can do little with it; she cannot in a set time memorize *verbatim* as long a literary selection as can the older sister, though she equals her in the reproduction of a series of ideas given her but once; and while Armande cannot reproduce extents of space as accurately as can her sister, yet she surpasses her in reproducing durations of time. In her case the inner life is rich and dominant, while her sister is more practical and more at home in the external world. To the one, the author at times attaches the term '*imaginatif*'; to the other, the term '*observateur*.' They typify for him two contrasting strains in human intelligence, the literary and the scientific spirit.

The detailed facts upon which Professor Binet's account rests are gathered not by experiment pure and simple, but by experiment joined with persistent urging of the girls to introspection. The results thus obtained are checked by observation of their daily behavior. The self-observation of which these children give evidence would be well-nigh incredible if it came through a less trustworthy channel. Many a psychologist might envy them their introspective skill. And yet even when one has misgivings at the first sight of so much introspection from persons so young, yet in the end the direct experimental results so strongly support the self-observations, and these so strongly support one another, that the reader finds himself putting more and more faith in the validity of the author's procedure. It is a fine example of the study of two-characters, and the varied results for

each individual are shown to have a mutual connection and to be in harmony with the character to which they belong.

But besides this, the book is important for its support of the doctrine that *thought* and *imagery* are quite different things. A given thought may be definite though the imagery accompanying it be vague; the thought may be special or individual while the image may have no specific or individual marks; and, finally, a thought may be real and clear without having any discoverable imagery at all. Such a view is, of course, not wholly new, but experimentalists have been especially prone to overlook the distinction between images and the thought which informs them.

If one were to speak of deficiencies in a book so able, he might pass over the abundance of printer's errors and the want of any proper index, and mention that the author seems at times to give too great weight to negative evidence. When a child says that she does not have such or such a mental process, — *e. g.*, incipient articulation or verbal imagery, — he is perhaps too ready to accept such a report as proof of its absence. More should be made of the possibility that the observation was faulty. Beyond this, one need hardly more than refer to a certain partisan and uncatholic spirit at times displayed. The German laboratory methods are condemned directly or with faint praise. '*L'époque Wundtienne*' with its physiological and statistical leanings is spoken of almost as of a bygone age.

We poor Americans are pilloried by name, — we with our love of doing big things and of publishing accounts of experiments on persons by hundreds and by thousands! But the better time, our author tells us, has long been dawning. '*Le mouvement nouveau*,' to which this present work belongs, pays proper attention to the individual traits of the person experimented on; it lays stress on introspection along with the experimental procedure; it studies the higher phenomena of mind, rather than its beggarly elements. All torn and trampled as one's partisan and patriotic feelings must be, after such an onslaught, yet, — with some pride that we are able to show our author the better way, — we express our good-will both toward him and toward *le mouvement nouveau*.

G. M. STRATTON.

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Studies of a Child. ALEX. F. and ISABEL C. CHAMBERLAIN.
Pedagogical Seminary, 1904, XI., 264-291.

The subject of these studies, which are practically confined to the third year, is the daughter and only child of the authors. The material

consists of extracts from elaborate diaries — from which further citations are promised in later articles — with only sufficient interpretative and explanatory comment to give connectedness to the series.

The observations are arranged under sixteen headings with the date of each entry, so that direct comparison with other records may be made as to relative advancement in any given particular. With few exceptions, such as instances of fear, observations of nature, establishment of right-handedness and time discrimination, the studies are linguistic in character. The vocabulary is unusually copious for a child of three, which is doubtless due to constant companionship with the parents, but it seems also to have been most flexibly applied. Many aspects of the significant expression of thought are taken up in the course of the article, including the development of habits of affirmation and negation, instances of argument and expostulation, imaginative processes, definition, comparison and transference of meaning, the spontaneous formation of words and language, story-telling, rhythm, rhyme and song.

The thirty or forty cases of analogical transfer of class names, many of which include under a single entry a series of such transitions, afford interesting illustration of the assimilation and modification of concepts in the child's mind, and the reader who wishes to add to his store of infantile definitions will find in section V. a hundred odd instances given, practically all of the familiar use-wont type. Under 'Poetry and Song' the authors give phonetic reproductions of the child's liltings and babblings which consist of a broth of sense and nonsense, nursery rhymes combining with available fragments of prose sentences and strings of meaningless syllables, in which a pronounced sensitiveness to rhymed arrangements is added to the ordinary tendency to rhythmical utterance. Students of the development of speech as well as those interested in that of sensibility to rhythm must be grateful for every addition to this class of material, and observations are much to be desired which connect speech-motor phenomena with the appearance of rhythmic movements generally, whether spontaneous or responsive. In this connection may also be mentioned the need of systematic, and if possible statistic and quantitative, observation of the succession of uncoördinated and coördinated, undifferentiated and differentiated uses of the limbs which appear in course of the establishment of right-handedness and preliminary to it.

The enormous amount and variety of gratuitous exercise in verbal forms which the child's life manifests at this most active stage of speech development is indicated in the entries under Spontaneous

Language where in some ten records, comprising altogether not more than perhaps fifteen minutes' 'talk,' over four hundred and thirty distinct forms were noted. The more intimate nature of the process of anticipatory training of the mechanism of expression which these word-plays afford is shown in the manifold variations of root forms, the constant reappearance of resembling syllables and the complication of verbal stems with a series of terminations by which they are marked.

No general conclusions are aimed at in this article, the contents of which are intended as a contribution to the material data of child psychology, which must be patiently accumulated through such laborious journal records of trained and systematic observers as the basis of any theoretic formulation of the processes of development.

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ROBERT MACDOUGALL.

Psychology of the Language Interests of Children. A. W. TRET-
TIEN. Ped. Sem., 1904, XI., 113-178.

The author has attempted to harmonize the periods of language growth with the stages of the unfolding mind. He discusses the innate, inventive, supernatural, imitative or onomatopoetic, and the developmental theories of language development. His divisions of life are the usual ones,—infancy, youth, preadolescence, and adolescence.

Infancy is characterized as the primary period of language development. It is the time of learning the mother tongue and extends from birth to the middle of the third year. Infancy is subdivided into the reflex period, the period of articulation, and the period of speech coördinations. The reflex or automatic period is one of physiological adjustments, marked by the undifferentiated reflex cry, which is followed, first, by the early differentiated cry that makes known the wants and discomforts by a modification of vocal utterances and, finally, by spontaneous babblings that result in a recognition and discrimination of sounds. The period of articulation, which embraces the second six months of life, is the time to practice upon the 'raw material of language.' The mental development is accelerated and there is a tendency to imitate sounds and movements.

Thus far in the child's life, language has expressed emotional states; it now expresses objects of thought. There is an understanding of the word. The time of teething and learning to walk is usually a period of language retardation. The period of speech coördinations or the independent use of language is subdivided into the sentence word, and the sentence with and without inflection. On the side of

training, it is shown in a forcible way that neither 'voice culture' nor 'baby talk' should be indulged in or permitted by parents.

Childhood extends from the third to the seventh years. Physiologically, it is the time of rapid growth. Psychologically, it is the questioning age (the what, where, and why period of children); the time of interest in myths, rhymes, stories, words, play upon sounds of words, combinations of words, drawing, personification, and dramatization. Pedagogically, it is the time when the child should be put in a rich language environment, allowed to come in contact with nature, and encouraged to relate his own experiences in his own way. The overshadowing impulse of the period is the myth-making impulse, and although it may express itself in colored and fancied forms, no alarm should be felt.

The preadolescent period is the time of verbal memory. It extends from the seventh to the eleventh or twelfth year. Its advent is marked by physical readjustments and its close by extreme physical disturbances. Interest in childish myths and fairy tales is diverted to stories of life and narratives. The child becomes interested in new words because of their form or because of their association. Economy of expression is shown in that the child is less sensori-motor and more associative, speech forms are rapidly developed, and memory becomes more exact. Definite, concise, clear statements become the rule rather than flowery misstatements.

Adolescence, the time of functional maturity, is known as the secondary period of language development. Significant language interests arise. The child longs to commune with nature. A passion for reading books arises. Interests are less sensuous and more emotionally interpretative. The vocabulary often proves inadequate and the child is overcome by the dumb-bound feeling. Again, secret languages are invented. There is spontaneous impulse to write, speak, recite, debate.

The article does not reveal marked originality. It is valuable as a well-arranged compilation of old material. It is luminous and vigorous. The pedagogical conclusions are significant but very general. The appended bibliography is comprehensive and inclusive.

LOTUS D. COFFMAN.

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Experimentelle Untersuchungen über die Hausaufgaben des Schulkindes. F. SCHMIDT. Archiv f. d. Gesamte Psychol., 1904, III., 33-151.

The author carries out his investigation in consideration of the following general home conditions:

1. Influence of parents, brothers and sisters, whether that of helpfulness, hindrance or indifference.
2. Place where pupils live, number and size of rooms, heating, lighting, whether in basement or attic, etc.
3. Time of day when work is done.
4. General conditions, such as social surroundings, nutrition, use of tea and coffee, conditions for sleep, etc.

The investigations are made in German schools in two classes, the VIa and VIIa, with pupils from twelve to thirteen years of age. The method was as follows: Two similar lessons equally difficult were given, one to be worked out at home, the other at school. In three weeks, for the sake of verification, the same lessons were again given. In all, eighteen home and eighteen school lessons were employed in the test. Only work already familiar was used in order to avoid practice effects. The aim was to make the home work a natural outgrowth of the school work. The teacher designated the time when the work should be done, but did not suggest how it should be done.

The lesson material tested technical skill, understanding, memory and imagination. Lessons were assigned in:

1. Copy work, in which pupils changed German type to German script; German type to Roman script; and direct to indirect discourse and *vice versa*.
2. Number work, testing both the pure and applied phases of this subject.
3. Composition, testing both constructive ability and thought development.

In general the conclusions of the author may be summarized as follows:

1. Home work is of less value than school work, but we are not to conclude that home work is negative in value.
2. The average variation in the quality of home work in both form and content is greater than in school work.
3. Daily home work should be avoided, because it tends to superficiality. But work done occasionally at home may surpass school work in certain cases.
4. In city schools, with morning and afternoon sessions, and in winter schools in the country, home work should not be done.
5. The time of day most suitable for home work is (for copy and number work) from five to six in the evening; and (for composition) in the forenoon and from five to eight in the evening.
6. Written number work should not be attempted at home, because the quality of such work is inferior.

7. Home composition work should be done when the pupil can work in solitude, because such work is qualitatively better than when done at school under the influence of the other pupils.

8. Home tasks should be derived directly from the instruction, since in that case it will be well prepared for and most carefully controlled.

The author emphasizes the value of the experimental method in dealing with the question of home study. By this method the teacher deals individually with his pupils. He comes to know not only how to adjust their home work, but how to deal with them according to their individual needs in general.

The value of the study consists not so much in a final solution of the question as it does in revealing a method for the study of the question. The author's conclusions cannot be taken as final, because the tests are limited not only to German schools but to particular classes and conditions in those schools. Possibly the same kind of experiments made in the United States, or even in other parts of Germany, would give somewhat different results. The value of the study remains, nevertheless, in that it suggests how each teacher may attack and solve his own problem of home lessons.

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Feeble-Mindedness.

Experimental Studies in Mental Deficiency: Three Cases of Imbecility and Six Cases of Feeble-Mindedness. F. KUHLMANN. Amer. J. of Psychol., 1904, XV., 391-446.

Since by far the greatest source of our information regarding the characteristics of arrested development in children has been merely from general observation, there is an inordinate lack of accurate descriptive terminology. There is 'a variety of different classifications, based upon different principles, and combinations of principles, and not one of them is uniformly followed by many writers.' The author of this article follows the common classification of these cases into idiots, imbeciles and feeble-minded, according to the *degree* of general development. He also insists that experience will enable us to make a farther classification of each type into a low, a middle, and a high grade, which is the only means to accuracy when it comes to a comparison of results from different cases.

To compensate for this lack of accurate descriptive terminology and to give a general idea of the development of each case during the

time the individual remained under observation (the experiments were carried on in the Massachusetts School for Feeble-Minded Children), the writer gives a brief description of each case 'At Time of Admission' taken from the physician's record, and some 'Present General Observations' made by himself during the four months in which the tests were carried on. As a farther aid photographs are appended of each case in two different postures. The nine cases studied were not selected at random, but were intended to be representative.

1. The first class of experiments are those on memory. The purpose is mainly twofold—'first to determine what the proper method would be for getting evidence that would decide the essential problems that such tests in general aim at, and, secondly, to get results from the particular cases studied for the sake of comparison with other results.'

The results point to the correlation of a 'high memory span and high proficiency to commit to memory, with a low degree of memory permanency.' This correlation may be accounted for, however, by the principle of normal psychology that whatever is committed to memory under a high pressure of effort and attention is least permanent. Incidentally it was brought out also that 'there were some instances of decided memory preferences,' those subjects that were poorest in mental development presenting the most striking examples of this. These preferences are shown to be due to differences in interest.

2. The second class of experiments relate to the ability gained by practice in performing certain set tasks. This was tested (*a*) by having the subjects throw at a target, and (*b*) by having them tap on a reaction key in unison with the beats of a metronome.

The results of the throwing experiments show that there is some ability gained by practice, but that this is more than counterbalanced by a loss of interest in the task as soon as the novelty wears off. As a consequence, the practice curve gradually falls after the second week. When the flagging interest is again aroused by artificial stimulation, the curve may be raised even above the level of its starting point. The daily records of each child show great variations due to changes in his daily disposition. It appears, however, that a favorable disposition alone does not necessarily improve the quality of the work in a given task, but does so only when interest in that particular task is aroused. Otherwise the surplus energy expresses itself in other directions.

From the experiments in tapping on the reaction key it appears that some of the children are unable to profit by practice when, for

example, the required rate of tapping conflicts too much with their 'natural rate.' It appears, moreover, from these same experiments, that 'they are almost completely incapable of any genuine voluntary effort in a task that they dislike, and that normal fatigue under such circumstances is impossible with them.' The degree of attention and voluntary effort exerted is, in general, directly proportional to the degree of intelligence the subject possesses. It was further found that their association and discrimination time was much longer than that of normal children and that it varied with the degree of intelligence.

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EDUCATION.

The Educational Theory of Immanuel Kant. Translated and edited with an Introduction and Notes by EDWARD FRANKLIN BUCHNER. Philadelphia and London, J. B. Lippincott Co., 1904. Pp. 309.

Kant's educational theory is derived chiefly from lecture notes used by him 'during four semesters between the winters of 1766-1777 and 1786-1787.' Coming to us merely as lecture notes, they are necessarily fragmentary and contain many logical imperfections. Professor Buchner's extended introductions and notes, however, render them extremely suggestive, alike to the general student of Kant, and to those interested in the history of educational theory.

Since, in another review of this book,¹ I discussed in some detail the lecture notes themselves, this notice will be devoted mainly to some points gleaned from the translator's excellent introductions. For one thing, the relation between Kant and Rousseau is clearly analyzed. "They agree on the necessity for a fresh start in establishing the principles of education." They are alike, also, in recognizing the necessity of the educator's knowing the child; in their belief in negative education at the first; in the importance of self-activity and of the physical culture of the mind. But in many important points they naturally part company. "To Kant, morality requires its pedagogical beginnings in discipline, the first true step in education, and religious instruction is necessary even as an expedient for social respect." The naturalism of Rousseau is of course far removed from the moral idealism of Kant. They build in opposite directions, the one back to savagery, the other to an ethically constituted social whole.

¹ *Journal of Philosophy, Psychology, and Scientific Methods*, Vol. I., No. 8.

"One praises barbarity, and attempts to usher in the time when nature shall be allowed to work out her own potencies unhindered by human ideas and the conventionalities of a social education. * * * The other, while starting with nature, shows how weak are instincts and how rude is savagery, and thus invokes the intelligence of which man is in need in order properly to develop those instincts in him, which are less trustworthy than they are in animal nature" (p. 27). To Kant, the good is not present in nature, but is the product of growth and training. Instead of instinct and inclination, he advocates the supremacy of reason and duty. After the first negative education, it must become a positive agency in the construction of character.

The Kant of the 'Lecture Notes' is not to be confounded with the Kant of the 'Critiques' (p. 33). His educational theory was not deduced from his philosophy, and yet, in a very real sense, Kant was moved in his philosophy by true pedagogical instincts.

Professor Buchner describes succinctly his psychological theory but points out that his psychology as such has no great or direct influence upon his educational theory. "The human nature which supplies the recurrent theme of pedagogical idealism in the introduction is the human nature of broad anthropological generalizations rather than that psychological individualism which is open to introspective analysis" (p. 52). However, his conception of the end of education as the perfection of man, he finds in the inner life rather than in outer circumstances. It is only in the latter half of the notes that mental training as such is specifically considered. Here, naturally, he is most absorbed in the training of the cognitive faculties and in this portion of the discussion he manifests a genuine genetic spirit. According to Professor Buchner, Kant's ethics holds a relatively more important place in educational theory than does his psychology, but, as he says, this is ultimately psychological in that it is based upon the will. In fact Kant mentions the 'will' more than any other mental process. "In his demand for a union of knowledge and power, and in his rule of learning by doing, this pedagogy of the will receives further vindication and application, and, finally, in moral education, it is will and not mere faculty training, which coördinates all the requirements and opportunities of securing the destiny of man in the moral behavior of the child" (p. 55).

Kant's place as an educational theorist is unique. His doctrine is described as a 'synthesis of the evolutionism of anthropological science and the ethical idealism of philosophy' (p. 57). His theory of the physical evolution of the universe is, of course, well known. He

'stood in the front rank of those who saw * * * the need of regarding the universe as in a state of change and becoming, which follows a law of progress' (p. 58). This conception, applied to anthropological science, was an important organizing principle in his educational theory.

Turning specifically to his educational doctrines, it is to be noted that, although they are not presented as a systematized whole, Kant nevertheless had a 'generic conception of education.' The idea of 'man and his destiny' is certainly fundamental. Education becomes a means for helping man to realize his destiny. To Kant, then, the educative process is thus essentially dynamic and within it 'effort' has a large place — is, in fact, its keynote. Education, he conceives, is not a luxury but a necessity, both national and racial. Man comes into the world 'raw' and helpless; by education alone, and not through nature, is it possible for him to attain the goal of his being. Its necessity thus arises out of the disparity of the infant and the developed human will, while its possibility depends upon the plasticity of infancy. The fact that the infant has 'germinal reason and quasi-germinal morality' makes education a practical possibility. Man 'is equipped for perfection.' Since education is a possible and a necessary process, it must rest upon scientific principles and should be developed into a distinct art. Its value lies in the fact of its being a means to the goal of man's perfection.

Kant regards the science of education as no mere theoretical structure. He stands clearly for experimentation and practical knowledge. The following are some of his principles, or maxims, as summarized by Professor Buchner: "The child must be educated under the dominance of the idea of humanity. The bodily powers must be cultivated to orderly independence. The mental powers must not be cultivated separately, or formally, but in mutual interdependence. Self-doing is the secret of true education, and self-education is its goal. Rules and maxims, not impulses and whims, must be the inspiration and guidance of every educational motive" (p. 71).

To the discussion of Kant's educational theory is added a valuable section on its limitations. These are said to be chiefly as follows: (1) the individual is over-emphasized, (2) the education of woman is not provided for, (3) the treatment of intellectual education is limited, (4) the feelings are neglected. He despises them as much in his educational theory as in his ethical theory. He thinks they weaken the character.

The 'Lecture Notes,' which comprise pages 101-222 of the vol-

ume, consist of an introduction, in which Kant discusses his general theory of education, and the 'Treatise,' in which physical, moral, and religious education are discussed. Under the physical is included intellectual education. Last of all is a conclusion. The translator has added 66 pages of pedagogical fragments from Kant's other writings. These are carefully classified and numbered and contribute much toward our understanding of his educational ideas as related to his philosophical thought.

The copious index adds greatly to the value of the volume as a reference book. It should also be stated that the carefully prepared marginal topics are an invaluable aid to a rapid consultation of the work. It may also be worth while to state that, owing no doubt to the excellency of the translation, the 'Lecture Notes' are very easy and on the whole interesting reading.

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TIME DIRECTION.

The Meaning of the Time Direction. R. A. P. ROGERS. Mind, N. S., 1905, XIV., 57-73.

Repeated endeavors have been made to give objectivity to time direction. Kant endeavors to do it by regarding it as an expression of the category of cause and effect, which is the only category that expresses an irreversible relation between objects. *A* determines *B*, but *B* does not determine *A*. Now this category, as intellectual, can only mean that if the cause is given, the effect can be deduced; on the other hand, if the effect is given it is impossible to deduce the cause. As applied to the time series, this means that if the past is given the present and future can be deduced, but given the present and future the past cannot be uniquely deduced, but may be one of several. This difference of relation, for Kant, gives meaning to the time direction; if this were not true there would be a time-order but no time direction.

But such a conception is wrong. The time series is intellectually reversible, the irreversibility is simply a result of limited vision. An omniscient intellect could deduce the only possible past from the given present. This is illustrated by the fundamental laws of rigid dynamics, $s = \frac{1}{2}ft^2$. This may be reversed by merely changing the sign of t . We must, therefore, seek for some other sign of the objectivity of the time direction.

Time direction is psychical; *i. e.*, when the conscious subject is abstracted, nature appears as an endless series of phases, contin-

uously connected, extending in either direction (past or future) indifferently. The laws of science illustrate this. It must, then, be concluded that consciousness must make time direction. Then time direction must have a psychical basis and a psychological explanation.

The explanation must begin with the subjective difference between past and future. Consciousness is always in the present, which is, so to speak, an ever-changing unit containing elements which give a distinction between past and future. In a general sense, these elements are memory and expectation respectively. But the active elements in both accentuate the difference most strongly. Thus desire intensifies the conception of the future. The future is that which can be an object of desire, and is the direction in which the will moves. The past has no actual interest, only a theoretical one.

So much for a subjective and individual criterion of the validity of time direction. But how is there one time and one time direction for all conscious beings? In other words, how is time direction external? Since time direction has only psychical meaning, and since this meaning is given by will, the objectivity of the time direction necessarily implies objective will. The future, then, is the direction in which objective will necessarily moves. Hence, time ceases to be a mere continuum. It becomes time direction. The motive which actuates will is the continuous and progressive development of some unique psychic quality. This quality, by its very definition, must be an 'absolute and common good,' since objectivity of will implies universality. As Nature inevitably strives after an absolute and common good for all conscious beings, we have a reconciliation between rational ethics and natural law.

Finally, the assumption of a Supreme Spirit immanent in nature delivers us from the Solopsism which arises from the conception that any individual human will can guide the processes of Nature. The human will becomes rationally objective through submission to the Divine.

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PSYCHOPHYSICAL PARALLELISM.

Le parallélisme psycho-physique et ses conséquences. ANDRÉ GODFERNAUX. *Revue Philos.*, 1904, LVIII., 329-352 and 482-504.

The author's purpose is to show that the principle of psychophysical heterogeneity — bodily automatism with epiphenomenal consciousness — furnishes a basis quite sufficient for all the purposes of psychology.

The various theories of parallelism differ in the extent of physical action which is paralleled by consciousness. The extent of the parallelism is wholly a matter of hypothesis. Nor, even in the clearest cases, is the parallelism worked out in detail. But this is no ground for admitting spiritual causality; for spirit, to act upon matter, must be of the same kind; and this is incompatible with the principle of parallelism.

The conception of spiritual causality has arisen partly from psychological sources — thought as antecedent to action being translated into thought as cause of action — but mainly from the theological prejudice of the inferiority of the body, which refuses to identify the self with the body and seeks a soul which may be declared immortal.

This conception persists in modern psychology in the idea that, while mind and body are generally parallel, there is one form of mental operation — the act of choice — which has no parallel in the physical series. This corresponds to the *liberté nue* of medieval theology. But this feeling of liberty is in reality only the parallel in consciousness of the liberation in the organism of energy for which no outlet is provided in the organized nerve-paths; it takes place at the point where equilibrium between organism and environment is not complete, and where new adjustments are being established. Thus, even in the act of free choice, the cause of the action is physiological rather than spiritual, and the liberty of choice is itself a property of the body.

Our action is, therefore, both determined and free: determined, in the sense that it conforms to the law according to which the sum of energy remains constant; free, in the sense that it marks a redistribution of energy which furthers our organic welfare. The feeling of freedom is simply the subjective aspect of that constant redistribution of energy which is peculiar to organic bodies. And this is all the freedom that can be desired. Spiritual causation presupposes supernatural ends; but when we examine our desires and purposes we find that they refer always to bodily welfare and to bodily activities in space and time.

Examining our consciousness, we find it composed of feeling and image (including sensation). And it is in feeling that we seem to find the ground of mental activity and spiritual causality. But feeling differs from image merely in being more diffused and indefinite. It is the counterpart of cerebral rather than peripheral changes; and the activity is throughout a physiological activity. Thus, consciousness is purely epiphenomenal. It is a contradiction in terms to attribute either sensation to the body or activity to the mind.

Accordingly, since the body is the self, the principle of automatism with epiphenomenal consciousness meets all the requirements of psychology. Nor must we discard the method of introspection, since it is mainly through introspection that we obtain our knowledge of the minute cerebral activities.

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MEMORY.

Memory of a Complex Skillful Act. EDGAR JAMES SWIFT. Am. Jour. of Psychol., 1905, XVI., 131-3.

Two subjects, 'A' and 'B,' practised every day throwing and catching one ball while a second ball was in the air. After the completion of this daily practice a set of ten trials was made once a month for five months.¹ This article gives a record and description of one set of ten trials made under identical conditions fifteen or sixteen months after the last monthly test. The results show that the old skill remained, 'the nervous system had forgotten nothing.' The muscles became fatigued much more rapidly than in the earlier tests. However, not only did the old ability remain, but a marked increase in facility appeared. There were several balls caught which required skill such as was nowhere shown in the regular practice series, and in this one set of ten trials a score was made equal to the best record of the regular practice series and superior to the last test of that series.

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BOOKS RECEIVED FROM SEPTEMBER 5 TO OCTOBER 5, 1905.

The Freedom of Authority. J. M. STERRETT. New York, Macmillan, 1905. Pp. 319.

The History of Agriculture in Dane County, Wisconsin. B. H. HIBBARD. Thesis submitted for the degree of Doctor of Philosophy, 1902. Bulletin of the University of Wisconsin, No. 101, pp. 69-214.

Travaux du Laboratoire de Psychologie Expérimentale de l'Université de Louvain. (Bibliothèque de l'Institut Supérieur de Philosophie.) Paris, Alcan, 1905. Pp. 195.

¹ Cf. 'Studies in Psychology and Physiology of Learning,' by Edgar James Swift, *Am. Jour. of Psy.*, 1903, Vol. XIV., p. 201.

- Das Gefühlsproblem.* ROLF LAGERBORG. Leipzig, Barth, 1905. Pp. vi + 141.
- Thought Forms.* ANNIE BESANT and C. W. LEADBEATER. London and New York, Theosophical Publishing Society, 1905. Pp. x + 84.
- Evolution, Racial and Habitudinal.* JOHN T. GULICK. Washington (D. C.), Carnegie Institution of Washington, 1905. Pp. xii + 269.
- La misura in psicologia sperimentale.* ANTONIE ALIOTTA. Florence, Galletti e Cocci, 1905. Pp. 253.
- Twenty-first Annual Report of the United States Civil Service Commission for the Year ended June 30, 1904.* Washington, Gov. Printing Office, 1905. Pp. 366.
- Congrès international de Philosophie; 2^e session.* Tenue à Genève du 4 au 8 Septembre, 1904. Rapports et comptes rendus, publiés par les soins du Dr. ED. CLAPARÈDE. Geneva, H. Kündig, 1905. Pp. 973.

NOTES AND NEWS.

PROFESSOR EDWIN G. DEXTER has been appointed director of the School of Education at the University of Illinois.

It is announced that the proceedings of the International Congress of Arts and Science held at St. Louis in September, 1904, will be published by Messrs. Houghton, Mifflin & Co. in eight volumes. Volume I. will be devoted to 'Philosophy and Mathematics' and volume V. to 'Biology and Psychology.'

THE following is taken from the press:

THE summer course in experimental phonetics at the University of Marburg was delivered this year by Dr. E. W. Scripture.

THE PSYCHOLOGICAL BULLETIN

INTEREST AND ATTENTION.

BY DR. FELIX ARNOLD,
New York City.

In the following paper I shall try to give a more or less sketchy account of the relation of interest to feeling and to attention, and then to take up a more or less positive account with possible logical and ethical implications.

The expression 'interest' is used very much in the manner in which young ladies apply the term 'perfectly lovely.' Interest is considered sometimes as a feeling, sometimes as attention, now as will and then again as sensationalist excitation. Interest as feeling, however, seems to be the prevailing dictum, especially since Stumpf brought out his much quoted sentence, '*Aufmerksamkeit ist identisch mit Interesse und Interesse ist ein Gefühl. Damit ist alles gesagt*' (*Tonpsychologie*, I., p. 68). It does not speak well for the thoroughness of the various psychologists who have taken this bodily from the text and appealed to it as an authoritative statement for the identification of interest and feeling. As far as I can remember, this sentence is quoted by Ladd, Sully, Stout and Miss Calkins, the last of whom by a most curious combination considers interest as a feeling of clearness (combining Stumpf and Titchener) and therefore as attention.

If one understands the general treatment among German psychologists of the term feeling, he would perhaps pause before taking Stumpf's statement and interpreting it in English sensationalist terms. As a matter of fact, Stumpf explains himself in his second volume. '*Gefühl*' here is seen to be not passive feeling, but a '*Lust*' in the German sense. Attention and interest are thus defined: '*Sie ist nichts anderes als die Lust am Bemerken selbst*' (II., p. 279). Further we find that '*Jedes Lustgefühl welches auf einen bloß vorgestellten Gegenstand gerichtet ist, kann in ein Wollen übergehen*,

sobald der Gegenstand wahrscheinlich oder sicher erreichbar scheint' (p. 283), and finally, '*Der Wille erzeugt hier also nicht sondern ist die Aufmerksamkeit*' (p. 69), i. e., where we have voluntary attention the will is the attention itself directed upon some cognitive content. Interest, then, according to Stumpf is not a feeling in the English sense of the term, but rather a desire, an appetition, a conative tendency.

Interest as pleasure hardly differentiates two distinct types of conscious moment, one in which there is only pleasure, and one in which interest exists. If interest is identical with pleasure, then every pleasurable state must be one of interest and *vice versa*, the same holding of course in the case of pain. But we do not find this in actual experience. Take for example the interest in the preparations for dinner, and the actual process of eating. In the former case the interest existing is due to the meaning which the preparations have for some future condition of the self concerned. In the preparations, for example, I see good things to eat, pleasant company perhaps, compliments and the like. But in the actual process of eating, there may be pleasure, but no interest. If the process has in it no reference to any future condition of the self, the interest is at an end and the pleasure begins; and it is confined to and ends in the present. As Professor Baldwin says: 'We could hardly say an oyster is interested when a sharp instrument is thrust painfully between his shells. The intrusion affects him and it is in his interest to avoid it; but it is truer to say that it hurts him than that it interests him' (*F. and W.*, p. 143). Interest seems rather to point to the future, while feeling as pleasure-pain is confined to the present.

Another aspect of the subject is sometimes unduly emphasized. This is the identification of interest with attention. James Mill, for example, treats interest as a feeling and also attention as a feeling and considers that 'having an interesting sensation and attending to it are but two names for the same thing' (*Analysis*, II., pp. 367, 368, 369). Stout considers interest as the hedonic tone concomitant with the activity of attention (*Anal. Psych.*, I., pp. 224, 225) while Titchener makes attention and interest as two sides of the same experience (*Outline*, p. 143).

While there is no doubt as to the concomitance of interest and attention when interest is actually present, some reservations might be made as to the closeness of their connection. If we restrict attention to cover that state of affairs in which there is the greatest clearness plus the motor adjustments, and interest to that meaning of the object

which refers to the future, we should, I think, be nearer the actual facts in the case. Perhaps this will be more clearly brought out if attention and interest are positively considered.

While it may be flattering to consider attention as some guiding activity, still this is a philosophical rather than a psychological conception. We do not feel any such selective principle buzzing around in our heads, and the most we can say is that there exists a felt tension in any moment of intense attention. Attention, rather, is that state of clearness and distinctness due to any difference, change or pleasure-pain elements in the incoming stimuli, or to the associative and supporting elements centrally excited; while on the motor side we have those end organ and muscle accommodations helping to produce such clearness.

The '*Blickpunct*' aspect of attention has been made popular by Wundt, but it has been brought out before him by others. Thus Lotze compares attention with the '*Netzhaut des Auges*' (*Med. Psy.*, §37) and Fortlage considers it like '*der helle Blick des Beobachtens*' (*Sys. d. Psy.*, §12). The clearness and distinctness which are the determining features of attention likewise had been explicitly stated by Kant (*Anth.*, §6). This is the structural point of view. Attention is the state of greatest clearness and distinctness, the former referring to the relation between the parts of the content, the latter to the separation of the whole from a background (Wundt, *Grundzüge*, III., pp. 333-339; Jodl, *Lehrbuch*, II., p. 74; Titchener, *Exp. Psych.*, I., pt. II., p. 189). The motor processes considered as attention by Ribot, and emphasized by Bain, Lange, Münsterberg and others, may be considered as concomitant and reinforcing processes.

In any actual moment of attention considered in its concrete totality, this aspect of clearness and distinctness must be analyzed out of the whole complex present. Besides the series of tensions felt either as simple eye strain or total body attitude, we might add in the higher forms of attention the associated ideas which rise and aid in bolstering, as it were, in the focus, the idea concerned. Attention may be considered as a state of tensions; but this, it seems to me, is not a predominating characteristic under *all* conditions. The feeling of passivity, *as a feeling*, is much more evident in the less strenuous kinds of attention. And again, greatest attention is not characterized by greatest felt tensions; in fact such tensions are rather the sign of inharmonious accommodations and incomplete attention.

The difference in the elements producing such clearness and distinctness gives us the ground for differentiating the kinds of attention

possible. Where attention or the state of clearness and distinctness is due to difference, change or pleasure-pain, we have instinctive attention. Where the incoming impression excites associations without any special sense of strain we may call the attention assimilative. When the mental state has in it felt tensions due to lack of harmonious adjustment to a given situation, because of its lack of congruence with some end or aim, we have the so-called voluntary attention. The modifying terms do not change the essential meaning of attention here any more so than elsewhere, and simply refer to exciting causes or concomitant changes. Just as when we speak of a horse-car, of a motor-car or of a railway-car, we refer rather to a certain method of propulsion, or to accompanying circumstances; we do not consider a car as a horse in the first example, as a motor in the second and so on. Any definition of attention must be consistent throughout its various phases, and any theory which considers attention as volition, or as sensation, motor adjustment or what not, is simply emphasizing certain aspects of it.

While it may be necessary to posit an activity back of consciousness and thus consider attention as an increase in the intensity of such activity, such a treatment is rather metaphysical than psychological. I think that Stout, in his treatment of the subject, mixes these two standpoints in his discussion of attention. Passivity as a mental state, as a feeling, has existence from the purely psychological standpoint. Whether there is an activity constantly operative in such cases has, psychologically, nothing to do with the matter, unless it is felt as tension strain or what not. Attention as pure activity seems rather a subject for philosophical than psychological discussion.

As regards interest, we may treat it in its two aspects, conative and cognitive. When I am interested in any thing, I take a certain attitude towards it with reference to some possible future condition. I see in the object concerned the means of influencing some future condition of the self. If the object gives merely pleasure and carries with it no future reference, there is pleasure present, but no interest. I may, for example, take pleasure in gazing at some highly colored chromo, but I would take a real interest in looking at a visiting card of some friend. The picture as a pleasurable object merely, carries with it no future reference, is without interest. The bit of pasteboard calls up certain attitudes, certain future states which are to be realized, and in so doing has interest. I anticipate a certain future state in which I shall feel a thrill of pleasure or what not. But I can hardly consider it an object of pleasure *per se*. I cannot say that the interest

is future pleasure, for it is now, it exists in the present and is a fact; whereas the future pleasure is not; it is something which may take place, but it has no present existence. This idea of the future state to be realized forms an important constituent of the state of interest existing. An example might aid in showing this. A newly elected president of a rapid transit company is reported to have said, 'All the interest the people have in me is how much they are going to get for a nickel.' It is highly probable that this president was not, as such, a pleasure producing object. But in so far as the people saw in him the possibility of influencing them, in some way, just so far did he hold their interest.

Interest, therefore, may be considered as a body attitude determined by a guiding cognitive content. For purposes of convenience these are treated separately, but they always in greater or less degree exist together. The attitude is rather a body feeling than a pleasure-pain sensation. It is easier to explain wherein such attitude consists by treating it genetically. When, for example, I am confronted by some object unconnected with any of my former experiences, I go through a series of reactions. I take the object up, try to use it, look at it, test it, smell or taste it and so on. After a number of such experiences, I tend to consider such object as a thing to be treated a certain way. Upon meeting it again, instead of going through the whole series of reactions, I simply tend so to do, get ready as it were serially to develop them. Such attitude may be said to consist in the motor innervations aroused. Now, when an object has meaning with reference to some future condition of the self, this future reference is felt as an attitude, as a tendency towards certain adjustments which for various reasons, *e. g.*, time, lack of proper means, of possession, etc. may be impossible at once, or which may be on the point of being realized. In the latter case we would have a primary, in the former a secondary interest.

The meaning or worth which I attach to the object is simply consciousness of the attitude roused. An object has worth because it 'hits' me a certain way. I give it worth, I stamp it as a thing to be treated a special way, give it meaning because of such attitude. Only in this manner can I conceive of Professor Dewey's definition of interest as 'consciousness of value' to have any meaning.

Any attitude as a body feeling as such, is blind, is a striving to little purpose without more or less of the cognitive aspect present. The future condition to be realized, to be appreciated, must exist in some ideal form. If, cognitively, I see nothing in an object, if it is

not connected with some future condition of the self, it has for me no interest. But as soon as it concerns me in some manner, and in a way not restricted to the present, interest in such object exists for me. Interest on its cognitive side is the especial signification which an object or idea has with reference to some future condition of the self. Cut away all idea of futurity, and no interest is possible. Similarly, if all reference to the self is removed, interest likewise will disappear. So-called disinterestedness is merely a special form of interest, an interest which cannot be weighed by the pound or measured by the yard, as it were. But the self is concerned none the less.

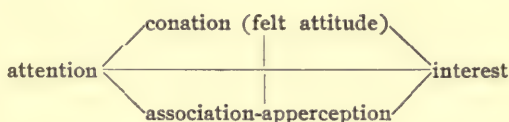
Examined as a form of consciousness, interest assumes two aspects. First we have the conative tendency towards a serial realization of motor innervations. Cognitively we have the revival of ideas or images giving direction to such tendency and explicating the meaning in the present with reference to some future state of the self. Any feeling of pleasure present is simply something added, something thrown in *gratis*, but something which does not constitute any essential part of the interest itself. Interest can exist equally with pleasure or displeasure considered as feeling. The general tendency towards adjustment to ideal conditions or in the direction of such conditions, and the struggle and alternation of attitudes arising, may give rise to a sense of effort, of tension or of strain. According as the attitude or the ideal factors in interest are emphasized, we have desire, expectation, curiosity and the like.

From this account of interest, it will be seen that interest is not concomitant with all forms of attention. When, for example, I start at a sudden flash of lightning, the state of attention instantaneous with the flash is not accompanied with interest. If, however, I then take an attitude, see in the present condition a menace, begin to seek shelter, and the like, interest is aroused. Only when associative processes due to previous experiences are possible, can interest arise. If we consider interest present in every state of attention, this would make the newly-born infant able to take an interest in everything, and would make teaching one long sweet dream. The child may be attracted or pleased by every new impression, but this is not interest. Interest, rather, may be considered as the residual effect of a series of acts of instinctive attention which make possible adjustments and striving, under future conditions of a similar nature.

I do not wish to be dogmatic on this point. But it seems to me that, at the beginning, there must be some short period in which the activity of a child is completely taken up with the present. To admit

the opposite would be to posit, as it seems to me, either innate ideas or ready-made adjustments. Striving as seen in the child seems to be more a feeling of unused activity, but this again seems to be confined at first to the present and has no future reference to the child. So, too, attention as primitive, *i. e.*, attention in some new field, or where the instinctive shock comes before adjustment towards it with reference to the future — such attention seems without interest at the beginning.

The relation between interest and attention in the highest stages may be shown as follows:



i. e., in the total attention-interest complex we have clearness and distinctness of the mental state, accompanied by felt tensions due to end-organ and other adjustments and associative processes aiding to hold the present moment in the focus; and on the side of interest, *in addition to the body tensions*, a body attitude due to the tendency serially to realize the meaning in the present with reference to the future, such tendency receiving guidance and support from the associated ideas referring to such future state.

The logical form in which the relation between interest and attention may be well shown, has been brought out by Professor Dewey in his Columbia lectures and discussions. Considering any proposition logically, as predicating certain things of any given, the subject would give us the '*Blickpunkt*,' the focus, the object in attentive consciousness, and the predicate would constitute the cognitive aspect of the interest present. Or if we consider that any meaning present is due to the attitude taken, the words themselves being a mere collection of marks, or auditory impressions, the conative attitude would also be included. But it has been said above that interest is concerned wholly with the future, and predicates may be past, present or future. This brings us closer to the full meaning implicit in any predicate.

Taking any predicate dealing with the past, *e. g.*, 'The fire has burned him,' the past experience is given as a warning for the future, as a sign pointing to future possible adjustments. 'The fire has burned him, *and may burn you*' is the complete meaning, or something of the kind. This is well shown in the cry, 'The king is dead! *Long live the king!*' Even where such implication is not so evident, it may be found. 'The house has fallen,' for example, may refer to

the future insofar as it means a certain state of quiescence, certain necessary adjustments, or what not. If one tells me in a casual way 'The house has fallen,' and it in no way concerns me, being simply an experience ending with the present, any interest signified by the predicate will not be interest for me, though it may be for the speaker. We are interested in the past chiefly as it points futureward, and those who simply dream of and enjoy past experiences in ideal form, are similar in kind to the individuals who practice the maxim, 'Let us eat and drink, for to-morrow we shall die.'

The ethical implications of the above view of interest need be only suggested. The development of a person's character is in reality nothing more than the development of a system of interests. It is the significance which a thing has with reference to some future state that determines one's attitude towards such thing. An interest is not a fleeting bit of sensationalism, but an enduring acquisition, a manner of interpreting and reacting. And judgment of a given situation will be determined by the interest of the person concerned. An individual in reality is as free as his interests are wide, and his power of judging is limited to the implications existing for him in the present moment, while the moral character of such judgments depends upon the nature of the interests formed.

PSYCHOLOGICAL LITERATURE.

PSYCHOLOGICAL STANDPOINT.

Der doppelte Standpunkt in der Psychologie. MARY WHITON CALKINS. Leipzig, Veit & Co., 1905; American agent, C. A. Kühler, Boston. Pp. 80.

The old associationist treatment of consciousness, more logical than psychological, considered consciousness as consisting of a series of ideas, such series, moreover, being considered *in abstracto*. In what lay the fault of such a view? Miss Calkins has given us a carefully prepared monograph to show wherein such a treatment is lacking, and has also supplied what in her opinion is necessary. According to Miss Calkins, we must supplement the structural standpoint by what she calls the point of view of the 'self-psychology' (*Ichpsychologie*), *i. e.*, a view of consciousness as the consciousness 'of a personal self in all its relations and phases' (p. 9), a psychology of selves, as it were.

At this point a question seems to me to remain unanswered. Granted a consciousness which is always in relation to another self or subject, a social consciousness as it were (pp. 35, 36), how does that help us any as regards the serial explanation? I do not here wish to uphold any special theory, but simply to seek light on the modification of the English view by the psychology which is treated as a science of selves. It seems to me that the latter method is trying to explain the problem by scattering it among a number of selves, by losing it in a multitude. Now, granted a series of ideas, how can we help explain consciousness by making such ideas social, or related to other selves? By relating them to other selves, we still leave them in all their barrenness, they still are discrete, they still remain atomistic and self-sufficient. If each is related to a number of other selves, we have the same old series with further complications which remain unexplained. Miss Calkins becomes somewhat more explicit in the treatment of perception and ideation, and perhaps it is here that the two standpoints are shown as mutually supporting each other.

In the former case, according to the one point of view, we have simply a succession of percepts which may undergo the usual analysis. According to the other standpoint, that of psychology treated as a sci-

ence of selves, every perception of an object has with it the added experience of a feeling due to the presence of concomitant observers who also perceive this object. 'In perception,' says Miss Calkins, 'I am always conscious that I am sharing the experience of others' (p. 42). This seems evident to Miss Calkins for the following reasons: (1) We verify a doubtful perception by appealing to the experience of others; and (2) we are able according to this theory to understand why we class some impressions as 'higher' than others. Visual impressions are considered the 'highest,' so Miss Calkins says, because they are such as can be shared by the greatest number of individuals (p. 43). And to the possible objection that we may perceive objects when no one is around, Miss Calkins even then by a continual appeal to introspection feels the object as one which *may* be experienced by others. 'Solitary and alone,' says she, 'when, in my study, I am aware of my desk for example, I have at the same time an indistinct consciousness that other persons, were they present, would see the same thing' (p. 43).

These seem to be very good reasons, but have they really anything to do with the case? Is it moreover a fact that this vague, dreamy, haunting feeling of another's possible presence is always involved in any perception? Is there not a most vicious example of the psychologist's fallacy here present? This objection can be safely left to the reader's judgment, without further remark by me. Concerning the verifying of perception by means of the experience of others, is this also a fact as stated? The point at issue in the latter case, it seems to me, is the *kind* of experience needed for verification, whether my own or that of others. Do we always need to verify our experience by such social appeal; or do we not rather of our own account attempt in verification to explicate our attitude by a series of reactions or motor adjustments? This point, too, I think can be safely left to the reader. Finally, as regards perception, supposing all the above mentioned statements of Miss Calkins to be correct, I do not see how such social awareness has anything to do with improving the structural view of consciousness as a series of abstract moments. We have simply the same old series, plus an awareness that others have or can have a similar series.

Further, as regards imagination and thought: "Psychologically, to distinguish imagination or fancy from perception, we must have recourse to 'self-psychology.' * * * The world of perception is in fact the world in common, which lies open to all. On the other hand, dreams and images belong only to individual beings" (p. 45). A

rather subtle fallacy is here involved, which is also present in the social theory of perception. It is, briefly stated, the following: Since there is a common world to perception, therefore, the common world of perception gives us a world of common or shared perception; and experience as self-experience must on that account necessarily be different from that of every other. As a matter of fact, every experience, whether of perception or of thought, is uniquely self-experience; and perception of the same object can be shared only insofar as the meaning of such object is the same for all concerned. Moreover, as regards ideal revival, there is nothing to prevent a number of individuals from having the same idea, *as idea*. As regards sameness, is there not just as much possible in the case of the image as in the case of perception? Sameness of object is not necessarily community of experience, nor is sameness of experience necessarily shut out in all ideation. Is it not just on this latter that most social appeal rests?

Underlying the whole treatment of '*der doppelte Standpunkt*' are the following misconceptions: (1) The isolation of the self as opposed to community of knowledge (one question, mainly epistemological) is confused with the twofold aspect, structural versus functional psychology (another problem). Miss Calkins takes the structural point of view, and opposes it to the problem of the community of knowledge, which, wrongly it seems to me, she calls functional (p. 33). (2) The consideration of psychology as a science of selves is simply one aspect of the treatment of psychology which views consciousness as always concerned with an object. From a psychological standpoint 'social' means nothing. I am just as sociable, psychologically, when I press closely a much prized object, as when I press softly the hand of a friend, or share my experience with him or with her. Psychologically I take an attitude towards each. Psychologically I can abstract from the present moment and by analysis seek certain elements. But as far as sociability is concerned, there is just as much in the one case as in the other. The fact that the self is connected with other selves is simply a form of the more general experience that consciousness always has an object, that every moment of consciousness is filled with a content, and a variation of the philosophical view so well expounded by Royce, that the universe forms one interrelated whole.

Now Miss Calkins is perfectly justified in presenting her discovery as '*EIN*' *doppelte Standpunkt*, but hardly as '*DER*' *doppelte Standpunkt in der Psychologie*. As a personal contribution it is

acceptable on its own merits. But it seems hardly fair to foist it upon psychology in general. What the twofold aspect of psychology is, and wherein modern psychology is an advance on the structural view, is overlooked by Miss Calkins. This twofold aspect, as it actually exists, is seen in various fields. In literature we are beginning to emphasize the content, and the meaning, at the expense of the purely verbal and grammatical analysis; in pedagogy we have passed out of the Lockian view of the 'empty cabinet,' are forcing out the Pestalozzian practice of object teaching as such, and are appealing rather to self motivation and self activity under guidance; in biology, the study of function holds equal rank with that of structure; in philosophy we are ploughing out of the static into the dynamic view of the universe; and over all is arising the great cry, *What does it all mean?* WHAT IS IT GOOD FOR? Where no meaning is evident we tend to cast it aside, or leave it for academic disputation. Use as here mentioned may refer to an attitude merely, as well as the more violent form of reaction, and the æsthetic or 'useless' *is* of use in this sense. It is here where Bradley makes his mistake in his various criticisms of the modern movement. So too in psychology this twofold aspect, structural versus functional, is becoming more evident.

The inadequacy of the structural point of view in psychology to explain the various facts of consciousness has given rise to the functional and motor theories so ably put forth by Baldwin, Dewey, James (more in his various articles), and Münsterberg, the last named being classed, in spite of his 'motor' theories, as a structural psychologist, which it seems to me he is not in the least. Perception is studied, not simply as an agglutination of sense elements nor as an association-complex, but as an essentially motor process, giving meaning to the object concerned, and determining serial reaction towards such object. Images are not simply fleeting bits of sensationalist revival, but also logical aids to action; and, as such, require further analysis to determine the motor tendencies and the attitudes bound with them. Even by reducing all states to sensationalistic elements, we do not necessarily restrict ourselves to the structural view, for such very structural elements, if conceived as having meaning, may be motor, may help in constituting the attitude taken.

As I have said above, if we take the contribution of Miss Calkins as one originating with herself, and limited to her own views, we must take it for what it is worth. But it is hardly a correct discussion of the twofold aspect of psychology as it exists to-day, nor is it a proper presentation of the attempt to harmonize such opposing views, in the sensori-motor theories now of so much account.

The psychological analysis of sensational elements, of volition and belief, and of will and faith given by Miss Calkins in this monograph is essentially the same as that set forth in her excellent *Introduction to Psychology* and need not be further mentioned. Much work requires to be done towards a complete sensori-motor psychology, and Miss Calkins' attempt is valuable for at least stirring the waters of this stream.

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METAPHYSICS.

A System of Metaphysics. GEORGE STUART FULLERTON, Professor of Philosophy in Columbia University, New York. New York, The Macmillan Company; London, Macmillan & Co., Ltd., 1904. Pp. x + 627.

This book is divided into four parts dealing with (1) 'The Content of Consciousness'; (2) 'The External World'; (3) 'Mind and Matter'; and (4) 'Other Minds and the Realm of Minds.' Each subject is treated at length, and any adequate review of the work would require a very long article, rather than the few pages that can be given to its consideration in the BULLETIN. All that will therefore be attempted here is to call attention to a few of the points that seem worthy of study.

Part I. exposes the inadequacy of the 'psychological standpoint' in metaphysical work. From this standpoint the mind is regarded as 'quite shut up, so far as its immediate knowledge goes, to its own ideas; and though it may *think of* an external world, it is wholly impossible that it should look out of the windows and into the world beyond, at any moment of its existence' (p. 21). "In contemplating its condition of complete insulation, we are struck by the oddity of the fact that this whole doctrine rests upon reasonings in which it is assumed that the mind is *not* shut up to its own experiences, but directly knows an external world of things. The contradiction is palpable and unmistakable; between premises and conclusion there is an abyss which may be concealed by obscurity and confusion of thought, but which cannot be bridged by any legitimate procedure" (p. 24). Hence the metaphysician, if he is wise, must recognize that there are 'two kinds of thinking,' a psychological and a metaphysical kind, which 'are by no means the same, and one who does very good work upon the plane of natural science,' that is, the plane occupied by the psychologist, 'may still be incapable of doing good work of the latter kind, unless he has some degree of aptitude and has enjoyed some special training—a fact not infrequently overlooked, and sometimes

with disastrous consequences' (p. 27). The main defect in the psychological kind of thinking consists in supposing that while we are aware only of the psychic contents of consciousness, we can also be aware of the fact that some of these contents are symbols of a reality lying beyond. "If we know immediately only elements in consciousness, it is inconceivable that we should, by means of these, represent to ourselves elements of a different kind in so far as they are different" (p. 53). The problem then is, how to conceive of the elements of consciousness as elements of consciousness and at the same time as giving us a knowledge of an external world.

This problem is attacked in Part II. The result obtained by the discussion gives "a view of the nature of the external world which, I am glad to think, is not fundamentally new, even though it differs in some details from other doctrines with which the reader is familiar. Possibly some will be tempted to call it, at first glance, idealistic; but this name, with the associations that cling to it, can only lead to a misapprehension of its true nature, and I must beg that the doctrine be allowed to remain nameless, at least until this volume has been read through to the end" (p. 98).

The present reviewer is compelled to admit that after having read the volume through to the end, he is still unable, not only to give a satisfactory name to the doctrine, but even to understand it at all. The fault, it is unnecessary perhaps to say, is not to be found in any failure of the author to express himself clearly, step by step. Professor Fullerton writes here, as always, with enviable lucidity on every single point, but somehow when one at the end takes an inventory of the stock that the author has helped one to acquire, one finds that one has a regular department store on one's hands, well supplied with a most heterogeneous line of goods.

Take for example the question of the meaning of the external world. Reality, we are told, is ultimately bound up with sensation. "My ultimate reference is always to sensation; to sensations which have been experienced, or to sensations which may be experienced" (p. 102). "But what, after all, is meant by reference to sensation? How can a sensation be recognized as such?" (p. 103). Peripheral as over against central stimulation of the nervous system does not furnish the criterion, neither can vividness serve as a test (p. 103). "There is, then, but one ultimate method of deciding whether a given experience is to be classed as a sensation or not. We must discover whether it takes its place among those elements of our experience which so connect themselves together as to form what we recognize

as the system of material things" (p. 105). But "can anything be more irregular than the actual sense-experience which we have of things? * * * The world appears before the windows of the senses only in fugitive glimpses, and we may piece these together as we will, but they still remain ridiculously inadequate to make such a world as we conceive the world to be. * * * It is clear that we cannot take quite literally the statement that our *sensations* fall into an ordered system and constitute what we mean by a world of things" (pp. 106-7). The world "is rather a something built up out of the materials furnished by sense, supplemented by elements which, while not themselves sensations, are made to represent such. Sensations, memories of sensations, and imaginary experiences which are not memories, though their elements have no independent source, all enter into its composition. Our sensations, actual and remembered, are separated by gaps which must be filled before there emerges the system of experience which we call the world of real things" (p. 107).

But the non-sensational filling that it is necessary to put into the gaps does not go in *as imaginary elements*, but *as representatives of sensational elements*. "It is their content, so to speak, which belongs to the construction, not the content with the added characteristic of belonging to the class called imaginary. There is, thus, a sense in which we may say that the external world is constituted by the sensational elements in our experience. These elements appear to belong to it in a way in which other elements do not. They constitute it, and elements remembered or imagined merely represent it" (p. 108).

This sounds very plausible, but when we try to put it all together, we find difficulty. The criterion of sensation, be it observed, is behavior in experience (p. 104). To be a sensation, an element must take and maintain a place among our other experiences (*ibid.*), which 'so connect themselves together as to form what we recognize as the system of material things' (p. 105). But some of our imaginations do this without thereby gaining the title to be classed as sensations: the best we can do for them is to regard them as *representatives* of sensations. How then are we going to distinguish between sensations and representatives of sensations? Applying the criterion of 'behavior,' we should be compelled to admit that some imaginations have pretty good right to be called sensations, as they fit excellently into their places among our elements of experience. Except for differences in the manner of their psychophysical genesis, which we are told has nothing to do with their differentiation, I cannot see how we are to call some of these elements sensations and some merely representa-

tives of sensations. Once give me a clear test of sensation beside its accommodating behavior, and I can perhaps recognize some of these conformist elements as sensations and some as not sensations. But Professor Fullerton refuses to give me any other test than 'behavior.' But he avowedly makes a distinction between sensations and representatives of sensations. In doing so does he not furtively introduce some other test than that which he declares to be the only ultimate test? There are passages, it is true, in which the author lays emphasis on the fact that sensations 'enter *directly*' into the structure of the external world, while imaginary elements enter only as representatives of sensations (p. 117). We are not told, however, what is meant by this *direct* entrance of sensations into the construct called the external world. At least the reviewer cannot find such an explanation as would help him understand the author at this crucial point in his argument. On the contrary it appears that the author has here two very diverse views, according to one of which reality has nothing to do with the psychical characters of sensations as such, while according to the other the psychical character of sensations as such are unconsciously used as a basis of the all-important distinction between sensations and representatives of sensations.

Again, when we come to the difficult question of the difference between 'sensations' and 'things,' I find that distinctions once made are facilely given up, with the result that I do not know where I am expected to stand.

We are assured that there is a very important 'distinction between *the world as it is* and *the world as it seems to us*' (p. 418). It is a puzzling distinction, so we are also told, but we are led to expect that the puzzle will be solved for us. But while this solution is taking place we meet sentences like these. "And I answer: second, it is a misapprehension to suppose that 'the external world as it is' can be anything else than 'the external world as it is perceived by me,' or the external world as it is perceived by some other creature" (p. 431). "It should be borne in mind that it is not one and the same thing to say 'the external world,' and to say 'the external world as revealed to me'" (p. 456). Is there a difference between 'the external world as it is perceived by me' and 'the external world as it is revealed to me'? Or is there a difference between 'the external world' and 'the external world as it is'? It is hard to conceive what either of these differences can be, but it is harder to conceive how, without some such differences, the two statements can be reconciled. In fact, a careful reading of what Professor Fullerton says about the rela-

tion of our perceptions to the external world has failed to give me anything like a clear idea of what that relation is according to his system.

One of the contentions that Professor Fullerton stands for most vigorously is that one cannot be an interactionist without being a materialist, unconsciously if not consciously. "It seems clear that what is known as the 'interaction' theory of the relation of mind and body gains what plausibility it possesses from the covert ascription of materiality to mind. When this is made apparent, and when a resolute attempt is made to remove every materialistic element from the notion of mind, then it also becomes clear that the attempt to build mind into the bodily mechanism, and to make it, at least for the time being, one of its constituent parts, is nothing less than absurd. The mind is not *present* to the body in any sense that would permit of its filling a gap in the bodily mechanism. Interaction becomes a mere word, the name of an empty nothing, and the impulse to insist upon it dies of inanition. No clear-minded man can take pleasure in maintaining that there is interaction between mind and body, if the word 'interaction' suggests to his mind nothing at all" (p. 284).

Now it must be admitted that many of the historical forms of interactionism have been tainted with materialism. But Professor Fullerton has not made it clear, unless repetition of an assertion can make anything clear, that materialism is necessarily involved in interactionism. It seems that Professor Fullerton cannot conceive of any kind of interactionism that does not assert a *mechanical* relation between mind and body. But does interactionism necessarily involve anything else than the contention that some physical events are — at least part — causes of psychical events, and *vice versa*? Now unless causation is limited to *physical* causation, with an equation of energy between cause and effect, there seems to be no reason for asserting that the doctrine that there is causal reciprocity between mental and physical events involves a materialistic conception of mind. In his account of the meaning of causation Professor Fullerton has not made causation a merely mechanical relation. "The relation of cause and effect is a temporal one, and marks the order of the successive states in the life-history of the system" (p. 234). It is also a necessary relation, but necessity is 'but another name for the orderliness to be discovered in the system of things' (p. 236). If this be the meaning of causation, then the interactionist who maintains that there is a causal relation between mind and body need only assert that there is an orderly sequence obtaining between psychical events and physical events.

Such an orderly sequence Professor Fullerton seems at times to be disposed to admit. Thus he says 'that the system of things as a whole, the universe which contains minds as well as material things, is a Cosmos throughout, and that its order seems to us now indefinite and more or less chaotic only because we are ignorant' (p. 392). Sometimes, in trying to escape the consequences of such an admission, he takes refuge in a distinction so subtle that one is tempted to wonder whether it is not merely verbal. He speaks of two distinct '*orders*,' the subjective and the objective, which however form one '*system*.' "That the two orders are not independent of each other, but form one system, must be admitted by every one, explicitly or implicitly" (p. 396). Now the question is, what is exactly the systematic connection between these two '*orders*'? Is it not one of orderly sequence? If so, is not interactionism true?

Rather than give an affirmative answer to this question, Professor Fullerton prefers to commit himself to the doctrine of the *timeless* character of the psychical, although he has been unsparing in his criticism of Green for maintaining the doctrine of the timeless character of thought. So far as I can see the only important difference between our author and the writer he grills over his critical gridiron is that Green asserted the timelessness only of *thought* while Fullerton asserts the timelessness of *all psychical facts*. Of course there are certain minor differences between the two thinkers. Green calls the timeless thought of his system '*eternal*.' Fullerton thinks that the word eternity is 'a mere sound when *all* reference to time has been stripped away' (p. 608). But the kind of reference to time that Fullerton allows to his *timeless* mind is as self-contradictory as that which Green allows when he calls thought an '*activity*.' To make this clear we must do some more quoting.

That the subjective order *changes*, Fullerton takes for granted, as indeed he must, if he is to keep in touch with experience. "Every subjective *change*, if it is to find an explanation at all, must find its explanation in the objective material system" (p. 372, italics mine). But how in the world can there be change in the subjective order unless that order is in time? And yet nothing seems clearer than that Professor Fullerton denies that the subjective order is really in time. "Of course, it is evident to the discriminating mind that mental phenomena cannot literally be assigned a place in real time, any more than they can be assigned a position in real space" (p. 391). Again, "The time which we seek is evidently *real* time. There is but one real time. The real time of an occurrence means the point, in the series of changes

which constitute the life-history of the real world, at which the occurrence takes place. The sensation, *as sensation*, cannot be assigned a place in this series of changes. When we speak of its time — its real time — we can only mean *the time of that material change* to which we relate the sensation as the plain man relates his sensations to his body" (p. 389, the last italics mine). Has this not a most familiar sound, and when one tries to recall where one has read the like of it before, do there not come to mind certain passages in the famous *Prolegomena to Ethics*? For instance this passage: "The consciousness which varies from moment to moment, which is in succession, and of which each successive state depends on a series of 'external and internal' events * * * consists in what may properly be called phenomena; in successive modifications of the animal organism"; while on the other hand there is a kind of consciousness "that constitutes our knowledge, with the relations, characteristic of knowledge, into which time does not enter, which are not in becoming, but are once for all what they are" (*Prol. to Eth.*, § 67).

Now, if mental phenomena cannot literally be assigned a place in real time, how in the name of common sense can they be 'protensive' (p. 468), and how can they 'change,' and how can there be a parallelism between their changes and those that take place in the body — in real time? A parallelism between changes in real time and 'changes' in — what shall I call it? — well, in something at any rate that is not real time, is surely something whose 'disappearance can only be brought about by substituting a habit for a habit — the habit of clear thinking, for the habit of thinking loosely and vaguely,' if Professor Fullerton will allow me to quote from his criticism of Green (p. 92).

Various other difficulties confront the reader of the book, but enough of them have been pointed out to show that a writer who finds 'logical monstrosities' (p. 608) galore in the works of other philosophers may keep at least a small dime-museum of them in his own.

And yet the existence of these 'monstrosities' does not negative the real value of this most interesting book. To my mind the most valuable feature of the volume is its destructive criticism of popular metaphysics. Such chapters as those on 'The Man and the Candlestick' (Clifford's metaphysics) and "The Metaphysics of the 'Telephone Exchange'" (Pearson's metaphysics) are as convincing as they are entertaining. They might have been shorter, as indeed the whole volume might have been considerably shorter, without serious loss, and yet after all one does not begrudge the time that is so delight-

fully whiled away in Professor Fullerton's company. Perhaps 'speaking inconsistently and growing incoherent,' and 'absurd and unmeaning,' and 'meaningless forms of words,' and 'hollow shells, without substance and without true reality,' and 'phantasms,' and 'chimeras,' and 'monstrosities,' and 'Egyptian darkness,' and scores of similar expressions met with in the author's criticisms of damnable heresies, are to be considered as among the amenities of philosophical controversy, when they are used, not in indignation, but in humorous vilification. Professor Fullerton's treatment of doctrines he abominates is often so exquisitely funny that even the victim of his abuse cannot refuse to join in the laugh raised at his own expense. When the opprobrious epithets are omitted, as sometimes they are, we have humor of the purest (American) sort. One example will suffice. "Descartes began with the resolve to repudiate all his previous opinions, and to take back only such as could really justify themselves before the impartial tribunal of his reason. But when he had cleared the room of all occupants, and opened the door for the admission of the elect, there entered unchallenged (*ex uno disce omnes*) a soul whose ticket primarily entitled it to a seat in the pineal gland, but which, not content with so definitely limited a location, insisted upon its right — one inherited from Scholasticism — to occupy simultaneously all the chairs in the room. This right poor Descartes admitted at once; he was so accustomed to having souls act in that way, and he expected of them nothing better" (p. 97).

The publishers' part in the production of the volume deserves unstinted praise. Typographical errors do not seem to exist, with the sole exception of 'sense-expressions' (p. 350) for 'sense-impressions.' The literary style of the book is matched by the beauty of the printed page.

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VISION.

Color Sensitivity of the Peripheral Retina. JOHN WALLACE BAIRD. Washington, D. C., Pub. by the Carnegie Institution, 1905. Pp. 80.

This monograph of Dr. Baird's sets forth the results of the careful working over of a problem in experimental psychology which has yielded varied and contradictory results at the hands of different investigators. The historical side of the paper presents, in as brief compass as possible, the results of nearly all the previous investiga-

tions on the color sensitivity of the peripheral retina. An examination of this literature shows a sad lack of harmony in the statements of the men engaged in this field. The author shows that many of the contradictions arise from the persistent failure on the part of the investigators to control the objective conditions of experimentation.

Summarizing the main facts of peripheral color sensitivity, about which there is an agreement by most of the men who have worked with care, we note the following in Dr. Baird's words: "It has been established that color sensitivity decreases gradually from the center to the periphery of the retina; that every color stimulus is correctly recognized within a certain retinal zone, whose extent varies directly with the color tone, the brightness (absolute and relative), the saturation, and the area of the stimulus, and with changing conditions of adaptation and of refraction; that under certain conditions the zone of a certain red is coextensive with that of a green, while that of yellow is also coextensive with that of blue; that the yellow-blue zone has a much wider extension than the red-green zone; that all colors, excepting the four mentioned above, pass through certain regular transitions of tone as they appear upon more and more peripheral regions of the retina; that these transitions tend in the direction of yellow (when red, orange, or green stimuli are employed) and in the direction of blue (when violet stimuli are employed); and that with moderate stimulation all colors appear gray at the periphery, while with a sufficiently intensive stimulation, they may there appear in their own tones."

Hellpach, as is well known, published an article in the *Phil. Studien* (Vol. XV., 1900, p. 524), the statements in which can not be harmonized in many particulars with those in the above summary. He devised a new form of perimeter which consisted essentially of an arrangement by means of which a movable stimulus lantern could be exposed at any part of the visual field. Hellpach built up his colors by inserting appropriate colored gelatines in the forward part of his lantern. He employed (with dark-adapted retina) red, orange, yellow, green, blue, violet and purple stimuli which he equated neither in white-value nor in color-value. His conclusions are curious. He found, firstly, that the 'yellow' stimulus (wave-length not given) did not arouse the sensation of yellow upon any part of the peripheral retina; secondly, that all his stimuli tended to appear in the *complementary* tones at the extreme periphery. Hellpach is convinced of the existence of four concentric zones upon the retina: (1) a central zone upon which all stimuli appear in their true colors; (2) a para-

central zone, where certain stimuli appear in adjacent or transitional tones, *e. g.*, violet appears blue upon this region; (3) a more peripheral zone where all stimuli are colorless, and (4) an outermost zone where they appear complementary to their true colors, *e. g.*, violet here appears yellowish. His stimuli gave non-coincident zones of red and green, and of yellow and blue.

Coming as it did from Wundt's laboratory, this paper has been a disturbing element in the minds of those who fondly hoped that at least the main facts of peripheral color sensitivity had been firmly established.

Stimulated, however, by these results of Hellpach, which are so out of relation with the findings of others, Baird endeavored to confirm the former's 'discoveries.'

The experimental portion of the paper under review is divided into two sections: Section I. deals with the chromatic character of the sensations aroused when a constant color stimulus is applied successively to different regions of the (dark-adapted) retina; section II., with the relative extension of the retinal areas within which the tones of the different color stimuli are correctly recognized (retina again dark-adapted). Section II. is of especial importance, since the zone of coincidence of yellow-blue and that of red and green has, in every case, been established only for the light-adapted retina—Hellpach, it will be remembered, denies the coincidence on the dark-adapted retina.

Under I. the apparatus used by Dr. Baird consisted of an exact duplicate of Hellpach's perimeter, of his light filter (for yellow) and an enormous supply of colored gelatines. The experiments were carried out in the dark room of the Cornell laboratory. The horizontal meridian, nasal and temporal, was used. Each sitting was preceded by fifteen minutes adaptation in absolute darkness. The method employed was a procedure without knowledge. The stimulus was exposed for three seconds. Periods of rest, from six to seven minutes, were allowed between stimulations. Five experienced subjects were tested.

SUMMARY OF RESULTS.

Red (706–631 μ) first appeared yellowish, then passed through yellow, orange-yellow, yellow-orange, orange and orange-red, before it finally appeared red.

Orange (640–592 μ) came in yellowish, gradually assumed a more and more orange-like tint and finally appeared orange or reddish orange.

Yellow (619–581 μ) first appeared yellowish, gradually increased

in saturation and became orange-like towards the center of the retina. This stimulus really contained a slightly orange tint.

Green (546-522 $\mu\mu$) appeared yellowish at first, gradually increased in saturation and toward the close of the series assumed a greenish and finally a green tint.

Blue (519-642 $\mu\mu$) underwent no appreciable change of tone, but became more and more saturated as the series progressed towards the fovea.

Violet (493-431 $\mu\mu$) appeared bluish, then blue, and took on a violet tint very much later. Indeed it sometimes happened that the violet tone of the stimulus was not recognized at ten degrees from the visual axis.

Purple (red end of spectrum 682 $\mu\mu$) gave the longest and richest series of transitions. Beginning with yellowish its tone gradually moved down the spectrum, passing through orange-yellow, yellow-orange, orange, orange-red, red, purplish-red and reddish-purple, before the pure tone of the stimulus finally appeared.

When different intensities of stimuli were used, the retinal zones of sensitivity expanded with an increase in the intensity of the stimulus. Dr. Baird, although he did not try it, thinks that if the stimulation were sufficiently intense, all colors might be recognized at the extreme periphery.

These stimuli were equated neither in color-value nor in white-value, consequently no effort was made under I. to determine the relative extension of the different retinal zones.

Besides the changes in quality of the stimulus noted above, two other phenomena were reported by all five observers: (*a*) progressive changes in the saturation and in the color tone of the sensation which result from continuous stimulation, and (*b*) variations of saturation and of color tone which result from changed conditions of the local chromatic adaptation of the retina.

Under (*a*) Dr. Baird reports that no matter how constantly and continuously the peripheral stimulus was applied, the sensation which it aroused was neither constant nor continuous. A marked decrease in saturation and sometimes in brightness occurred during the progress of stimulation. Frequently a pronounced change in color tone also appeared. However well saturated the color appeared at the first instant of exposure, it tended to fade out as the exposure continued, finally ending in gray. The persistence of color was found to be much greater upon the paracentral than upon peripheral regions. Yellow and blue paled out much less rapidly than did the other colors — while

purple and violet changed most rapidly. Variations in color tone were as pronounced as those of saturation. The tendency was toward changes in the direction of yellow and blue.

Under (*b*) an interesting phenomenon was noticed when the interval between stimulations was reduced to one minute or less. Instead of sensations which corresponded in tone with the objective stimulus or with such transitions as have been noted, the observer would report phenomena which seem at first sight to be of the most irregular and accidental character. This irregularity consisted often in the observer's seeing the color complementary to the objective stimulus. The writer tells us that the appearance of the complementary color is wholly due to a failure to maintain a constant condition of retinal adaptation, since all irregularity invariably disappears when the eye has rested for a time in complete darkness. The observers were wholly ignorant of the existence of these after-effects — they were attended by no after-images, nor in fact by any other conscious datum. Pauses were made and the subjects were asked to be on the lookout for after-images, but the report was invariably to the effect that no visual phenomenon of any sort was present to consciousness after the cessation of the stimulus. Dr. Baird concludes that the 'functioning of the peripheral retina is followed by an after-effect which is tenaciously persistent and is wholly latent in character; and that this subliminal capacity is called into active functioning by subsequent stimulation.' Hellpach's 'gegenfarbige zone' is then only a product of the latent effects of stimulation (retinal fatigue). His method of experimentation was most favorable for the operation of the residual after-effects of stimulation (see method in text).

Hellpach's 'discovery' that a yellow stimulus gives no sensation of yellow in indirect vision was not confirmed.

The experiments under II., designed to test the relative extension of the different retinal zones, were carried out upon the Hellpach perimeter (dark-adapted retina). The colors employed as stimuli were those which undergo no change in indirect vision. These stable colors were hard to establish. The following were finally decided upon:

Yellow.....	551-557 $\mu\mu$
Green	483-500 "
Blue.....	448-474 "

The stable red of these subjects transmitted no part of the visual spectrum. These four colors were carefully equated both in white-value and in color-value.

The results show that the zone of stable red is coextensive with that of stable green; that the zone of stable yellow is coextensive with that of stable blue; that the yellow-blue zone is much more widely extended in all directions than is the red-green zone; that the nasal side of the retina has the widest extension of color sensitivity, and that there is a wide individual variation in zonal extension. These conclusions are in harmony with those drawn from investigations upon the light-adapted retina.

A question may here be raised, the answer to which is not clear in the text: was the 'stable' yellow (for example), bounded in the spectrum by $551\text{ }\mu\mu$ on one side and $587\text{ }\mu\mu$ on the other, the stable yellow for all five observers? Or does the $551\text{ }\mu\mu$ - $587\text{ }\mu\mu$ represent the extreme limits of the spectral band between which the stable yellow for all five observers lie? Again, do the same equations for color-value and white-value among the four colors hold the same for all five observers? Or were the equations made separately for each individual? As a matter of fact, if Dr. Baird found a stable color of a given wavelength to be a stable color without change for two individuals; or if he found the same equations for color-values and white-values to hold for all five observers—he was, to say the least, extremely fortunate in his choice of subjects.

The paper closes with a discussion of the relation of the facts brought out above to the various color theories. The results are found to be explicable in terms of both the Hering and the Ladd-Franklin theories.

On the whole Dr. Baird seems to have done his work carefully and extremely well. His conclusions are a distinct contribution to the subject of peripheral color sensitivity.

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Zur Kenntnis des zentralen Sehaktes. SIGM. EXNER. Zeitschrift f. Psych. u. Phys. d. Sinn., 1904, XXXVI., 194-212.

Exner offers a theoretical explanation of hemiamblyopia in view of the more recent experiments of Hitzig and Imamura on dogs. The results accepted as valid by Exner may be grouped in four classes: (1) Hemiamblyopia of the opposite side of the visual field will result from an injury to any part of the occipital lobe or the motor region controlling the eye (gyrus Sigmoideus). The result is independent of the extent or position of the injury within these areas; (2) recovery of the defective vision will occur after some time; (3) immunity. After recovery from an occipital lesion, a motor injury will

produce no second disturbance, nor will an occipital injury after recovery from a motor lesion; (4) alternating amblyopia. After recovery from a right occipital lesion, injury to the left occipital lobe will cause a return of the first disturbance which is sometimes more pronounced than the right hemiamblyopia normally resulting from the second operation. Imamura made four successive operations with the following results: (a) A left motor operation produced right hemiamblyopia from which recovery was made; (b) a left occipital lesion produced no further effects according to the principle of immunity; (c) a right occipital injury gave first a left hemiamblyopia, followed by a reversal to the right hemiamblyopia, and then full recovery; (d) a right motor operation produced amblyopia, but more pronounced on the left side, which condition was shortly reversed. In other words, the effects may successively alternate between the two halves of the visual field.

Preparatory to an explanation of the facts the author analyzes perception from the physiological side, describing the diffusion of the initial stimulus over the brain, which diffusion forms the basis for the constitution of the stimulus as an object with meaning. He describes various defective perceptions, *e. g.*, optical aphasia, etc., due to lesions of some of these associative pathways. Further, he calls attention to the fact that many retinal stimulations never force their way into consciousness, as in retinal rivalry, distracted attention, pathological cases, etc.

1. Hemiamblyopia is allied to defective perception. Some of the diffusive associative pathways are disturbed in function and the object loses meaning and value to the organism.

2. Recovery is due to a gradual absorption of the perceptive function by the opposite hemisphere by means of the corpus callosum. As proof of this position he cites experiments by Imamura, who cut the corpus callosum after the recovery. The hemiamblyopia returned permanently. The section was also performed simultaneously with the causal lesion and no recovery was effected.

3. Immunity. Since the function is absorbed by the opposite hemisphere, a second lesion on the same side will produce no effect.

4. In alternating amblyopia the perceptive machinery of both hemispheres is defective; the animal can perceive, but poorly. If one half of the visual field be normal, no use would be made of the defective side, but when both sides are defective the animal is forced to rely as best he may upon this defective vision. In this condition, strain and fatigue easily occur and the alternation of the amblyopia is

due to an alternation of this fatigue from one hemisphere to the other.

Possibly some writers would object to Exner's selection and interpretation of the basal facts in the phenomenon, but granted the validity of his position in this respect, his theoretical explanation seems not only ingenious but possessed of positive worth.

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Untersuchungen über den galvanischen Lichtreflex. DR. BUMKE.
Zeitschrift f. Psychol. und Physiol. d. Sinnesorgane, 1904,
XXXVI., 294-299.

It is known from the researches of others that a galvanic current between $\frac{1}{50}$ and $\frac{1}{5}$ m.amp. in strength will cause a sensation of light when passed through the eye. As the author has previously shown, a somewhat stronger current will also give a pupillomotor effect. Further investigations along this line were conducted with the aid of the Zehender-Westien binocular microscope. The large electrode was placed on the sternum or held in the hand of the subject. The small one was placed on the temple, close to the eye; or, if only the consensual reaction was to be tested, over the closed and protected eye.

When the current was passed from the temple through the eye, an average strength of 2.4 m.amp. was required to cause a contraction of the pupils 1-2 mm. at each closure at the anode. The movement and the following secondary expansion were analogous to the reflex from light. Next to the closing at the anode, the opening at the kathode was effective.

The subjective sensation of light seems to come before the motor result, at least so far as it is perceptible.

The attempt was made to use the galvanic reflex to decide what differences there are between the direct and the consensual reaction. The result was as ambiguous as that obtained by Fuchs; with some individuals the direct reflex comes first, with the greater number there is no such difference.

The behavior of the pupil in a condition of fatigue caused by staying awake all night was then investigated. The pupils of all subjects were larger in the morning after a night awake than at the same time on other days. The reaction to light was not changed, but the sensitivity of the iris to sensible stimuli was increased. The sensitivity to light from the galvanic current was increased somewhat, but the reflex sensitivity became less; if an individual perceived light with 0.1 m.amp. before, and a movement of the iris occurred with 0.2

m.amp., in a condition of fatigue, the values become respectively 0.08 m.amp. and 3.2 m.amp.

A satisfactory explanation of this difference cannot be given.

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DISCUSSION.

VISUAL SENSATION AND EYE MOVEMENT.

In a paper entitled 'The Illusion of Clear Vision during Eye Movement,' published in the *PSYCHOLOGICAL BULLETIN*, Vol. II., No. 6, appearing in June of this year, Prof. Raymond Dodge has adduced a variety of observations and arguments of which I am unable to catch the import further than that the author aims to invalidate some experimental results that I published in the *Harvard Psychological Studies*, Vol. I., appearing January, 1903. In my paper the conclusion was that some central anæsthesia prevents retinal stimulations given during voluntary eye movement from coming to consciousness until after the movement has ceased. Professor Dodge in his recent paper says that he 'should want to substitute the words inhibitory process for anæsthesia' in my statement. To this I have no sort of objection, inasmuch as in such a place the two words seem to me synonymous. Professor Dodge says furthermore, 'There is evidence, however, that the perception must occur largely if not wholly after the eye has come to rest, not on account of central anæsthesia during eye movement, but because of the latent time of retinal inertia and the transmission of nervous impulses.' He has, however, elsewhere said that 'eye movements of the first type * * * are primarily not periods of perception, but rather interruptions of vision';¹ and again, 'the most important characteristics of movements of the first type are * * * the fact that under ordinary circumstances of illumination and complexity of the field of view, they are never movements of new effective retinal stimulation.'²

The only conflict that I can so far discover between our two views, besides Dodge's rather captious choice of 'inhibitory process' in place of 'anæsthesia,' is that he ascribes the 'inhibitory process' to the latent time of retinal inertia and the transmission of nervous impulses. I cannot agree with this ascription, because the duration of the inhibition in my experiments was too great (being over 120 σ at the very least), and because, as I previously reported, there was good evi-

¹ *Amer. Jour. of Physiol.*, Vol. VIII., 1903, p. 316.

² *PSYCH. REV.*, Vol. XI., 1904, p. 3.

dence that the very optical stimulations that did not come to consciousness reached lower brain centers, and, before the voluntary movement was terminated, frequently changed it into a pursuit movement of Dodge's second type.¹ But neither does Dodge himself agree with his first ascription, for he says in the paper first cited (p. 197), "The lack of clear perception must rest largely, if not wholly, on other grounds [than anæsthesia]. Some of these at least are not far to seek. First, I believe we can demonstrate the influence of certain factors usually held to be retinal in their character; *and secondly, I believe we must admit, at least in the longer eye movements, evidence of important central factors.*"² The retardation of vision is then not due solely to the latent time of retinal inertia and the transmission of nervous impulses but to important central factors. These important central factors are what I thought it convenient to designate by anæsthesia.

Whatever opinion Dodge may have about the physiological facts, he is at least certain that my experiments are inconclusive, even in support of his own opinion. His objections commence on p. 194 of his first cited article, and I will take them up in turn.

A presumption, he says, is created against my 'anæsthesia' (his 'important central factors') by the fact that in the pursuit movements, Dodge's second type, vision is exceptionally clear. I quite agree with him as to the clearness of vision during pursuit movements, and I trust that his 'important central factors' evidenced in voluntary movements are not invalidated because of this fact. Dodge himself has shown beyond dispute that the two types of movement are quite distinct, and all my observations have confirmed his showings in this respect.

1. My 'pendulum tests * * * give results which can be interpreted as favoring central anæsthesia only occasionally.' Quite so: the adjustment of the eye movement to the pendulum swing was so delicate a matter that I made many trials that were not successful. Nor do I suppose that in experimenting Dodge stops after a few unsuccessful efforts. The evidence yielded by the many successful trials that were in the end obtained is absolutely unequivocal.

2. Dodge has been unable to realize voluntary eye movements of so slow a speed as were those that I chiefly used. This need not, however, have deterred him from repeating my experiments had he desired to do so. I have also made the pendulum test with more rapid eye movements, and found that with them also 'important central

¹ *Harvard Psychological Studies*, 1902, p. 42.

² Italics mine.

factors' prevent the retinal stimulations from coming to consciousness until after the movement is over.

3. "All the phenomena on which the hypothesis [of anæsthesia] rests may be explained without recourse to central anæsthesia [or 'important central factors'?] on the assumption of discontinuous sweeps of the eyes, interrupted by these short movements. These are certainly not precluded by Holt's experimental conditions." They certainly are precluded (cf. my paper, pp. 24, 32, 36 and 42), and if they otherwise were not, a discontinuity of eye sweep could hardly explain the *absence* of sensation when, as Dodge must know better than almost anyone else, it is the one condition necessary in a voluntary eye movement for the *presence* of a sensation. These short and discontinuous movements are indeed apt to occur, and when they did occur the subject at first believed that he had had visual sensations *during* an eye movement.

Dodge asserts that 'the handleless dumb-bell would appear if the velocity of the eye happened to coincide with the angle velocity of the pendulum when the dumb-bell shaped opening was passing some other than the central part of the illuminated figure.' True, but the eye was also looking at the dumb-bell shaped opening as well when it was passing the central part: if the eye was at rest then it would have seen the handle; if not at rest it was moving, and still the handle was not seen. This was because of a central anæst —, or rather of 'important central factors.'

Again, the handle 'must appear if the illumination was near the threshold and the angle velocities nearly but not exactly coincided.' As I pointed out again and again in my paper, if the angle velocities nearly but not exactly coincided, as indeed frequently enough happened, the two ends of the dumb-bell must and did appear not circular but horizontally elongated. Such cases formed a part of the unsuccessful trials above mentioned.

'In view of the ambiguity of Holt's experiments' Dodge devised a combination of his own perforated disc and my pendulum exposure apparatus, in which a stimulus 5 σ longer than a threshold stimulus and present to the moving eye, was seen. 'There is evidence, however, that the perception must occur largely if not wholly after the eye has come to rest * * *. This seems to me,' he concludes, 'rather decisive evidence against the hypothesis of central anæsthesia.' But not, I trust, against that of 'important central factors.' I remain mildly curious to learn why my experiments are 'ambiguous,' and why Dodge's, which, though they were less careful, yet followed

mine as closely as Dodge found feasible and yielded identically the same result, should seem to him 'conclusive evidence' to the contrary. All who are interested in this topic, moreover, should master the nice distinction between 'important central factors' that inhibit sensation, and central anæsthesia.

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EDITORS' ANNOUNCEMENT.

His colleagues regret that stress of other duties compels Professor Warren to relinquish the duties of the position of Business Manager of the REVIEW publications. In his place Dr. J. W. Baird, of the Johns Hopkins University, will assume the Business Management. We append a statement of the present location of the responsible bureaus of the REVIEW, with the appropriate addresses for the various sorts of communication.

1. All Editorial correspondence, Manuscripts, etc., intended for the REVIEW proper, together with Books for review, should be sent to

*Prof. J. Mark Baldwin, Johns Hopkins University,
Baltimore, Md.*

2. All Editorial correspondence, Manuscripts, etc., for the PSYCHOLOGICAL BULLETIN, and all correspondence relative to the PSYCHOLOGICAL INDEX, should be sent to

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*Business Manager Psychological Review,
Johns Hopkins University, Baltimore, Md.*

BOOKS RECEIVED FROM OCTOBER 5 TO NOVEMBER 5.

Ethik. M. WENTSCHER. II. Thiel. Leipzig, Barth, 1905. Pp. xii + 396. Mk. 9.

Twelfth Census of the United States (1900): Statistical Atlas. W. R. MERRIAM, Director; prepared under supervision of H. GANNETT. Washington, Census Office, 1903. Pp. 91, and 207 plates.

[A very important and beautiful series of maps and charts illustrating the statistical progress of the country up to 1900, in 'Population,' 'Vital Matters,' 'Agriculture,' and 'Manufactures.']

First Steps in Theosophy. E. M. MALLET. London, The Lotus Journal; New York, Lane, 1905. Pp. 93.

[A text-book dedicated to Annie Besant, and containing colored plates of the 'Astral Body' as influenced by different emotions.]

The Life of Reason. G. SANTAYANA. III. *Reason in Religion*; IV. *Reason in Art.* New York, Scribners, 1905. Pp. ix + 279, and ix + 230. \$1.25 net, each.

The Theory of Psychical Dispositions. C. A. DUBRAY. Psych. Studies from the Catholic Univ. of America. Mon. Sup. to the PSYCHOLOGICAL REVIEW, No. 30. New York, Macmillans, 1905. Pp. vii + 170. \$1.50.

Esquisse d'une Théorie biologique du Sommeil. Rep. from *Arch. de Psychologie*, IV. E. CLAPARÈDE. Geneva, Kündig, 1905. Pp. 245-349. 3 Fr. 50.

[Holds that sleep is an instinctive and defensive function whose biological utility is to forestall and prevent complete exhaustion.]

Vocabulaire philosophique. Fasc. 7, 8, E to Extrinsèque, contained in *Bulletin de la Soc. fran. de Philosophie*, June, July, 1905.

[Earlier parts of this *Vocabulaire* are reviewed in the BULLETIN, I., p. 123 (March 15, 1904).]

The Era Key to the U. S. P. A Complete List of the Drugs and Preparations of the United States Pharmacopœia. Eighth decennial revision (1905). Pharmaceutical Era, New York. Pp. 83.

THE PSYCHOLOGICAL BULLETIN

SOCIAL PSYCHOLOGY IN SMALL'S GENERAL SOCIOLOGY.¹

BY JAMES H. TUFTS,
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Professor Small's volume² just issued, although containing much less in the way of detailed psychological construction than was given in Professor Giddings's *Inductive Sociology*, is nevertheless of great interest to those who have followed, or desire to follow, the gradual development of a psychological standpoint and method in the treatment of social problems. The aspects of the volume which are of chief interest for social psychology may be considered under the following topics: (1) The Elements of the Social Process, (2) The Nature of the Social Process, (3) The Province of Social Psychology.

¹ This number, dealing especially with topics in social psychology, has been prepared under the editorial care of Professor James H. Tufts.

² *General Sociology. An exposition of the main development in sociological theory from Spencer to Ratzenhofer*, by Albion W. Small. Chicago, The University of Chicago Press, 1905. Pp. xiii + 739. \$4.00 net.

The author states that the purpose of the book is to present neither a system of sociology nor a history of sociology, but rather a conspectus of present conceptions and lines of tendency, in which much space is given relatively to questions of scope and method. Its main thesis is that 'the central line in the path of methodological progress from Spencer to Ratzenhofer is marked by gradual shifting of effort from analogical representation of social structures to real analysis of social processes.' In conformity with this thesis there are, for the first half, brief expositions of Spencer's structural view of society, then a brief exposition of Schäffle's functional view, followed by an extended exposition and interpretation of Ratzenhofer. In the last half, an extended account of sociological concepts is followed by a view of the psychical, ethical and technical problems in the social process. In the present article it goes without saying that no attempt is made to appraise the book as sociology, further than to say that to a layman such a conspectus of progress and tendencies appears to be very opportune.

1. *The Elements of the Social Process.*—Sociology seems definitely to have abandoned the 'individual' as the unit of analysis. The methodological ground for this may be very briefly stated, although I do not know whether the sociologist has put it in just this form. If individuals are our units, we are forced to explain a variety of results from identical causes. Or else we must say that individuals differ; and then we make, not individuals, but certain constitutive elements in individuals the ultimate units. What explains everything explains nothing. The question is, why do certain individuals act in one way, and others in another; or again, why do the same individuals act in one way at one time and in another way at another time? Professor Small (following Ratzenhofer) finds the social unit, and then the answer to these questions, in the concept of 'interests.' The social structure at any time is made up of more or less definitely organized interests; the historical process is the result of the conflict or union of interests. The various institutions, political, ecclesiastical, professional, industrial, etc., are devices, means, gradually brought into existence, to serve interests. Typical interests are security of existence, kinship, national, ecclesiastical, pecuniary, class, rank, and corporate. Each interest is at bottom exclusive, peremptory and insistent upon being satisfied. All the various interests may, however, be classed under six, health (including satisfaction of bodily appetites), wealth, knowledge, sociability, beauty, rightness.

It would seem that sociology is unquestionably on the right track in substituting interests for individuals as the unit of analysis. But certain difficulties, requiring further examination, at once present themselves. A minor question is as to the number and classification of interests proposed. Can all the interests which move man in society be classed under the six kinds named? To answer this we must understand whether we class and name the elements from the agent's standpoint or from the observer's, *i. e.*, the sociologist's standpoint. Is it a psychological or a teleological term, and if the latter, who is to fix the 'end' which serves as the standard? Professor Small answers that the term is to be used in sociology teleologically, although he also states that it makes little difference, for purposes of sociology, whether we define interests objectively as the ends toward which the life process moves, or as the ends which are actual objects of desire (subjective ends). It would seem, however, to make a decided difference in the number and classification of these ends. It is conceivable that the ends actually reached by a given man may be wealth or knowledge, while the actual conscious interest or desire is

simply to outstrip a rival. And this would be as true of communities in their activities directed toward improving the school system or building a navy as in the case of an individual. So, too, in every political campaign, besides those who are contending for spoils and those who are contending for good government, there is a considerable number who want to win, simply to have the satisfaction of winning. The instinct or interest of rivalry is certainly a most important subjective end, and it scarcely seems to be capable of inclusion under either of the heads named. Certainly also social psychology would have to take account of this interest and it is difficult to see how the sociologist can give a true picture of society without considering just such differences as are illustrated in the case of this particular interest.

A more important question is, which standpoint, viz., the subjective or the teleological, is more useful? It seems not a mere analogy, but a proper aid, to ask how we explain an individual's life-process. We cannot assume that either the ends toward which the process actually moves, or the conscious desires are the exclusive and all-sufficient explanation. Nor could we give an adequate statement in either 'objective' or 'subjective' terms. Just because the life process ranges from instinct to volition, and from selective intelligence to habit, because it is in an environment physical and social which both makes and is made by the nature of the process with its ends and interests, it is becoming less possible for the psychologist to fulfill his task by the employment of any fixed unit of analysis. Even the economist has abandoned the desire for wealth as a fixed entity. Will not the sociologist find it to be desirable, if his problem is to comprehend and explain the social process, to take a farther step, and treat interests not as units but as themselves modes to be accounted for and resolved? Men sometimes act from (subjective) interest; sometimes from tendencies toward ends not consciously recognized (instinct); sometimes from habit. Voluntary organizations, kinship groups, customs handed down by tradition, may all be said to represent interests, but they are very different in their origin and significance.

2. *The Social Process.* — The social process is defined as 'incessant reaction of persons prompted by interests that in part conflict with the interests of their fellows, and in part comport with the interests of others.' Conflict is the 'conspicuous element,' especially in the earlier phases. Three stages are specified as struggle, moralization (by which is meant, apparently, regulation by a group as contrasted with an individual standard on the one hand, or a universal standard on the other), socialization. Professor Small recog-

nizes that the relation of conflict and coöperation is not one of antecedent and consequent in time. Nevertheless, from the standpoint of social psychology it may be questioned whether the perspective is a true one which places so much stress on the struggle aspect of the earlier phases of the social process. Every war or conflict between groups implies coöperation (within the groups); and their internal coöperation is fully as significant as the external conflict.

On the other hand there are many kinds and degrees of struggle in modern life which were unknown in primitive conditions. Modern society has less *violent* struggles, but has far more of competition than more primitive life. An Indian tribe knows no such economic struggle as that which marks our city life. "A whole tribe of Indians might starve, a single Indian never." The savage chief cannot comprehend the individualism which is symbolized by the stone palace of the rich and the filthy tenement of the poor standing side by side.

Again, as regards the increase of socialization, it is necessary to bear in mind also the concomitants of increasing wants and therefore of new incentives to struggle, not to speak of the new instruments for carrying on contests. There is undoubtedly more socialization as society progresses. The power of the social whole impresses more and more the members, as it has more to offer of contents, such as art, science, justice, which appeal to social rather than to exclusive interests. The social whole is thus itself constantly creating the capacity by which it is appreciated and the desire by which it is sought. But, on the other hand, the process is constantly awakening new interests of the exclusive sort. No savage, barbarous, or semi-civilized chief ever planned a campaign so comprehensively and probably so coldly, so far as the fate of other interests is concerned, as a modern corporation. In fact, one of the happy touches of Professor Small's book is the comment that corporations have no souls because they are merely a single abstract interest. Now the earlier stages of society have no such sharply organized and abstract interests. We are impressed by the struggles of earlier stages because they are violent and obvious. We may easily overlook both the manifold struggles of the civilized, and the amount of coöperation in the savage life.

This suggests that the social process might be more fruitfully interpreted in terms of another pair of categories, which Professor Small recognizes but does not utilize extensively, viz., individualization (including definition of aims, self-control, and freedom) and socializa-

tion. This twofold process can certainly be traced both objectively in institutions and psychologically in the form and content of ideals, desires, and volition. The individual is recognized to be a social outcome, not a social unit; many of his interests are also social outcomes rather than social units.

3. *The Province of Social Psychology.*—Formulations of the specific problems of social psychology have recently appeared from Professor Thomas, summarized in the BULLETIN of November, 1904, and by Professor Ross, summarized in this number. Professor Small gives a general rather than a specific statement. Social psychology is 'the restatement of the social process in terms of purpose and choice.' This definition aims to mark out the field as distinct from biology on the one hand, and individual psychology on the other. As compared with the latter the problem is 'to generalize the purpose reactions that occur in typical situations.' The most general classification of cases is into two groups; *i. e.*, first, cases in which mass-valuations are adopted by the individual; second, cases in which individual valuations are communicated to the mass. This yields the main questions: "Through what appeal to interest does a group purpose come to be adopted as an individual purpose? and, Through what appeal to interest does an individual purpose come to be adopted as a group purpose?" As contrasted with biology the emphasis lies on the conception of purpose and choice. This, in contrast with such a category as 'imitation.'

As regards the basis of distinction from individual psychology, there is coming to be a consensus of opinion that the field must lie in the consciousness of the individual as affected by his group relations. But it is probable that it will not be practically desirable, whatever the theoretical definition of the field, to limit such relations to the purposes and choices. In the study of the individual, instinct and habit are doubtless biological and physiological facts, but the psychologist can scarcely get on without them. So the action of society upon the individual is often in ways that do not involve conscious choice by the individual. For example the phenomenon of religious conversion may be due in part to conscious choice in response to group stimulus. But the *kind* of experience, its imagery and in part its emotional coloring, will depend largely upon suggestions adopted without any conscious choice. Or, to take Professor Small's illustration of the part played by volition, even in the following of a fashion. In criticising Tarde's doctrine of imitation, he very justly points out that not every suggestion is accepted. Not every attempted style of hat 'goes.' It

must suit the buyer. This must certainly be admitted. Nevertheless there is another side. The buyer's choice is not unconditioned, free construction of desirable headgear; it is limited to two or three alternatives. The buyer may choose between certain copies, but the copies are set for him. And along with the elements which he takes because he wants them, he takes many others which are simply a part of the hat, and therefore have to be taken whether he will or not. Or, in the more complex case of suggestions from human action or language or institutions, many features are adopted without receiving any focusing of attention upon themselves. There is thus very much in the stuff out of which the individual and the social builds up its structures which is simply taken by suggestion without any conscious volition. This is the element of truth in the theory of Tarde. We may cordially agree that we have complete social consciousness and social activity when, as social groups, we act for reasons and with definite ends, but is not this for social, as for individual psychology, a limiting ideal rather than an exclusive test of the psychological?

PSYCHOLOGICAL LITERATURE.

Du Rôle de l'Individu dans le Déterminisme Social. D. DRAGHISCESCO. Paris, Félix Alcan, 1904. Pp. 367.

Le Problème du Déterminisme Social, Déterminisme biologique et Déterminisme social. D. DRAGHISCESCO. Paris, Editions de la Grande France, 1903. Pp. 99.

M. Draghiscesco, in a brochure entitled *Le Problème du Déterminisme Social* and in a book following it a year later, *Du Rôle de l'Individu dans le Déterminisme Social*, has presented a statement of the relation of sociology and psychology that in any case throws into strong relief the problems involved in the relations of these sciences.

In his earlier work M. Draghiscesco is occupied with the difference which he conceives to exist between the social sciences and the positivistic natural sciences. These latter, according to him, serve to prophesy the future through a study of the past. The past yields them the facts which in their uniformity and invariability reveal the laws that determine the necessary succession of events in the future. To this group of sciences biology must belong, and if the individual is to be defined and analyzed by a physiology and a psychology dependent upon physiology, and a sociology that follows the same lead, the determinism of the social sciences will be that of biology.

Against this the author makes a vigorous protest. The basis of this protest is that the events of consciousness can not be predicated, because they spring from a source which lies higher than that of natural phenomena. In the first place he finds that the phenomena of consciousness are of a totally different character. They are to a large degree rational and teleological in their structure, while the natural phenomena are mechanical. From this he goes on to discuss the nature of the relation of the body and consciousness. The hypothesis that consciousness is an epiphenomenon is rejected because of the evident efficacy of consciousness in our conduct, while the parallel doctrines of materialism and spiritualism are impaled upon their metaphysical contradictions and implications.

The alternative that the author substitutes for these hypotheses is that of society, or a general social consciousness (it is impossible to determine just which of these he has in mind), which is the matrix out

of which individual consciousness arises. Social relationships are real, objective, and according to the author the source of all states of consciousness which lie above the barest sensation and impulse. Instead therefore of a brain with its epiphenomenon of consciousness, that is but the shadow of a reality, there stands the social plexus which is not only there as a web and woof of facts but is after all the very stuff of consciousness. The simpler unreflective phases of consciousness would thus be dependent upon the physiological determinism of the physical body, while the higher processes out of which the conscious individual arises would arise out of and be dependent upon the social complex and its determinism, a determinism which is teleological while the former is mechanical. The author brings into this discussion the problem of the inheritance of acquired traits, coming to the conclusion that only those traits can be handed down which arise out of permanent conditions in the environment, and which will continue to have the same value for descendent forms that they had for those parent forms in which the variation arose. He concludes from this that conditions so unstable and variant as those of the social environment cannot possibly be the ground for the inheritance of the acquired traits of conscious life. Thus there appears another type of inheritance in the social world through which acquired characteristics are handed down by the way of social institutions. The basis for inheritance in the biological world is that the results of development have been so assimilated into the texture of the biological matter, that the child-form brings its characteristics fully determined with it into the world; while in the social world the form comes as nearly as possible as a white page with no characteristics as yet inscribed upon it, but ready for the determination of its social environment through education and training. Thus a capital distinction between the two worlds is made, which seems to M. Draghiscesco of the greatest moment.

As I have indicated, there is an entire lack of analysis of this dependence upon the social environment. At one time the author implies that the social complex is an antecedent objective environment existing before the consciousness of which it is the substratum in some sense. At another he implies that there is a general social consciousness out of which the individual consciousness arises. While seeming to reject Wundt's position that this social consciousness must appear in that of individuals, he nowhere discusses adequately this assumption, nor its relation to a theory of cognitive consciousness.

Add to this that the author assumes that the events in the world of

consciousness may result from causation without any fixed or recurrent series, and finally that, following the steps of Tarde, he suggests that the social world is but young in comparison with the physical; that the countless ages requisite to account for the building up of the solar system and the surface of one of its planets have resulted through continuous evolution in an almost unvarying course of events; that the social world is by comparison but in an age of chaos, comparable to the early nebular stage of the solar system; that the scientists who should have speculated in the beginnings of the nebular period could not have possibly predicted the coming events within the system as they can now predict with certainty an eclipse; and we see that a great variety of considerations on entirely different logical levels are brought forward. At one point he suggests that a coming period is conceivable when such an evolution shall have taken place within the social world, that a complete integration of society will take place, so that the processes of law and method will have completely passed into the consciousness of mankind and all its actions will be determined, as are the mechanical events of the physical world. At another point he implies that the initiative of consciousness makes any such result an impossibility.

When we turn to M. Draghiscesco's book on the rôle of the individual in social determinism, we find a more detailed effort to prove the identification of sociology and psychology, which is the ultimate thesis of his brochure. He again insists that the physical world cannot be the ground for the explanation of consciousness because of the extreme complexity of the conscious content. For the author the physical world is extremely simple, made up of series which are ever recurring without exception, offering no variety on the one hand nor any principle of synthesis on the other. Variety and synthetic activity are accepted as the conditions of our personal consciousness, and the infinite variety of the physical world and its syntheses are somewhat contemptuously dismissed as quite inadequate to the awakening of human reflective consciousness while they may suffice for the stimulation of the life processes of lower animal forms. It is then to the social environment that we must look for the conditions under which reflection can appear.

The social processes, furthermore, run parallel with the psychological. The whole social evolution is a process of integration, and this integration has its two phases which answer directly to the two demands of reflective consciousness. All history shows society continually sweeping more and more communities into each other, while

this very process of increasing the extent of society involves a differentiation of new social functions and a more profound organization than could have existed in any of the smaller communities. This movement is so continuous and incessant that no limit can be put to it except the final integration of the race, though step by step with this spread of community-life must go increased depth and intensity of social consciousness. Here, then, we have the continual occurrence of new and unceasing synthesis.

If we examine the processes of consciousness and the social processes more in detail we find that perception is expressed in terms of modern psychology as a form of suggestion, that association of ideas comes back to the processes of attention and repetition, and that attention is but the subjective expression of the prestige, the authority with which some element in the environment commands us, while repetition is an affair of education if we take education in its largest sense. But suggestion and prestige, authority and education can only be conceived from the social point of view. Advancing to imagination, it is to be identified with invention, and abstraction with the operation of social control through laws and customs, while voluntary activity finds its great and at bottom only expression in what M. Draghiscesco defines as the genius. The genius is the individual who gives expression to the new law and through his identification with his environment on the one side, and his initiative on the other, impresses the idea upon the community, and raises the mass up to it, so that the idea becomes a part of the consciousness of the whole society. These social laws are inculcated on the younger generation through all the social institutions. The changes that take place must do so through the genius who makes advance possible, who is the social will. Advance is necessary because of the very process of continued social integration which involves ceaseless absorption of new content and as ceaseless new organization. The conclusion of the whole matter is that psychology is but applied pedagogy, the statement in terms of the individual process of the operations by which society controls its members and takes the steps in advance which a necessary social integration involves. Thus sociology and psychology become identified, being but the same science looking out upon the same field through different windows.

It seems to the reviewer a matter of no great importance that a complete parallelism can be traced between consciousness and any environment which it knows. Knowledge is universally recognized as constructive, so that such a parallelism between the process and the product

is but to be expected. Surely just what M. Draghiscesco abuses the physiological psychologist for doing is what he has done with no better warrant as a social psychologist. The psychologist has pointed out that the physical world is made up of our representations, that its laws are but the associations of our ideas, and that its objects have the unity of our synthetic apperception. If it were conceivable that a consciousness could derive a power of synthesis from the syntheses which affect it through its environment, certainly these could be found in the world of physical science. James Mill deduced the association of ideas from the succession of events in physical nature about us. If the social stimulus can command our attention, certainly the physical has exerted this authority for still longer periods, and its objects have given forth the suggestions which native impulses have responded to in naïve perception. Natural law certainly presents classical instances of abstraction, and who shall draw the line between impulse and the will? There is, however, a problem brought out here which deserves a more profound analysis than is granted it by M. Draghiscesco. It is the problem of the relation of the individual with whom psychology deals to the process of that consciousness as a whole. On the one side this is peculiarly a problem of social psychology, for the question at once arises as to whether the individual with whom the psychologist deals is the same as the individual of the sociologist. Our author insists that they are the same and that the sciences are but one science.

There is one point of view from which the social object seems essentially different from that of physical perception. The other selves stand upon a different basis from that of physical objects. Physical objects are merely objects of perception, while the other selves are perceiving subjects as well as perceived objects. The question arises whether this difference has any significance for the process of cognition. I take it that it is the feeling of this difference which lies behind the position of the author that the social consciousness stands upon a higher plane than that of physical consciousness, and provides the mechanism of cognition itself. His assumption is that reflective, representative consciousness is essentially a social consciousness.

Stated in somewhat different terms the position is this: cognition is essentially a synthetic process which involves an organizing self, but this self arises only in so far as other selves, the *alii*, appear in consciousness. Professor Baldwin in his *Mental Development* has described, perhaps, as satisfactorily as any psychologist, the process by which the child's own personality arises out of the differentiation of a

general social consciousness into an ego and alii. And these other selves are accepted as subjects like unto the knowing subject, and therefore unlike the known object. This fact from the standpoint of ethics is of capital importance. As Kant has stated it, these other selves cannot be mere means as are the physical objects. They must be recognized as ends. Has the fact a like importance for the psychology of cognition?

If we turn to immediate consciousness we find no direct evidence of a peculiar cognitive value inhering in our social perceptions in comparison with the physical perceptions. One is quite as real as the other. From the psychological point of view the question becomes this: does introspection present the knowing self to the knower, as a social content implying necessarily other selves, while the known physical object is subject to analysis into states that must be referred to this self? If this were the case, we might indeed deduce the whole cognitive process out of a consciousness which was primarily social and secondarily physical. But the fact is that this self which our introspection reveals is the so-called empirical self, and is just as much a construct as the physical object. A constructing self never appears as the object of introspection. He can no more be got on to the dissecting table than Kant's transcendental ego. It is true that we cannot construct empirical selves without constructing other selves. It is equally true that we cannot construct our physical bodies as objects without constructing other physical objects, and it is a piece of Berkeleyan idealism to refer the consciousness of physical objects to the consciousness of the empirical self, giving precedence in reality to the latter over the former. It is hard to see that psychology as an analysis of reflective consciousness is essentially social in its character.

There is another attitude of the author which bears more or less directly on this question. He assumes that the physical sciences give us a fixed theory of nature that does not change, that is not subject to the constant reconstructions which social theories undergo. The assumption is a groundless one. It would be difficult for social theory to change much more rapidly or more fundamentally than has the theory of matter within the last half century. The fact is that our attitude toward physical theory is exactly the same as that toward social theory. Every new hypothesis brings with it a radical change of such a character that it would have been impossible for the scientist to have predicted the new hypothesis from the fullest possible knowledge of the world under the old. From a Ptolemaic point of view one could never have argued to or predicted the Copernican. And it is

the essence not only of Pragmatism but of most of the other modern philosophical doctrines of knowledge, to call this scientific knowledge as really teleological as that of the social sciences. The point that needs to be emphasized is that reflective consciousness, when it meets an essential difficulty and forms an hypothesis to solve this problem, has just the same attitude toward its social theories as that which it holds towards physical theories, and *vice versa*. The whole body of knowledge is open to reconstruction.

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Les Mensonges du Caractère. FR. PAULHAN. Paris, 1905. Pp. 276.

To discover what truth there is in lying seems to be the object of M. Paulhan's artistic, suggestive, and paradoxical study of simulation — its protean variations with different types of character, its commanding rôle in the complexities of social life, and its final sublimation as a sociological and philosophical principle.

The author begins by drawing a fundamental distinction between two types of character. Under the first belong those who conceal, or inhibit, their real disposition. Under the second belong those who pretend to express traits, ideas, sentiments, etc., which they do not really have. The former are negative; they dissimulate. The latter are positive; they simulate. Both tendencies may exist in the same character. All degrees of preponderance of one or the other may be noted in different characters, and even, in some instances, in the same character.

The first type the author discusses at length in Part I. under the head of 'Feigned Indifference.' A brief review cannot do justice to the skill with which the author penetrates this mask and illuminates the interior with his keen and brilliant analysis. Feigned indifference is a form of self-protection. Given, on the one hand, a self characterized by great sensitiveness, endowed with capacities for deep affection and reflective thought, a self in whom *la vie intérieure* predominates with its natural inhibitions of overt action; and given, on the other hand, a harsh or niggardly environment, a crude, unsympathetic *milieu*; and you have conditions favorable to the development of feigned indifference, of assumed coldness and reserve. Frequently the mask does not persist as a mask. By usage it clings closer and closer to the features and ends by becoming a part of the real character — a *persona*. The character insensibly tends to become what it dissimulates.

The second type of character, what we should probably label the 'motor' type, the author discusses at length in Part II. under the head of 'Feigned Sensitiveness.' Simulation of indifference isolates. Simulation of sensitiveness to the interests of others, to their ideas and sentiments, unites. Both have a practical social justification. Amid the alarms and conflicts in which our lives are cast we must be prepared either to erect a barricade or to make a sally, according to the nature of the ground and the relative strength of the enemy.

The value of the book lies chiefly in its descriptive analyses of typical varieties of deception and of self-deception as indices to individual differences in temperament. The author is less successful in his more fundamental explanations and generalizations. His aim, as I understand it, is practically to substantiate the psalmist's assertion that all men are liars — not merely on a statistical basis, but on a psychological and philosophical basis. Not all men, but Man, is inherently, normally, necessarily and universally a liar. The author even goes so far as to suggest by way of an extreme illustration that perhaps Desdemona simulated fidelity in such a way as to deceive Shakespeare!

Psychologically, the argument, briefly summarized, is to this effect: A volitional act is the outcome of conflicting desires and impulses. It does not express them all. It represents only the victorious desire or impulse. There is an inherent discrepancy, according to this mechanistic analysis, between the product of volition and the process of volition. This discrepancy is the germ of simulation and dissimulation. There is, again, a discrepancy between the image, or ideal, and actual conditions. Philosophically the outcome amounts to a profound scepticism of reality. All individual life, all social life, would become impossible if we were to know things as they really are. Dwell not too long on the meaning of life, on its value, its rôle in the world, lest the desire to live perish within you (p. 120).

Yet though conceived in volitional discrepancy, simulation, we are told paradoxically, is derived from our passion for harmony in the face of universal discord. To offer simulation, the veil or ill-concealing mask of discord, conflict, strategy, and suspicion, in response to a passion for harmony, is likely to strike the Anglo-Saxon mind as a pretty poor sort of substitute. With all the love for subtle distinctions and knife-edge partitions which characterizes this work, the distinction between a construction — and simulation unquestionably is a construction — that has for its essential aim the blocking of intercourse, the arrest of movement, and a construction that has for its aim the promotion of better mutual understanding seems to have been ignored.

It would be interesting to know what relation this attempt to make simulation a great socializing instinct and agency has to similar attempts made in behalf of imitation.

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Études sur la Sélection chez l'Homme. Dr. PAUL JACOBY. Avant-propos par M. GABRIEL TARDE. 2^e éd., rev. et augm. Paris, F. Alcan, 1904. Pp. xvii + 620.

The first edition of Dr. Jacoby's book appeared in 1881, when it was the brilliant thing to identify genius and crime with each other and with degeneracies of various sorts. This work fell in with the general current of the time, but proved of more lasting value than those of the Italian school of criminologists. Dr. Jacoby is at some pains to point out, in this edition at least, that most cases of what is generally called crime and madness are at quite opposite ends of the scale in point of view of their symptoms. The pessimistic tone of the work has, however, not lessened in its later edition, nor has the author seen reasons for regarding the greatest achievements of mankind other than as the steps taken on the road toward degeneracy.

The explicit aim of the work is to show the process of selection in the development of the human animal. There can be no question of the learning and industry of the author. The two instances of selection in human history which he has presented are the histories of families who have held for a number of generations royal power, and the fate of talented families in France during the eighteenth century. Under the Roman Empire he follows the descendants of Augustus to Nero with unwearying detail. Then, with more conciseness, he deals with the principal dynasties of Europe from the fourteenth to the eighteenth centuries. The results of the selective action of the peculiar social position of the family of Augustus he sums up as follows: "Here is a family which nature and fortune had treated as their favorite child. Beauty, exceptional intelligence, talents of all sorts—nature and fortune had lavished their gifts upon it. If the first generation was not numerous—one son and one daughter—the second counted already from a dozen to fifteen members. And yet this family is represented in its fourth generation only by a monstrous and grotesque actor, abject and sanguinary, soiled by all the vices and all the crimes, and whose only child died in the cradle. And to reach this actor the family passes through imbecility, epilepsy, nervous affections, incest, parricide, fratricide, shamelessness, infamous and

monstrous debauches, the bloodiest ferocity, sterility, premature death, assassination, poisoning, suicide, drunkenness, misfortune and disgrace" (pp. 317 f.).

The European dynasties reveal as complete family disintegration and disappearance. And if one wishes to follow this disintegration into its details of degeneration, its neuropathies and psychopathies, and its ultimate, unavoidable and fortunate sterility, he has only to turn over the pages crowded with the distressing, sickening, and finally monotonous diagnosis of this royal clinic.

The story of the remarkable men and their families in France during the eighteenth century passes over into the study of the city. The city is the group that attracts the remarkably endowed from the whole country. Here those who rise above the level of common humanity intermarry, and selection of talent takes place in the sense of the biologist. A moment's thought will at once call up the evidence which the author must present of degeneration emphasized in the statistics of city life and death. Beside these and the consideration of the acknowledged early dying out of the families of remarkable men, there is a chapter on the history of the world's aristocracies, including the Spartan citizens, the puritan aristocracy of Berne, and the nobility of England. It is a commonplace of history that there has been no aristocracy, however good or bad its habits and blood, which has not in a comparatively few generations run out, unless it has continued its existence by additions from the outside.

In such an investigation as this there are two factors intimately related: selection and heredity. Yet they by no means are uniformly causally active. For example, polydactylism or albinism are hereditary, but the possession of an abnormal number of fingers does not lead to intermarriage among those who have this peculiarity. For the purposes of this study it is necessary that hereditary conditions should be found which at the same time lead to interbreeding of those who are subject to these conditions. The author — who is an alienist — naturally turned his attention to nervous troubles which, while being hereditary in a prominent degree, are generally conceived of as influenced by social conditions. Supposing therefore that the data and the interpretation of the statistics are adequate, the question still remains, as to how far it is that the social conditions which are unquestionably responsible for the selection, *i. e.*, the intermarrying of those within a certain social class, are also necessarily responsible for the degeneration which accompanies this social differentiation. Belonging to an aristocratic class is unquestionably the cause of aristocratic selection,

i. e., of the continual intermarriage of those belonging to that class. It has yet to be proved that the degeneration, which has been noted in aristocracies for example, is due to the social differentiation and the selection that accompanies it.

Dr. Jacoby's proof of his doctrine it is a little difficult to disentangle. The seeming progress of the argument is this: a display of the most detailed and presumably typical form of the degeneration which he is discussing; second, the presentation of a number of examples of the same process, under the same conditions; finally, the generalization of the causes and effects of this degeneration as found in large social groups. The first step is a minute medico-psychological analysis of the different members of the house of Augustus. Here we are familiarized with a certain unvarying course of the disease. The second step presents us with a more summary display of analogous phenomena among the dynasties of Europe from the fourteenth to the eighteenth centuries. Finally, the men of talent and their families lead us up to the city as the social organism where just such a differentiation and selection is going on, on a grand scale, and the table of nervous and mental disorders that are in evidence in urban life seems to complete the proof.

There are certain very evident replies that can be made to this argument. The comparative wealth and the power of monarchs and aristocracies give them opportunities for dissipation with little restraint, and dissipation, carried to excess, is a recognized cause of all the procession of nervous and mental disorders here catalogued. Dr. Jacoby's answer to this argument is, first, that such sober and self-controlled aristocracies as those of Lacædemonia and of Berne have not shown their ability to maintain themselves, but have died out as surely as have the riotous and noble classes of Europe, while on the other hand these noble classes whether serious or dissipated have all lived in better hygienic conditions than the poverty-stricken masses who have swarmed in the midst of their misery and filth. The constant cause that is present, while other supposed causes are now present and now absent, is the social differentiation and selection. The second rebuttal offered is that the dissipation here is frequently not a cause but an effect.

To these, there are two replies that can be made. In the first place this series of neuro- and psychopathic events that lead up to the extinction of a family are not proved to be the only ones which precede such a result. It is possible for a family to disappear without passing through the wild excesses and mental aberrations of the house of

Augustus. For example, the original New England society is approaching extinction, if we can trust present statistics, but the antecedents are as far from the course of events laid out by the author as possible.

In the second place, while the conditions that lead up to dissipation are not always the mere presence of opportunity and the absence of restraint, the social causes that predispose to such dissipation are by no means always of the neuropathic order. Unhealthful social ideals, ennui because of the absence of any active interest in life, etc., may predispose a perfectly healthy nature to dissipation. The situation is indefinitely more complicated both biologically and socially than is implied in the formula of Dr. Jacoby.

It is especially necessary to insist upon this from the point of view of the final generalization of the book. "From the vast human mass have arisen individuals, families and races, which tend to elevate themselves above the common level. They have climbed painfully the abrupt heights, have arrived at the summits—of power, of wealth, of intelligence, of talent—and once there, they are precipitated to the bottom, and disappear in the abysses of madness and degeneracy. * * * Men seem to have been organized—if we may be allowed to express ourselves thus—with a view to equality. All distinction in classes—political, economic and intellectual—and all selection which is the natural and logical consequence of these distinctions, are equally fatal to humanity, to the elect as well as to the rest of men, producing lack among the latter, and excess among the former of the element which is the principle of the differentiation of the class. * * * But nature seems to wish to avenge herself for this violation of her laws, striking cruelly the chosen, the fortunate, pursuing them to the fourth, the seventh generation" (pp. 616 and 618).

In other words the unusual and exceptional man, whatever be the peculiarity that distinguishes him from the crowd, is an unnatural growth in human society, and as soon as selection takes place on the basis of this unnatural position of his, the unnatural character of the man passes over in his posterity into degeneration. The proof is that all classes in the history of human society have tended to die out; but classes are groups which have been selected out on the basis of some social peculiarity, and have interbred with each other so that continual selection with reference to this peculiarity has been the result.

As before noted the problem is indefinitely more complex than this statement of Dr. Jacoby implies. It is primarily a question of the persistence of the family, but the family biologically defined and

socially defined are two different things, and any investigation that would carry conviction would have to be based on the histories of families among the mass of mankind as well as within its 'classes.' How persistent is the average family? Does it die out by a process of degeneration? The reader who is not trained either as an alienist nor as a statistician feels that this wealth of specific details must be interpreted on the basis of a larger and more massive body of facts than is here presented.

There is another implication which is not made specific but which is constantly felt in reading Dr. Jacoby's work. It is that the exceptional man is unnatural, abnormal, and that even if he performs a valuable social function he does it at the expense of his own disintegration. The psychological justification for this is given in part, when analyzing the position of the autocratic ruler, such as the Roman emperor. Unfortunately this analysis is not extended to other exceptional individuals with whom the work is later occupied. Still it goes far to account for the author's doctrine and bias.

The author, as alienist, explains the phenomena of insanity, in a great degree, not by the abnormal increase in power of some impulse, but by the weakening of the self, the ego. The basis of all conscious activity is the reflex, which may however be inhibited by other reflexes. The perceptions and ideas which arise in consciousness tend to pass over into action through these reflexes unless so checked. Organized conscious control, therefore, depends on the presence of a group of ideas which hold in check the different ideas and their reflexes arising in consciousness through association. The self, or ego, is such a group of ideas, strongly interrelated, persistent through powerful associations, which acts therefore as an arbiter in the struggles of ideas to rise above the threshold and become effective through conduct. Education is the process of forming such an organized group of ideas into a self, and mental disease is the disintegration of this self. In a word Dr. Jacoby's psychology is Herbartian, which shows the same mechanical adaptability to the phenomena of psychiatry that has characterized it in pedagogy.

The autocrat is shown to lack the possibility of forming any such self as is above described, or if such can be conceived of as arising in him through education, it must be enfeebled by his own conditions of life. "Power must enfeeble the will, the self, and render the man thus less capable of resisting his desires, his instincts, his suggestions, and reinforce therefore reflex action and render more direct the transformation of perception into movement, into action, in annulling more

or less the activity of the controlling centers. Power, by its moral influence on the personality, should produce in the cerebral life a functional trouble, the nature and character of which are identical with that which we find at the beginning of mental diseases and serious nervous affections" (p. 30).

This makes a brilliant introduction for the study of the early Cæsars, though it utterly fails to explain Trajan, Aurelian, Marcus Aurelius, in whom power itself had become a functional activity that carried with it its own control. From such emperors we go by an unbroken series to the executive officers of monarchies and republics, whose power is so normal an expression of human social conduct that its control arises out of the very situation which has bestowed it upon the individual. Autocracy, such as that of the Cæsars, can be readily admitted to be a predisposition to mental derangement. Tiberius exclaimed to his friends, "*Ignoros, quanta bellua esset Imperium.*" But the absolute power of the competent general, of the industrial engineer, of the competent expert in any direction, has no such tendency, and the psychology of Dr. Jacoby carries with it no comprehension for this fundamental difference between the lawless autocrat and the expert; for the talented individual of any sort, in so far as he becomes a power in the community, in so far as he comes under the rubrics of Dr. Jacoby's investigation, is essentially an expert. For him the self is not a functional entity that arises out of and exists with the social relations that make it possible, but an intellectual mechanism, which arises by a series of associations of ideas. These associations may be strengthened by education and the influence of the social environment, but that social function renders any endowment, any group of powers however exceptional, a normal material out of which to build up a self, is a conception that does not belong to Herbartian social psychology nor has it entered into the ideas out of which this book has arisen. The psychological point of view, therefore, from which the material of the book should be interpreted, if this is correct, is that of determining how far the lack of social function, and hence of control, has been responsible for the degeneration and extinction of privileged classes. Biological interpretation would show how far selection has served to emphasize the socially abnormal characteristics of these groups and the psychopathic and neuropathic results of these abnormal conditions.

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PSYCHOLOGY OF GROUPS, CLASSES, RACES.

Mass and Class. A Survey of Social Conditions. W. J. GHENT.
New York, The Macmillan Co., 1905.

This book consists principally of an outline of the various classes in society to-day, with a brief theory of their origin and their relative influence and the ideals set by them. More space is given to the trading class and the reign of graft than to other topics, as that class is the most influential in our own country and the present prevalent corrupt conditions are the direct result of its ideals.

To the psychologist the book is of interest on account of its frequent references to mental development as the basis of social changes. The theory advanced is as follows: All human action springs from interest, and physical and temporary interests have always been in the ascendant. The economic motive is always the most important one, and all men's habits of thinking and feeling and their notions of right and wrong rest for the most part upon the prevailing mode of production and exchange of goods.

Men are not indeed conscious of this, nor is this the only motive. We have unquestionable instances of acts performed in pure heroism. But the consciences of men are greatly quickened to overcome injustice when they can thereby also secure a foreign market, and the search for a foreign market often takes on the aspect of a holy war through the transmuting alchemy of the mind. The actual effect of the preaching of ideals may be set down as a negligible quantity, if following those ideals involves economic loss.

The prevailing mode of production determines in large part what is moral or immoral, and the ruling class are the formulators of the code. There are always two sets of virtues, one for the working class and one for the enjoying class. Under feudalism, the principal virtue for the workers was fidelity, under the present régime, liberty—that is, liberty or freedom from organized labor. Under all régimes, industry and obedience are the prime requisites.

An economic class is one whose economic functions and interests are similar. Out of this similarity of function develop like feelings and acts under like conditions of employment, and the individual instinctively develops the practice of acting in unison with others of his own class. If the individual changes his economic function, his feelings and convictions also change, the employer who was formerly a workman now holding views with his own class against unions, etc.

If we divide the workers of America into classes according to their economic functions we have the following classes: the wage-earning producers; the self-employing producers — principally farmers and handicraftsmen; the social servants — the educators, physicians, clergymen, artists, and writers; the traders, divided into manufacturers or dealers in commodities, and financiers; and finally, the retainers — lawyers, clerks, employees in domestic and personal service, and politicians.

Each of these classes tends to develop its own ethical code, and these codes are in opposition in so far as the underlying economic interests of the classes are, and only in so far. It is for the economic interest, for instance, of the social servant to teach the code of the trader, and hence we see many of our ministers and teachers upholding the traders in their practices, though in direct contradiction to Christ's teachings. They thus become retainers instead of social servants.

Among producers, the ethics of usefulness and of fellowship are held to be fundamental, but as these are opposed to the traders' interests, the traders oppose them as immoral. The trader, on the other hand, upholds the keeping of a contract, no matter what its conditions, as the supreme morality, and insists that the maker of the contract takes his own risks of being deceived. As a result we get the reign of graft and the present struggle between capital and labor. But graft is essential to the trader's life, and will therefore continue until its necessity is abolished by a coöperative commonwealth.

Probably most psychologists would attach more importance to the part played by ideals than the author does, but in tracing back our present conditions of war between labor and capital to a play of motives that were the direct result of the rapid economic development of our country, he is fundamentally correct. The book is to be criticised in this respect as being too schematic, as not going sufficiently into detail to be at all satisfactory to one's historical sense.

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La Psychologie de l'Argot. R. DE LA GRASSERIE. *Revue Philos.*, Sept., 1905.

A field of language much neglected by the social psychologist is that of the '*argot*' (jargon, lingo). The word *argot* is not accurately descriptive of the subject matter to be discussed, since it commonly designates the speech used by criminals. The Greek term *glose*

(tongue) is a convenient technical term. 'Language' refers to the distinctive tongue used by a nation; a 'dialect' is a variation of this as to idiom and vocabulary, resulting from geographical situation; a 'glose' is a deviation from the normal language which registers differences in mental and physical traits that run parallel with differences in occupations, pursuits, and habits of the various social classes. Some are inferior, some superior to the standard language. The inferior gloses or catagloses are of three grades, the 'accoglose,' used at home among near of kin; the 'demoglose,' used by the common people; and the 'cryptoglose,' used principally by criminals. The demoglose furnishes typical and interesting material. An analysis of it shows a tendency to translate all abstract ideas into concrete expressions charged with imagery of a vigorously picturesque sort. *Avoir une idée fixe, c'est avoir une araignée au plafond*, or as a small American boy would say, 'a bat in your belfry.' The man of the common people possesses little but his own body and his tools, and this is reflected in his speech. *Avoir de l'influence, c'est avoir le bras long*. The frequent recourse to the animal world for imagery the author considers a kind of linguistic totemism. *Le paresseux est le lézard* (cf. 'clam,' 'lobster,' 'jay'). The vegetable kingdom too is employed. *Un homme important est un gros légume*. There is an attitude of literal honesty and aggressive sincerity in the insistence of this class in calling *un chat, un chat* (a spade, a spade). An instinct of hostility toward upper classes aggravates this habit of plain speech into an abusive stripping off of all euphemistic delicacy which may have been given to a phrase by the upper classes, and reclothing it in homely, often coarse, dress. Or reversing the process, they refine ironically a common situation by couching it in extravagantly high-sounding phraseology.

Though the gloses serve as lines of demarcation among social classes yet communication between classes is possible. A member of a superior class knows more than one glose and there is a special or 'reverential glose' which an inferior uses when he addresses a superior. The man of the middle class uses the accoglose in the bosom of his family, but when a sufficiently stimulating occasion occurs, an oratorical endeavor, for instance, he can rise to the effort of a 'glose soutenu.' However, he drops with relief into his familiar vernacular as soon as the pressure abates.

Besides hostility of one class for another, three other fundamental instincts contribute to the forming of gloses; the secretive instinct which moves one class deliberately to exclude and mystify another by

the use of language intelligible only to the initiated; the impulse to follow along the line of least resistance, that is, of 'least mental effort, as instanced in the use of abbreviations and in the translation of abstract terms into incisive and suggestive concrete expressions; finally the impulse, most fundamental and connected closely with the secretive instinct, to foster and preserve the feeling of class or group solidarity by the adoption of a mode of speech belonging uniquely and exclusively to the class.

Les Différentes Justices. R. DE LA GRASSERIE. *Revue Internationale de Sociologie*, 1904.

There are four types of justice, or four methods of securing justice: abstract justice, the justice of equity, concrete justice and '*justice globale*.' Of these, that designated abstract is the most absolute and formal. It secures its end by a procedure rigorously mathematical or syllogistic in character; given the law as the major premise, the fact to be passed on as the minor, the conclusion follows inevitably. Time, place, circumstance, or the characters of the parties concerned are irrelevant. The Roman civil law is a good instance of this kind of justice. Had Roman law always retained this inflexibility and disregard for the fuller demands of the concrete situation, it would have forfeited the immense influence it has had historically. However, the Roman '*droit prétorien*' developed side by side with the '*droit civil pur*' and introduced into it an element of variability, and adaptability to the needs of the individual case. That is, it took into account qualifying circumstances, the good or bad faith of the parties, etc.

The 'justice of equity' and 'concrete justice' are further developments of the principles exhibited in the Roman '*droit prétorien*.' They differ from each other only in the field of their application; equity deals with questions of right (*droit*), concrete justice with questions of fact (*fait*). Both pay full justice to the peculiar necessities of the specific situations. Concrete justice, for instance, attempts to look into the character of the criminal, his past as well as his present, his antecedents, his associates, his opportunities. This type of procedure has the advantage of recognizing the individual and the obligations of society to him, but there is danger of its degenerating into a deliverance of convictions based upon mere personal bias. An obvious disadvantage of this method as weighed against that of abstract justice is that it introduces an incalculable element and thus threatens the stability of the social structure. When a delinquent can anticipate the exact penalty consequent upon his transgressions against the law

he exercises more control over his inclinations than he would were the chance of an indulgent disposition of his case present.

The last type of justice discussed is called by the author justice 'globale.' It is a sort of collective or class justice which is everywhere operative as exercised by one class against another, by the people against a corporation or a particular profession, or by one race against another. Examples of the 'globale' justice are abundant in history. The treatment of the nobles by the common people in the war of the French revolution, or in modern times the lynching of the negro who has committed a crime against the white race of the United States, are some of the most obvious illustrations.

The psychological temper which characterizes these various types of justice is suggestive. Abstract justice makes its appeal to the satisfaction of the intellect in solving a problem with logical neatness and dispatch; equity and concrete justice are based upon feeling — sympathetic insight; justice globale harks back to primitive impulses of self defense or preservation of the group.

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Les Mystiques, Étude psychologique et sociale. PAUL HERMANT.
Revue de Synthèse Historique, Juin, 1905.

The writer finds that mysticism has appeared in its most pronounced form in societies and individuals dominated by a crushing authority so firmly established that the individual cannot hope to realize in fact the society of love and of sympathy of which he has dreamed. To his imagination, thus forced back upon itself, this ideal appears in an amplitude of perfection, unopposed by the difficulties in the way of actual realization.

As a result of these conditions mysticism arises, and M. Hermant believes that the psychological processes through which mystics of all ages have passed are fundamentally the same. These processes appear most clearly in the consideration of the extreme form of the mystic state, — ecstasy. This is simply attention carried to its highest degree of concentration. Desire and attention are centered upon a concept, of certain amplitude and intensity, and all other sensations, desires, and thoughts are suppressed and ignored. In this respect ecstasy is similar to the hypnotic state, the difference being in the nature of the image upon which attention is centered. This total concentration explains why the mystic, upon awakening from the ecstatic state, is unable to recall clearly the intermediate states through

which he has passed. His whole attention has been given to the central idea.

Baffled in his attempts at objective realization, the mystic seeks in contemplation the infinite and unchangeable happiness of the beings with which he is in sympathy. In God, the summation of love, perfection, goodness, truth and beauty, the mystic finds all his aspirations realized.

There is a close parallel between the procedure of the mystic and that of the natural scientist. The latter seeks to interpret the universe in terms of his most constant sensations, notably those of the muscular sense, and reduces the world to ether, atoms, or a mathematical point. Likewise the mystic looks into an ideal world which he interprets in terms of his own emotion, and sees the whole world animated by love and united in God, who to him is simple abstraction (as is the mathematical point) and yet the source of all things.

Since to obey this inner God is a reaction against arbitrary, external authority, we naturally find in mystics frequently a reaction against dogma and ecclesiastical authority. Love is its own law. In extreme cases ordinary virtues are despised; attaining God is attaining perfection, and the mystic feels that he has transcended the bounds of right and wrong, and becomes oblivious even to the claims of wife and children.

The foregoing M. Hermant designates as the *inductive* phase of mystic love, — the period of abstraction. As in science there is also a *deductive* phase in which the hypothesis is led back and applied to concrete facts, so in mysticism a phase appears in which the mystic recognizes God in all things and loves them as divine. This phase is to be treated in a subsequent contribution.

In establishing each point M. Hermant quotes freely from Hindu, Chinese, Arabic, and Neo-Platonic, as well as Christian mystics of all ages.

Introduction à l'étude de la Psychologie des Elites de la Démocratie.

N. VASCHIDE et G. BINET-VALMER. *Revue Internationale de Sociologie*, Août-Sept., 1905.

The writers are firm believers in the doctrine of a social *élite*, and are followers of Nietzsche. All progress is due to the initiative of a military and intellectual *élite*. Such an *élite* does not simply re-echo the opinions and ideals of the nation at large; it makes and transforms them. Democracies do not give proper opportunity for the development of the social *élite*, which is essential to progress. "Democra-

cies, at any rate the French democracy, at the present time systematically neglect the *élite* individual. They desire that the heroes whom they admire, protect and elevate above themselves, shall be wholly divested of their own individuality, and be merely the echo of the desires and tastes of social groups. The masses admire themselves in their representatives, and they admire only their representatives."

Human evolution has always been guided by individuals. "As soon as an association is formed to impose a new conception upon the multitude, other superior individuals set themselves to work, and it is their work which prepares the future. All the great scientific discoveries, all the great religious, metaphysical, and social ideas are the work of individuals. But some pretend that these individuals, on the contrary, are merely the echo of groups, the representatives of the universal science which was contemporary to them. To this one must reply : If Lamarck and Newton, for example, have profited by this science, it is certainly due to themselves and thanks to their mysterious genius * * * that the synthesis was produced from all the elements furnished (we agree to it) by the organized *élites* * * * . So that if the members of the *élite* are the echoes of the learned mob, let us say that they return to the mob its voice so transformed that it does not recognize it. And this transformation, which is the proper work of isolated individuals, justly represents progress."

The new *élite*, found in democracies, is not a *fixed élite* representing intellectual or military excellences, and capable of leading to further progress, but a *mobile élite*, reflecting merely the average and necessarily mediocre and unprogressive ideal of the nation at large. Wise monarchs recognized and encouraged men of genius. But a man of genius cannot appeal to the intelligence of a mob ! Modern democracy is more oppressive to the intellectual *élite* than any monarchy or religious caste could be. The whole scheme of education in France is calculated to crush out individuality.

Progress is the result of the contention between opposing forces. Destruction must precede reorganization. This is typified in the work of founders of dynasties. But a democracy attempts to keep opposing forces in equilibrium, and so neither destruction nor reconstruction can take place. "A perfect democracy seems devoted entirely to immobility." To avoid reaching a dead level of mediocrity, we must have the free play and spontaneity of action which conflicts and revolutions afford, and which allow a truly intellectual *élite* to develop.

W. K. WRIGHT.

Essai sur la psychologie des races nègres de l'Afrique tropicale.

AD. CUREAU. *Revue générale des Sciences pures et appliquées*, 1904. Pp. 638 ff.

The negro races as compared with civilized peoples have great similarity in mental traits, yet the forest peoples show some marked differences from the peoples living in the open. The former are distrustful, cautious, deceitful, and when mingling with other men in the open are ill at ease. The man of the plains and rivers, on the other hand, corresponds to the more open and cheerful environment. He is gay, exuberant, a lover of noise and song. He is naïve, trustful, hospitable, honorable in business matters, not lacking in generosity, with a rare talent for the comic side of persons and things. His language is sonorous, with a large proportion of vowels and labials, whereas the idiom of the forest people has a nasal and guttural character. (M. Cureau does not state what are the relative sizes of the groups. If, as is often the case, the plain groups are larger, this may be one factor in the difference.) In general the senses of the negro are less acute, his emotions rise and fall easily, he lives in the present with less memory and less forethought than the white. It is not accurate to call him lazy; he is only unoccupied; he on his part can not understand the restless agitation of the white. An evidence that it is not the dislike of labor which moves him is seen in the fact that in bargaining he values commodities solely by his wants, not at all by the labor he has used or must use to produce them. Intellectual development proceeds rapidly up to puberty—indeed the young black is more precocious than the average European—but from this time on there is arrest or even a slight decline. The languages show some interesting indications of the teleological motive in the formation of terms: the same word signifies ‘animal’ and ‘food’; the same word stands for tree and stick. On the other hand they distinguish by different terms the heat of a hearth or other hot body from that of the sun, and the light of the sun from that of the moon. Another interesting fact is that such qualities as weight, hardness, resistance or elasticity are not separated from the feeling of effort involved in dealing with them; they are spoken of as ‘strong,’ etc. There is little æsthetic expression except in music, which is characterized by the repetitions common among primitive peoples.

J. H. T.

GENERAL SOCIAL PSYCHOLOGY.

The Present Problems of Social Psychology. EDWARD ALSWORTH ROSS. Amer. J. of Sociol., Jan., 1905.

Human psychology may be divided into General (dealing with things common to all minds) and Special (dealing with differentiae that mark off one category of minds from another). General psychology may in turn be divided into individual (mind as acted upon by things) and inter-individual. Special psychology deals with (1) anthropic varieties, such as races, sexes, and (2) with social varieties, such as nationalities and classes. Social psychology should include not only inter-individual psychology, but also the differential psychology of people reared in different civilizations, social formations, family types, etc. Inter-individual psychology deals with (1) personal relationships and (2) social groupings. The former has been well explored. What we lack is a clear notion of how 'personal relationships' produce such massive products as languages, myths, customs, proverbs, and folk-lore. They are not mere 'collective products,' nor 'superimposed.' They depend upon innumerable molecular occurrences too petty to challenge general attention. What concerns us here is that society transforms, socializes its members. New properties appear, depending not upon the original elements only, but also upon their mode of combination (morphological) and their manner of interaction (psychological). A group-individuality arises, trenching upon personal individuality. The problem of social groupings is distinct from that of personal relations. Personal relations may furnish a plane of agreement, such as a common speech. But only in some such relation as that of compatriots do the new properties of leader, dynasty, etc., appear.

Collective psychology has taken in hand the subjective aspects of human groupings. It has exposed the pointless antithesis of 'individual, society,' 'society, individual.' But too often the investigator has imagined the sort of association in a particular group a pattern for all. We should stop trying to unlock all doors with one key and classify groupings into *genera* and *species* according to broad psychic characteristics. The next task is so to graduate them as to reveal principal degrees of socialization from absolute individual to completest group ego. We find the units progressively grouping themselves because of (1) mental agreement, (2) spiritual resemblances, (3) for coördinating like efforts, (4) unlike efforts, (5) through directive organs, (6) by restraining aggressive members

(juristic rules), and (7) by organs (festivals, etc.) instituted to promote a completer socialization.

A more difficult task is to determine the *causes* and *conditions* of these levels. Some will be morphological; others psychological. Understanding these levels, their causes and conditions, we could perhaps plot the life-curve of a group.

But some particular problems for collective psychology: Which architect is the chief builder, resemblance or community of interest? If resemblances (color, physique), what is the relative importance of the various sorts of resemblances (and differences)? Is agreement in feeling more socializing than agreement in intellectual qualities?

It is not entirely clear under what conditions classes will feel and act together. For example, does not the secret hope of rising prompt many to identify themselves in imagination with *the class they hope to belong to*? If so, what significance has this fact for the mutual problems of the workingmen and the employers? What significance regarding the ultimate decomposition of the national life into hostile classes? Further, with the growth of group-individuality what is the fate of personal individuality?

As to the special psychology of nationalities and classes: Are differences in national traits due primarily to race endowment or to situation and history? Once a Turk is not always a Turk. Here is work for the race psychologist and for the social psychologist.

Passing from the differentiae of peoples to their broad psychic differences, we find various classes—the married, unmarried; master, slave, etc.—which are of societal origin, and hence belong to social psychology. A systematic survey of class types should be helpful for general sociology. Only as we know these classes thoroughly—slavery, militancy, ecclesiasticism—can we rightly value them.

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Sociological Papers. FRANCIS GALTON and others. London and New York, Published for the Sociological Society by Macmillan and Company, 1905. Pp. xi + 292.

The Society may be congratulated upon this volume which represents the first year of its activity. The papers by V. V. Brandford and E. Durkheim on 'The Relations of Sociology to the Social Sciences' and to 'Philosophy' are accompanied by some thirty communications from the leaders in this field, and make an interesting symposium. There is little of a specifically psychological nature except in the let-

ter of Fouillée who regards social psychology as the distinctive feature of sociology. He understands it to be the province of sociology to consider phenomena due (1) to reciprocal (psychological) influence — states of consciousness determining states of consciousness through the medium of society; and (2) to the reaction of the whole social self upon itself, or of the whole assemblage of social phenomena upon themselves. These are the 'two collective processes of mutual determinism and auto-determinism.'

Francis Galton contributed a paper on Eugenics, to which is annexed an investigation by the same author on the achievements of the near kinsfolk of some of the Fellows of the Royal Society. The Fellows in question certainly have brilliant kin, and the kind of ability displayed would be little aided by social position, though of course the intellectual stimulus from living in a family of geniuses must be something. E. Westermarck finds indications that the position of women in early civilization is not so servile as is often supposed. Other papers are by P. Geddes on 'Civics' and by P. H. Mann on 'Life in an Agricultural Village in England.' This latter reveals a distressing condition.

J. H. T.

ETHICAL IMPLICATIONS.

Aspects of Social Evolution. First Series, Temperaments. J. LIONEL TAYLER, M.R.C.S. London, Smith, Elder & Co., 1904. Pp. xxviii + 297.

This book represents a working out of three fairly distinct lines of thought which may be roughly characterized as (1) an argument from a neo-Darwinian standpoint regarding the problem of physical heredity, (2) a diagnosis from a physician's standpoint of various types of temperament, and (3) criticism and exhortation from a social reformer's standpoint with reference to the crying evils of modern society.

Dr. Tayler's argument regarding the problem of physical heredity discloses no novel features. It is essentially a recapitulation of well-known facts and generalizations derived mainly from the labors of Spencer, Darwin and Weissmann. The conclusion reached is that natural selection acting upon a fundamentally unmodifiable protoplasm has been and is the sole method of evolution. The metaphysical or even the logical contradictions involved in such a conclusion as this, though hardly to be escaped when thus started from the cover of biological details, are not pursued, if perceived; for the author seems to be chiefly intent upon another trial — sociological applications. In

the first place, according to the author's view of the biological principles thus derived, it becomes of fundamental importance to discriminate amongst the various types of human individuals with a view to discovering what types ought to survive because they are fitted for a higher social life. In the second place, it becomes of equal importance to determine how to modify the environment, both physical and social, so as to select and perpetuate the most desirable types. Out of these two reciprocal considerations grow the latter two thirds of the volume—the study of temperaments, and the social and medical aspects of the problem.

The author's treatment of temperaments proceeds largely from the physiological standpoint, with special reference to questions of health and disease. In fact the author states, in so many words, that 'the study of temperament is concerned *solely* with peculiarities which have a physiological significance, and which are found in certain large groups of individuals who appear to be healthily organized, as far as known data permit of our estimating accurately what is or is not healthy' (p. 100). Great prominence is given to the temperamental influence of glandular organs. Evolutionary tendencies now at work receive some attention. The author notes, for example, the passing of the traditional John Bull type, its place being taken by a thinner, more alert, active type, just as the old mammoth and larger reptilian forms of animals have been displaced by others smaller and better adapted to newer environments. The following types of temperament are discriminated with special reference to physical, mental, social, medical, educational and artistical characteristics, and each type is illustrated by a full page half-tone reproduction of a crude and fanciful sort of composite sketch: (1) The long-limbed northern type (pre-civilized), (2) the short-limbed southern type (pre-civilized), (3) the mediæval type, (4) the scientific type, (5) the rational type, (6) the emotional type, (7) the womanly type, (8) the manly type.

In his discussion of the social and medical aspects of the problem Dr. Tayler seems to be able to find no language too strong with which to condemn the existing industrial conditions, particularly as they affect the lot of women, and the production of social extremes—the parasitic rich and the parasitic poor—the 'scum' and the 'dreg.' This part of the book is unmistakably written out of first hand, flesh and blood experience. It voices an emphatic human protest against the dehumanizing tendencies of modern society. As a conclusion derived from three years of work in a poor populous district comes the statement (the italics are the author's): '*The worst sin of our age is the*

conscious, deliberate, devitalizing and dewomanizing of women by modern commercialism.'

The book as a whole is essentially humanitarian, rather than definitely scientific in its spirit and scope, utilizing results of scientific investigation, particularly those available in English—references to studies on the same subject in French and in German being conspicuous by their absence—but making in return no scientific contribution, save on the level of reflecting, too faithfully, if anything, some of the aspects of the chaos of human life.

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BOOKS RECEIVED FROM NOVEMBER 5 TO DECEMBER 5.

The Educative Process. W. C. BAGLER. New York, Macmillans, 1905. Pp. xix + 358.

The Interpretation of Nature. C. LLOYD MORGAN. Bristol, Arrowsmith; London, Macmillans, 1905. Pp. 164 (12mo).

Wasps, Social and Solitary. G. W. and E. G. PECKHAM. Boston, Houghton, Mifflin & Co., 1905. Pp. xvi + 311.

Mexico, Its Social Evolution. Various authors. Ed. by J. SIERRA. Eng. trans. by G. SENTIÑON. Mexico, Ballescá & Co. 2 tomes in 3 large 4to vols. Profusely illustrated in half-tone, lithographs and in color. Pp. 415, 778.

[A superb and sumptuous work, treating of all aspects of the Mexican Republic from the points of view of history and social evolution. Mechanically it is an example of the best Spanish work, having been printed and illustrated in Barcelona. The only criticism that could be offered would terminate on the somewhat grandiose English of the translator.]

Die Lehre vom Denken; zur Ergänzung der naturwissenschaftlichen Psychologie in Anwendung auf die Geisteswissenschaften. III. Th. Berlin, Dümmler; New York, Stechert, 1905. Pp. 303.

Measurements of Twins. E. L. THORNDIKE. Columbia University Cont. to Philos. and Psychol., XIII., 3. (Archives of Philos. etc., No. 1.) New York, Science Press, 1905. Pp. 64. [The Columbia University Monographs in Psychology, formerly printed in the PSYCHOLOGICAL REVIEW Monograph Supplements, are hereafter, we understand, to appear only in the above form.]

- Psychologie de l'Enfant et Pédagogie expérimentale.* Dr. ED. CLAPARÈDE. Geneva, Kündig, 1905. Pp. 77.
- Great Pedagogical Essays.* F. V. N. PAINTER. New York, Amer. Book Co., 1905. Pp. 426.
- Le Langage. Essai sur la Psychologie normale et pathologique.* E.-B. LEROY. Paris, Alcan, 1905. Pp. 293. 5 fr.
- Mexican Antiquities.* Bulletin 28, Bureau Amer. Ethnology. Washington, Gov. Printing Office, 1904. Pp. 682. [A collection and translation of papers by Seler, Förstemann, Schellhas, Sapper, and Dieseldorff, supervised by C. P. Bowditch.]
- Ricerche di Psicologia.* Vol. 1. Directed by F. DE SARLO for the Istituto di Studi Superiori of Florence (Lab. di Psicologia sperimentale). Florence, Seeber, 1905. Pp. 245. L. 10. [To be continued serially.]
- Criminal Responsibility.* CH. MERCIER. Oxford, Clarendon Press, 1905. Pp. 232. 7s. 6d.
- Proceedings of the Aristotelian Society.* N. S., Vol. V. London, Williams & Norgate, 1905. Pp. 188. 10s. 6d. net.
- Psychologische Untersuchungen.* Bd. 1. Heft 1. *Bewusstsein und Gegenstände.* TH. LIPPS. Leipzig, Engelmann, 1905. Pp. 203. M. 5.60. [The first issue of a new series to be edited by Professor Lipps.]
- The Secret of the Totem.* ANDREW LANG. London, New York and Bombay, Longmans, Green & Co., 1905. Pp. x + 215. \$3.
- Life and Matter.* O. LODGE. New York and London, Putnams, 1905. Pp. 175. [A criticism of Haeckel's *Riddle of the Universe*.]
- L'Âme et le Corps.* A. BINET. Paris, Flammarion, 1905. Pp. 288.

NOTES AND NEWS.

PROFESSOR H. K. WOLFE has been appointed to a new chair of educational psychology at the University of Nebraska. He was formerly professor of psychology at this institution and is now professor of philosophy at the University of Montana.

DR. JAMES CARLETON BELL has been appointed instructor in experimental psychology at Wellesley College. Dr. Bell spent one year in the Psychological Laboratory at Leipzig, and the following

two years in graduate study at Harvard University where he took his doctor's degree. Dr. Bell shares with Professor Gamble the direction of the training course in laboratory psychology and of the research work.

ELIZABETH KEMPER ADAMS, A.B. (Vassar), Ph.D. (Chicago), has been appointed instructor in philosophy and pedagogy at Smith. Anna A. Cutler, Ph.D., has been promoted from an associate to a full professorship in the department.

THE American Psychological Association will meet in Cambridge (Mass.), December 27-29, in affiliation with the American Philosophical Association. There will be a joint session on Wednesday afternoon, including a discussion on 'The Affiliation of Psychology with Philosophy and with the Natural Sciences.' Professors Fullerton, Hall, Münsterburg, Taylor, Thilly and Witmer are to speak. A Conference of the Psychological Association has also been arranged to consider 'Coöperation between Laboratories and Departments of Different Institutions.' Further details of the meeting will be given in the final program.

THE Southern Society for Philosophy and Psychology is to meet in New Orleans during the meeting of the American Association for the Advancement of Science.

THE following items are taken from the press:

PROFESSOR R. M. WENLEY, of the University of Michigan, has leave of absence for the year, which he is spending in Switzerland.

ELMER E. POWELL, Ph.D. (Bonn), has been appointed to the chair of philosophy at Miami University, Oxford, Ohio.

CLARK WISSLER, Ph.D., and Berthold Laufer, Ph.D., have been appointed lecturers in anthropology at Columbia University.

CHARLES J. C. BENNETT, Ph.D. (Columbia), has been appointed professor of education in the Louisiana State University.

Dr. W. G. SMITH has been appointed lecturer in experimental psychology at the University of Liverpool.

THE next meeting of the German Society of Experimental Psychology will be held at Würzburg, April 10-13, 1906.

H. C. STEVENS, Ph.D. (Cornell), has been appointed assistant professor of psychology at the University of Washington, Seattle.

MR. WALTER B. PITKIN has been appointed lecturer in philosophy at Columbia University.

PROFESSOR H. EBBINGHAUS, of the University of Breslau, has been called to the University of Halle, to succeed Professor A. Riehl.

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