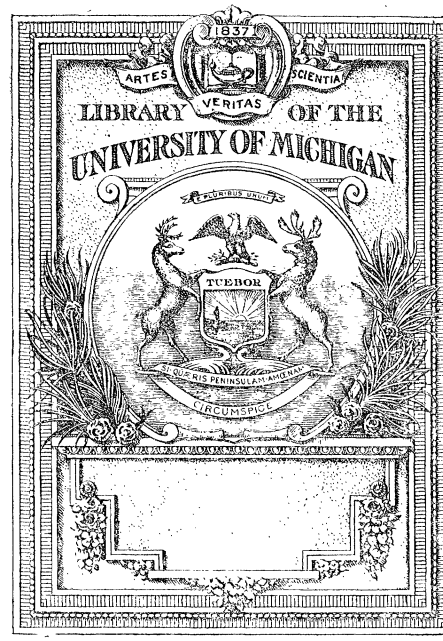
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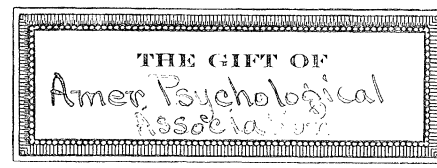
THE GIFT OF
Amer Psychological
Association

PROCEEDINGS OF THE

AMERICAN

PSYCHOLOGICAL ASSOCIATION.

I. PRELIMINARY MEETING: CLARK UNIVERSITY, WORCESTER, MASS., 1892.

II. FIRST ANNUAL MEETING: UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA., 1892.

III. SECOND ANNUAL MEETING: COLUMBIA COLLEGE, NEW YORK, N. Y., 1893.

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PROCEEDINGS

OF THE

AMERICAN PSYCHOLOGICAL ASSOCIATION.

I. PRELIMINARY MEETING:

CLARK UNIVERSITY, WORCESTER, MASS., 1892.

IN response to an invitation issued by President G. Stanley Hall of Clark University, a preliminary meeting of psychologists from various institutions was held at that university, Worcester, Massachusetts, on July 8, 1892.

The meeting was presided over by Professor G. S. Fullerton of the University of Pennsylvania. After a general expression of opinion as to the form of organization, it was determined to refer the entire matter to a Committee consisting of

President HALL of Clark University,
Professor FULLERTON of the University of Pennsylvania,
Professor JASTROW of the University of Wisconsin,
Professor JAMES of Harvard University,
Professor LADD of Yale University,
Professor CATTELL of Columbia College,
Professor BALDWIN of the University of Toronto.

This Committee was authorized to determine the place, time, and programme for the next meeting and then to report a plan of organization.

It was the sense of those present that these gentlemen should constitute a council to be renewed by frequent elections and should choose from their own number an Executive Committee to direct the more urgent affairs of the Association, and that the first three gentlemen named should act temporarily as such committee.

Sessions were held in the afternoon and evening, at which papers were read by Professors Jastrow, Sanford, and Bryan, and Doctors Nichols, Krohn, and Gilman. It was decided in response to an invitation from Professor Fullerton to hold the next meeting of the Asso-

ciation in Philadelphia, at the University of Pennsylvania, on Tuesday, December 27, 1892, at 10 A.M.

Professor Jastrow was appointed secretary to provide a programme for that meeting. He invites all members to submit to him at Madison, Wisconsin, titles of papers with brief abstracts and estimates of time required for presentation.

The original members who were either present at this meeting or sent letters of approval and accepted membership are the following:

Angell, Frank, Leland Stanford, Jr., University,
Baldwin, J. Mark, Toronto University,
Bryan, W. L., Indiana University,
Burnham, W. H., Clark University,
Cattell, J. McK., Columbia College,
Cowles, Edward, McLean Asylum,
Delabarre, E. B., Brown University,
Dewey, John, University of Michigan,
Fullerton, G. S., University of Pennsylvania,
Gilman, B. I., Clark University,
Griffin, E. H., Johns Hopkins University,
Hall, G. Stanley, Clark University,
Hume, J. G., Toronto University,
Hyslop, J. H., Columbia College,
James, William, Harvard University,
Jastrow, Joseph, University of Wisconsin,
Krohn, W. O., Clark University,
Ladd, G. T., Yale University,
Nichols, Herbert, Harvard University,
Noyes, William, McLean Asylum,
Patrick, G. T. W., University of Iowa,
Royce, Josiah, Harvard University,
Sanford, E. C., Clark University,
Scripture, E. W., Yale University,
Witmer, Lightner, University of Pennsylvania,
Wolfe, H. K., University of Nebraska.

The following additional members were elected:

Mills, T. Wesley, McGill College, Montreal,
Münsterberg, Hugo, Harvard University,
Ormond, A. T., Princeton College,
Pace, Edward, Catholic University, Washington,
Titchener, E. B., Cornell University.

Professor Jastrow asked the co-operation of all members for the Section of Psychology at the World's Fair, and invited correspondence upon the matter.

II. FIRST ANNUAL MEETING:

UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA., 1892.

ABSTRACTS OF PAPERS.

(1) *History and Prospects of Experimental Psychology in America.* By President G. STANLEY HALL, Clark University.

This paper consisted of an abstract of an extensive History of Psychology in this country beginning with Jonathan Edwards, and coming up to the present time. The history is intended to include an account of all the important investigations, and in anticipation of the final paper any more detailed account is omitted.

Discussion by Professors Ladd and Baldwin.

(2) *Errors of Observation in Physics and Psychology.* By Professor J. MCKEEN CATTELL, Columbia College.

Physical science can better eliminate errors of observation by learning from psychology what is known of their cause and nature. Psychology will gain greatly in clearness and accuracy by using the methods and conceptions of physics and mathematics. In the work on the relation between mental and physical intensity the just noticeable difference has been used ambiguously, at one time as an equal increment in sensation, at another time as the error of observation or proportional to it. When the just noticeable difference (or an apparently equal difference) is used in the former sense, the judgment of the observer is probably based on association with the known relations of the physical world. When the just noticeable difference is used as equivalent to the error of observation, as in the method of average error and the method of right and wrong cases, we do not measure an increment in the intensity of sensation, but an error of perception, which cannot in any way be used as a unit for measuring the intensity of sensation. From the point of view of the theory of probability we can understand the alteration in the error of observation under altered conditions. Thus there are differences which are nearly always correctly perceived and differences which are nearly as likely to be perceived incorrectly as correctly, but the ideas of an absolute just noticeable difference or of an absolute threshold become absurd.

The increase in the size of the error of observation as the intensity or extensity of the stimulus increases may be due to various factors, but one of the most important of these is the summation of errors. If a certain error be made on the average in judging the length of a second of time, the error in judging two seconds would not be twice as large (Weber's law) but would be as large as the error in judging one second multiplied by $\sqrt{2}$, and generally we should expect (apart from other factors which will never be entirely absent) that the error of observation would tend to increase as the square root of the magnitude. In actual experiments the error of observation usually increases neither in direct proportion to the stimulus nor as the square root of the stimulus, but the facts seem to accord fully as well with the relation here proposed as with Weber's law. [Printed in The American Journal of Psychology, vol. v. 285–293, Apr. 1893.]

Discussion by Professors Fullerton, Ladd, Hall, and Cattell.

(3) *Experiments upon Pain.* By Dr. HERBERT NICHOLS, Harvard University.

On Glans Penis: Four hospital subjects, healthy as to parts concerned. Natural temperature of part 32° C. If a shield of cotton and asphalt protect the prepuce, and a large Bunsen burner is brought forward, no warmth is felt; trace of pain noted at 36°—41°. Clear 39°—43°; strong 49°—50°; unbearable 50°—58°. From cold metal no cold is felt; trace of pain at 15°—8°; clear 10°—8°; tolerably strong 5°—2°. Applied ice never felt cold; after 30–60 seconds dull pain; in time becomes unbearable. On lower regions of œsophagus: insensible to feelings of warmth, of cold, or of touch from considerable pressure. Sharp pains from twisting the mucous membrane on end of bougie. On extreme upper portions of rectum: similar results. The sub-dermal surfaces of cuts and wounds, the nerves of the teeth, and portions of the upper cavities of the nose also give pain only.

Thus certain parts of the body are sensible of pain only, in response both to temperature and to mechanical stimulation. The doctrines of summation (Dessoir); of pain as an intense degree of our other feelings, —touch, heat, cold, etc.; or as rising from the summation of stimuli in the cord (Schiff, Wundt, Goldscheider) are irreconcilable with these facts, as they all demand some other feeling preceding the pain. These facts support the theory of special pain nerves, responsive with pain only, to various forms of stimulation. Goldscheider is right as to four kinds of dermal nerves, but they are Warm, Cold, Touch, and Pain, rather than Warm, Cold, Touch, and Pressure. In my experiments the low temperature at which pain is perceived from heat stimulation is

probably due to absence of complicating sensations, and the effects of this in attention.

(4) *Tactile Estimates of Thickness.* By Professor E. A. PACE, Catholic University.

Considerable differences of thickness may be safely estimated either by sight or by touch. Where finer discrimination is needed, we are inclined to apply both these senses, and are often obliged to sharpen the tactile impression by means of visual images. If the touch alone be employed, it affords three distinct bases of judgment: the simple clasp of opposite surfaces, the movement of the finger through an intervening space or over an intervening surface, and the tactile sensation which accompanies the movement. Whether one or all of these factors must enter into our estimate, and which of them is to predominate, will depend to some extent upon the character of the object. In 'feeling of' flexible substances like paper or cloth, we decide that they are thicker or thinner because our fingers can be brought near together, or because the material crumples under pressure, or because, in some cases at least, peculiarities of the surface tell us plainly what we are handling. Estimates of this sort reach a high degree of delicacy, the transition from 0.025 mm to 0.037 mm of thickness being easily recognized.

With rigid substances the case is different. The mere clasp or rub proving insufficient, the finger, almost unconsciously, slips over the edge and glides from surface to surface. Here we have the two other elements, movement and contact. An attempt was made to determine the relative accuracy of the three modes of judging, or to determine their respective difference-thresholds, by the method of Least Variation. The experiments were made with sheets of mica, strips of zinc, and blocks of polished wood. The results may be summarized as follows:

1. Below 5 mm the clasp is the only satisfactory test, and this is rather uncertain below 0.5 mm. Within this narrow range the threshold for two observers was 0.5 mm.

2. In the upper portion of the scale—5–80 mm—the most accurate judgments were obtained by continuous contact, the threshold being 2 mm. The visual elements afford more assistance in this case than when the fingers are simply pressed against opposite surfaces, or are moved through the intervening distance without contact.

3. This threshold either remains constant throughout the scale, or, if it shows variations, they seem independent of the increment and diminution of the normal thickness.

(5) *Some Experiments upon the Æsthetics of Simple Visual Forms.* By Dr. LIGHTNER WITMER, University of Pennsylvania.

1. A figure of less pleasing proportions falling within a border of similar proportions (the border of the sheet of paper on which the figure is drawn, for example) will be chosen rather than a figure of more pleasing proportions within a border with whose proportions those of the figure do not correspond. The proportions of the border are effective even at right angles to those of the figure, and even though they are not observed by the subject. This suggests that possibly the outlines of the field of vision may influence the choice. Perhaps for this reason, ellipses are more pleasing than rectangles or circles.

2. Every figure is judged as a result of certain movements of the eyes. These may change or modify the effectiveness of the border of the field of vision, and their extent and direction may themselves be determinative of the æsthetic judgment. The eyes naturally prefer to move from left to right rather than from right to left; up rather than down. Normally the base in vertical direction, or the centre in horizontal, is taken as the point of departure for the eye movements with which we view the figure; likewise the left side rather than the right, a horizontal rather than a vertical line, and a vertical rather than an oblique. But peculiarities in the structure of the figure may change the natural arrangement of these movements and enforce others. A vertical line will be viewed from the bottom upward; but if a heavy horizontal line be drawn at right angles to the upper end, the eyes will first seize upon it and then be forced to move downwards to get the whole line. The importance of the normal eye movements suggests the possibility of the ratio between the maximum or, if not this, then the average range of movement along the horizontal axis and the maximum or average along the vertical axis being a norm of relative amounts of muscular contractions, which is effectual in determining the choice of the proportions of a figure.

3. Perhaps the explanation is to be referred to a proper difference in the successive movements of the eyes—the pleasingness of difference being a general contrast phenomenon the ultimate explanation of which is to be sought for in conditions of a general nature and not by reference to the eye alone. [In continuation of research published in Philos. Stud. IX. 1, 96–144, 2, 209–263.] Discussion by Profs. Baldwin, Ladd, Fullerton, Jastrow, Titchener, and Drs. Nichols and Witmer.

(6) *The Chronoscopic Measurement of Simple Reactions on all Classes of Persons.* By Dr. LIGHTNER WITMER, University of Pennsylvania.

An investigation is in progress at the psychological laboratory of the

University of Pennsylvania to determine the mental times that are of most general interest from an anthropometrical standpoint, and to examine methods of obtaining accurate time-measurements on all classes of untrained observers. About 75 persons, of most varied age and condition, have so far been examined and their reaction-times for sound, light, and electric shock measured. A series of experiments comprises 13 and sometimes 18 single reactions—in the latter case, five serve as a practice series, and of the 13, the three most divergent reactions are excluded, so that the average result represents ten experiments. Three series are made with each stimulus, and 162 reactions thus comprise the maximum number made on each observer. The three series with a given stimulus were never taken at one time.

All the results thus far obtained have not yet been collated, nor is the collection of experimental data yet complete; the accompanying table, therefore, gives only provisional results:

	I.		II.		III.	
	Av.	mv.	Av.	mv.	Av.	mv.
Sound (20 persons).....	155,	13	144,	8	143,	9
Light (20 persons).....	171,	11	168,	11	166,	10
Electr. (14 persons).....	146,	11	138,	7	135,	9

In length of reaction-time and size of *mv*, we find light, sound, and electric shock decreasing in the order named. The large size of the *mv* for the first set with sound (13σ) is explained by the fact that each subject began reacting to the sound-stimulus, and the average result represents the reaction-time to sound after only five practice experiments. This also explains the greater difference between the first series for sound and the second series (i.e., 11σ) than between the first and second series for light (3σ). In the case of every stimulus, the third series is slightly shorter than the second—an evidence that the effect of continued practice has not been eliminated. The mean variation, however, does not show any tendency to shorten in the third series. Comparison with results obtained on skilled observers points to the normal character of these results.

Initial practice is most marked in its effect; this, however, does not extend beyond the second experiment. The average result of the first series of sound reactions from 15 observers was 159σ. Referred to this average, the five results of the practice series were $+ 111\sigma$, $+ 82\sigma$, $- 8\sigma$, $- 3\sigma$, $+ 6\sigma$. Two trials only are needed for the subject to accommodate himself to the general conditions of the experiment.

A method for regulating the chronoscope by means of a pendulum was also described.

Discussion by Profs. Jastrow and Titchener.

(7) *Experimental Psychology at the World's Fair.* By Professor JOSEPH JASTROW, University of Wisconsin.

This paper described the plans of the Section of Psychology of the Department of Ethnology at the World's Columbian Exposition. The section occupied the rooms in the north gallery of the Anthropological Building, one of which was fitted out as a practical laboratory in operation, the other containing a collection of apparatus used in demonstrations and research in psychology. The laboratory was designed for the collection of tests of sense and motor capacity, and the simpler mental processes. The tests included the typical forms of dermal sensation, pressure, roughness and smoothness, contact, pain and motion; rapidity and accuracy of movements with and without the guidance of the eye; tests of range and accuracy of vision, of color and shade; quickness and accuracy of form and space perceptions of various kinds; tests of memory, quickness of perception, simple and complex reactions, associations and the like. The collection of apparatus was partly a loan collection contributed by a number of American colleges and partly an exhibit of the instrument-makers. The typical instruments for demonstration and research upon the senses and movement, upon the physical concomitants of mental phenomena, upon their time-relations, and upon other portions of experimental psychology were represented. A collection of photographs of the various psychological laboratories was exhibited. In addition charts showing some of the results of psychological research, particularly in the line of sense tests, were prepared; a large portion of these was the original work of the Section of Psychology. There were also exhibited in the room devoted to *Development* illustrations of mental development in children, particularly the results of statistical research in the school-room.

The main purpose of the section was to excite interest in and show the methods of experimental psychology; it also aimed to complete the general exhibit of Anthropometry by some illustrations of anthropometrical methods and results as applied to mental phenomena. For further details reference may be made to the Official Catalogue of the World's Columbian Exposition, Anthropological Building, pp. 50–60, and to the forthcoming report of the Department of Ethnology to the Director-General of the Exposition.

Discussion by President Hall and Prof. Krohn.

(8) *Certain Illusions of Rotation.* By Dr. HERBERT NICHOLS, Harvard University.

With two black bars, 8 in. long, mounted one above the other on

cylinders rotated in opposite directions, at moderate speed, by clockwork, the rotations whimsically appear to change through every combination of directions possible for the two bars. A single bar gives similar illusions. Treating both eyes thoroughly with atropine, the illusions continue as lively as ever. Still under drug, one eye blindfolded, upper half of other eye looking through glass horizontal prism, single bar rotating vertically in plane of sight and 20 ft. distant: theoretically under above conditions, upper half of bar should be seen rotating one way, and lower half in opposite direction; active stimulation for accommodation should be neutral, even without atropine. Viewed across a stationary hair no movements of the eye could be detected corresponding either to the real or the fancied movements of the bar. The illusions continued independently of all the above changing conditions, and seem therefore free of all active muscular suggestion.

Since the illusions change while the retinal stimulations do not, the perceptions plainly are not simple correspondents of the latter. Since muscular sensation commonly enters into sight perception, similar psychic components probably constitute a part of these illusions. But if so, then the above facts indicate that these components are filled in to the perceptions through internal association. This last—the illusions being indistinguishable from common perceptions—is interesting in view of the current notion that *reproduced* images—those rising inwardly by association—never have the strength and clearness of full-grade, outward sensations; it opens perhaps the whole question as to the fundamental distinction between perception and conception, seeing and imagining.

Our experiments also seek to determine: (*a*) the maximum rate of rotation for various distances at which no deceptions occur; (*b*) the time-reactions of the muscular processes normally; (*c*) the relation of (*a*) to (*b*); (*d*) maximum rotation at which definite perceptions of direction occur at all; (*e*) maximum at which deceptions occur; (*f*) most favorable speed for deceptions; (*g*) time-reactions for various association processes as above involved. The experiments aim to get at the nature of perceptions in general, and in particular to separate the inner from the outer elements.

(9) *Note upon the Controversy regarding the Relation of the Intensity of the Stimulus to the Reaction-time.* By Professor W. L. BRYAN, University of Indiana.

The question of reaction-time is still in many ways open and practical both for the physiologist and for the psychologist. Martius's result that intensity of stimulus does not affect reaction-time except in the case of very small stimuli is doubtful. Extended series of experiments with sound stimulus made by the speaker show:—

(1) That below a certain maximal stimulus, which varies in different individuals, the reaction-time varies inversely with the intensity of stimulus, as all authors before Martius hold.

(2) That above this maximal point, which is low in comparison with the height of sense, increase of intensity of stimulus does not affect the reaction-time.

(3) That within the limit specified in (1) the amount of variation in reaction-time occasioned by a given increment in the stimulus depends upon the stimulus to which the increment is added. This result is given as having a very high degree of probability.

(4) If it were assumed that the intensity of sound varies directly with the height of fall, the results show an approximate correspondence between the ratios of the intensities and the differences of the reaction-times.

Recent physiological literature tends to show that the relation between intensity of stimulus and the 'latent period' is the same as that here given [in (1), (2), and (3)] for reaction-time.

Discussion by Profs. Baldwin, Titchener, Cattell, Jastrow, and Bryan.

(10) *Minor Studies at the Psychological Laboratory of Clark University.* Dr. E. C. SANFORD, Clark University.

Dr. Sanford's paper consisted in a report upon six studies made under his direction by students of psychology at Clark University, namely: (1) On the Discrimination of Groups of Rapid Clicks, by T. L. Bolton; (2) On Reaction-times when the Stimulus is applied to the Reacting Hand, by J. F. Reigart; (3) Statistics of Dreams, by Mary Whiton Calkins; (4) On the Pressure Sense of the Drum of the Ear and 'Facial Vision,' by F. B. Dresslar; (5) On Tests of Mental Ability at Different Hours of the Day, by J. A. Bergström; (6) On Experiments upon Physiological Memory by Means of the Interference of Associations, by J. A. Bergström. All these have since been published in the American Journal of Psychology, numbers 1, 2, 3, 4, and 6 in Vol. V. No. 3, 1893, and number 5, with further results upon the same topic, in Vol. VI. No. 2, 1894.

Discussion by Profs. Ladd, Baldwin, Fullerton, Krohn, Jastrow, Dr. Nichols and Dr. Witmer.

(11) *Preliminary Notes upon Psychological Tests in the Schools of Springfield, Mass.* By Prof. W. L. BRYAN, University of Indiana.

[This paper was only given in part, and abstract has not been furnished.]

(12) *The Problems of Experimental Psychology.* Professor HUGO MÜNSTERBERG, Harvard University.

Professor Münsterberg, welcomed by the President as guest in

America and asked to address the meeting, explained the point of view from which he seeks to direct the investigations in the psychological laboratory at Harvard University. He does not share fully the satisfaction felt at what has been thus far accomplished in experimental psychology. Everybody looked at experimental psychology with the greatest hopes and supported it liberally, especially in America, but everywhere only scanty results have been gained and a certain disappointment has entered scientific circles. In the first place experimental psychology, proud of the exactness of her results, has neglected self-observation too much. We accumulate figures, but we forget too often what those figures imply. People rightly say of it that it is rich in decimals but poor in ideas. It is indeed a misleading ideal of psychology to make mere measurements its goal. The goal of psychology must be different from that of physics, as measurement is confined to quantitative facts, while psychical facts are never magnitudes. For psychology every measurement is only a means to qualitative analysis. Experiment must not take the place of self-observation, but only offer more exact conditions for self-observation. Closely connected with that is the fact that experimental psychology is too little in touch with the mental sciences, especially with philosophy and pedagogics. To be sure the boundaries between psychology and philosophy are not to be destroyed and philosophy ought never to pass over into mere psychology, but it is also necessary that the choice of psychological questions should recognize the needs of philosophy in a higher degree. If psychology unites with physiology in order to cut loose from philosophy, it must lose more than it can gain.

And above all, the range of problems for psychological laboratories is still too limited ; it stands too much under the influence of the more or less accidental starting-points. It started several decades ago with the psycho-physiological studies in sensation, psycho-physical relations and reaction-times; one objects, not wholly without justice, that it has really advanced scarcely a step, and that these problems can be solved just as well in physiological laboratories. Every one becomes impatient with a science which, as if in hypnotic fascination, stares constantly at only one single problem out of the endlessly great circle of its possibilities. Experimental psychology will come to investigate the entire circle of psychological problems and push the centre of interest in experimental work from the half-physiological questions to the higher psychological problems or it will degenerate into a superficial scholastic sport. Everything depends, not upon the figures, but upon the analysis; not upon the precise instruments, but upon the right questions.

REPORT OF THE SECRETARY AND TREASURER, PROFESSOR JOSEPH JASTROW.

The first annual meeting of the American Psychological Association was held at the University of Pennsylvania, Philadelphia, on Tuesday and Wednesday, December 27 and 28, 1892.

Of the thirty-one members of the Association eighteen were in attendance at the various meetings. Those absent were

Angell, Frank	James, William	Patrick, G. J. W.
Cowles, Edward	Noyes, Wm.	Royce, Josiah
Delabarre, E. B.	Mills, J. Wesley	Scripture, E. W.
Dewey, John	Ormond, A. J.	Wolfe, H. K.
Gilman, B. I.		

The meeting of the Council was held in the morning of December 27th, at which G. Stanley Hall was nominated President of the Association for the ensuing year, George T. Ladd, Vice-President, and Joseph Jastrow, Secretary and Treasurer. These nominations were submitted to the general meeting and the officers elected.

The reading of papers was then begun according to programme, excepting that Dr. Nichols substituted his second paper for his first, and that in addition papers were presented by Dr. Aiken on 'An Analysis of Cause,' and by Mr. Davis for Mr. Chamberlain on 'The Relation between Psychology and Anthropology.'

Before the meeting adjourned it was moved and adopted that arrangements be made for printing an account of the proceedings of the meeting in the American Journal of Psychology. A vote of thanks was tendered to Prof. Fullerton and to those who acted as hosts and had administered to the comfort and entertainment of the members.

Invitations were received from the Historical Society of Philadelphia for a reception to be held on the evening of December 28th, and also from the American Society of University Extension to attend its first meeting to be held the same evening.

The invitation of Prof. Cattell to meet at Columbia College, December 27 and 28, 1893, was accepted.

The question of holding a Psychological Congress in Chicago in

connection with the World's Congress Auxiliary was discussed at considerable length. Information was received that a Psychological Section would be welcomed in connection with the Philosophical Congress, with the Educational Congress, and with the Anthropological Congress. The possibility of a separate congress was also considered. It was finally decided that the Association as such should not take part in any of the congresses, but leave the members free to place their allegiance where they thought best.

The Council at various meetings discussed the plans for a permanent organization, but did not prepare a final constitution. For the guidance of the Council in the future the following regulations were adopted. These were to be regarded as in effect in so far as the continuance of the Association depended upon them.

Name.—The name of the Association shall be the American Psychological Association.

Council.—The government of the Association shall be vested in a Council of seven or more, one of whom shall be designated as Chairman, and another as Secretary. These together with a member from the place of meeting shall constitute an Executive Committee of the Council. No more than one member from any institution shall have a seat in the Council.

Membership.—The right of nomination for membership is reserved to the Council, the election to be made by the Association. The members shall pay annually three dollars as dues to the Treasurer.

Officers.—There shall be elected annually a President, Vice-President, and a Secretary and Treasurer; the President to act as Chairman of the Council, and the Secretary as its Secretary.

Business.—All communications should be addressed to the Secretary and by him transmitted to the Council or to the Executive Committee.

The Council nominated for membership the following:

Armstrong, A. C., Jr.,	Wesleyan University.
Butler, Nicholas Murray,	Columbia College.
Gardiner, H. N.,	Smith College.
MacDonald, Arthur,	Washington, D. C.
Mead, Geo. H.,	Ann Arbor.
Marshall, H. R.,	New York City.
Murray, James C.,	McGill College.
Newbold, William Romaine,	University of Pennsylvania.
Peirce, Charles S.,	Milford, Pennsylvania.
Schurman, J. G.,	Cornell University.
Strong, C. A.,	University of Chicago.

The Council also invited President Schurman to a place in the Council.

All have signified their acceptance of the nominations.

The receipts and expenses of the Association are as follows:

Received from members' dues		$63.00
Expenditures:		
Expenses for printing circulars	$5.75	
Postage	2.20	
Clerical work and stationery	1.90	
Programmes	2.85	
		12.70
Balance on hand		$50.30

III. SECOND ANNUAL MEETING:

COLUMBIA COLLEGE, NEW YORK, N. Y., 1893.

ABSTRACTS OF PAPERS.

(1) *Address of the President.* Professor GEORGE TRUMBULL LADD, Yale University.

The position which psychology occupies among the group of modern sciences has certain disadvantages and certain equally great advantages. These are partly due to its peculiar nature, and partly to the recentness of the movement toward its more definite scientific cultivation. The success of this movement will largely depend upon the answer given to the following three classes of inquiries: (1) What is the relation in which the statistical and experimental investigation of mental phenomena stands to the total science of psychology, in the larger meaning of the latter words? (2) What is the relation in which the science of psychology, thus understood, stands to that interpretation of the external world and of human life, in its yet larger and profounder experiences, which we are wont to call philosophy? (3) What is the relation in which psychology stands to conduct and to the practical welfare of mankind?

In answer to the first of these three questions we must take a position which recognizes the merits of a great variety of workmen, pursuing different methods, for the description and explanation of the phenomena of consciousness. Of course, the determination of the facts to be described and explained can never be otherwise made than by use of introspection. This is just as indispensable for the workman in the psychological laboratory or the dealer in psychological statistics as for the most high-and-dry student of so-called rational psychology. Indeed, skill and accuracy in introspective analysis of conscious states is the greatest of all fundamental needs for the student of experimental psychology. Moreover, it would seem that there are certain dominant factors, or important phases, of the most common psychic phenomena which, with the problems started by their introspective recognition, never can be made the subjects of experimental and statistical examination.

In answer to the second question we must admit the historical fact that philosophy is on the whole much older and more interesting to

the human mind than is the science of psychology. The relation between the science and the philosophy of mind is such that neither can dispense with the other. The science is necessarily propædeutic to philosophy. Indeed, it is difficult or impossible to tell just when the solution of certain psychological problems (the problem of knowledge, e.g.) passes over into philosophy. On the other hand, philosophy is left largely vaporous and in mid-air, unless it takes its stand on psychological science. The practical lesson is one of toleration, magnanimity, and comprehensiveness of view, rather than of invitation to raise an outcry against all 'metaphysics in psychology.'

Finally, the modern science of psychology is vindicating its claim to a place in the front rank of those sciences which affect the welfare of man, by its growing capacity to contribute to pedagogics, to the science and practice of medicine, especially in the department of neurology, to the treatment of the unfortunate, the idiotic, the criminal classes, to the care of children in the home, and to the interpretation of literature and of art, etc. [Printed in The Psychological Review, Vol. I. pp. 1–21, 1894.]

Discussion by Prof. James and Brother Chrysostom.

(2) *The Psychological Standpoint.* By Professor GEORGE STUART FULLERTON, University of Pennsylvania.

The paper was a plea for psychology as natural science. It traced the development of psychological knowledge from its beginnings in the inexact and unscientific thought of every-day life to its completer expression in the thinking of the scientific psychologist, maintaining that the plain man and the psychologist occupy essentially the same point of view, that of common-sense and natural science. It held that the psychologist must accept without question the assumption upon which the natural sciences rest,—he must accept the external world, the world of matter and motion. He must also accept the existence of consciousnesses reflecting this world, and numerically distinct from it, but obtaining information from it along certain channels of sense. He must so conceive of a consciousness as to make it, in some intelligible sense, capable of being regarded as representative of real things. He must not think of it, therefore, as an 'indecomposable unity' or 'an uncompounded psychic thing,' for such a consciousness could never represent what is complex. Again, the psychologist must beware of metaphysic, confining himself resolutely to phenomena, and eschewing all 'substrata,' 'unit-beings,' 'transcendental' selves, and what not. [Printed in The Psychological Review, Vol. I. pp. 113–133, March 1894.]

Discussion by Profs. James and Dewey and Dr. Scripture.

(3) *The Case of John Bunyan.* By Professor JOSIAH ROYCE, Harvard University.

This paper was an effort to define, in terms of the recent concepts of descriptive psychology, the phenomena reported by John Bunyan, in his autobiographical confession published under the title *Grace Abounding to the Chief of Sinners.* In this work Bunyan narrates, with a skill and pathos well worthy of his genius, his own experience, of the beginning, growth, culmination, and gradual passing away, of a system of what are now known as 'Fixed' or 'Insistent' Impulses, or 'Obsessions,' which in his case were of a conscientious type, and which were connected with his own conversion and early religious life. Of the facts we have no account but Bunyan's own; but his sincerity, his simple yet wonderful literary skill in confession, his detailed memory of the experiences, and, above all, his entire unconsciousness as to the theoretical interpretation of his own case, render it comparatively easy for us to interpret the phenomena with a considerable degree of assurance, since we can often read in Bunyan's own statements psychological connections of which he himself had no idea, plain as they must be to us. The value of such an analysis as the present one has to lie wholly in its character as a contribution to descriptive psychology. The enterprise is justified, however, in view of the fact that Bunyan's numerous biographers have either missed or decidedly misinterpreted the psychological aspect of his early life.

An analysis of known facts in Bunyan's family history and general personal experience gives no good ground, apart from his own confession here in question, for regarding him as at all a heavily-burdened nervous sufferer. He was of sensitive, but apparently not of the 'degenerate' nervous constitution. His malady of insistent impulses is confined, in its more serious phases, to the years of his life between twenty and twenty-four. The causes, so far as discoverable, appear in his early marriage, the material cares of his youth, and the very serious mental strains and distresses accompanying his conversion.

Upon a thus determined, obviously neurasthenic basis, Bunyan, whose childhood history had already included a good many nocturnal terrors, developed in the first place a good many elementary fears, doubts, and inhibitions, of a well-known morbid type. The further history of his case, however, strikingly parallels that of a patient reported upon by Dr. Cowles, in his well-known paper (Am. Journ. of Psych., Vol. I.) on 'Insistent and Fixed Ideas.' Bunyan's doubts, like those of Dr. Cowles's patient, gradually systematized about certain central conscientious concerns. There were no delusions, and but a few elementary pseudo-hallucinations. Bunyan, in accordance with his faith,

regarded his troubles as due to the 'Tempter'; but this theory was, in view of his presuppositions, in no sense an abnormal one. The most distressing of the insistent impulses were motor speech-functions, or groups of ideas with regard to such functions, and associated with them. The phenomena appeared in successive and interestingly distinct stages.

The highly dramatic culmination of the malady, and the extremely instructive process by which Bunyan, unaided and ignorant as he was, thereafter toiled with unconscious but effective skill, towards his own cure, and so reached that self-control whereby his genius in the end attained its maturity and its power, were set forth in the remainder of the paper. The outcome was, nervously considered, a cure with a somewhat limited permanent 'defect,' which, however, like many such defects, proved only the more a basis for the mature man's depth of earnestness, power of will, and insight into life. [Printed in The Psychological Review, Vol. I. Nos. 1, 2, and 3, 1894.]

Discussion by Dr. Collins introduced by Dr. Witmer and by Prof. Starr.

(4) *Experiments on Visual Memory.* By Mr. HOWARD C. WARREN, Princeton College.

Experiments were made in Toronto by Prof. Baldwin, to determine the accuracy of memory for visual magnitudes and supplemented by Mr. W. J. Shaw and myself at Princeton.

The objects chosen were squares; the intervals ten, twenty, and forty minutes. A class of 225 persons (fifty being women) made the observations simultaneously. The methods employed were: 1. SELECTION. One square shown and removed; after the desired interval several squares shown together; to select a square equal to the first. 2. IDENTIFICATION. One square shown and afterwards another; to determine whether latter is larger, equal, or smaller. The percentage of right cases was:

	Selection.	Identification.
10 min.....	65.1	87.6
20 "	59.3	82.7
40 "	36.4	58.5

The curves resulting are parallel. They do not coincide for two reasons: (1) If a subject always, *by Selection*, choose too large a square, then, *by Identification*, given a larger followed by a smaller, he answers correctly; this gives more correct answers, relatively, by Identification. (2) Special experiments proved that when several squares are shown

together, contrast leads to the choice of one *nearer the average of the set* than the correct one. These facts showed the superiority of Identification.—Later experiments (not yet completed) aim at determining the 'Threshold,' i.e. that difference in magnitude which just 50% detect. This is found for each interval, including also zero time, or perception. The normal square was always 150 mm. square. The threshold increased with the time; but it was found that smaller differences could be detected when the second square was smaller than when it was larger; that is, *the memory-image tends to become greater* than its original. Taking the mean of the two results and reducing to per cent. of areal difference, we find the threshold to be 4% for 0 minutes; 9 for 10; 13 for 20, and 18 for 40, approximately. As regards the exaggerative tendency, the threshold value depends on the size of the squares; if Weber's Law held absolutely, it would vary in direct proportion. Hence a larger square, to be judged correctly, must differ from the normal by more than a smaller square; and if the judgment oscillates between the threshold limits, the mean value will be larger than the normal square. Even assuming Weber's Law to hold, the theoretical divergence is too small,—for a threshold 1% of the normal it is .001%; for 10%, .12, etc. Some additional factor is needed to account for the actual displacement.

Discussion by Profs. Baldwin, Dewey, and Krohn.

(5) *The Confusion of Content and Function in the Analysis of Ideas.* By Dr. DICKINSON S. MILLER, Bryn Mawr College.

The purpose of the paper was to emphasize the distinction, too commonly neglected, between the content or intrinsic character of any form of consciousness and its function or what its presence brings about in the mental life; the distinction between what it is and what it does. A mental phenomenon not only has a content; it has a part to play in the mental life. It summons or excludes other ideas, it influences the future course of thought and action. Now it has been widely assumed that the content of an idea is invariably a key to its function; that the idea in some sort *means* or *consciously tends to effect* all that its presence actually results in. But in point of fact the function may be quite independent of the content; and an idea may by its associations and its inhibitions have a significance of which its own inner character is but an imperfect index.

Several conspicuous instances of this confusion were discussed. In the long-standing controversy about generic ideas the conceptualist seeks in the content of our conceptions for a portrayal of the abstract.

But the nominalist points out that this is to confound the content, which must always present particulars, with the function of the ideas, which is to *stand for* the abstract by virtue of their associations and inhibitions—by virtue of the other ideas which they call up or keep down, and of their consequent guidance of thought and action. The different ingenious devices for defending conceptualism can in no case hold their ground. Again, according to the current theories of the nature of *belief*, it is distinguished from mere imagination by some intrinsic difference of quality. On examination, however, it appears that belief is a fact not of content but of associative function; consisting in the spontaneous cohesion of the parts of the image when they are not intentionally separated by the will; the spontaneous self-maintenance, that is, of the image as a whole to the exclusion of other images. (This theory is that of Mr. Alfred L. Hodder.)

The confusion is perhaps most harmful in the psychology of cognition. The cognitive quality, by which an idea resembling a certain object is said to *know* that object, lies not in any conscious intent of the idea to portray something not itself, but in the fact that it guides aright our behavior towards the object. It is, as Professor James has said, a cognitive *function*.—Some minor instances were also examined.

(6) *Do we ever Dream of Tasting?* By Professor J. CLARK MURRAY, McGill College.

To this question an extremely common answer is a sweeping negation. But this answer seems to be contradicted by the experience of many; and it is worth inquiring how far the contradiction is merely apparent, how far it is real.

A sufficient number of observations go to prove that tastes undoubtedly do occur among the phenomena of dreaming consciousness, and to that extent the common negation must be qualified. But in every case in which inquiry was made it resulted in proving that the taste dreamt of was a genuine sensation of the moment, and not merely a representation of a taste which was no longer felt; and therefore it remains doubtful whether, when there is no real 'taste in the mouth' at the time, the dreamer ever revives a past taste in mere idea. This doubt is converted into nearly absolute certainty of the negative by the fact that at times the dreamer's consciousness is filled with images which, by the influence of association, might be expected to suggest tastes to his mind, if these could be represented. He is present at a dream-feast, he takes the viands in his hand, he puts them into his mouth, he masti-

cates, he swallows; but he remembers distinctly, on awaking, that in the whole process he did not feel any taste. We are therefore led to the conclusion that, when one dreams of tasting, the taste is not a dream-*image*, but a dream-*sensation.*

To put this otherwise, the consciousness of tasting in a dream is probably to be interpreted as due to peripheral excitement in the organ. Such excitement is easily and frequently produced in consequence of the fact that the mouth is contiguous to the alimentary canal and the organ of smell, as well as of the fact that the nerves with which the mouth is supplied—the glosso-pharyngeal and the fifth pair—are connected with the general sensibility. But it remains doubtful whether the central tract, with which the gustatory nerves are connected, can be excited by disturbances in the neighboring tracts without any peripheral stimulation. Of course there must be some trace left in the central region of the organ as an effect of peripheral excitements, else there could be no recognition of tastes. But in every such recognition the stimulation of the central region has a peripheral origin.

It remains to add a precaution to observers of dreaming consciousness. The attitude of expectant attention is well known to have a powerful influence upon our waking consciousness, sometimes stimulating, sometimes inhibiting; and it is just possible that it may penetrate into dream-life too, producing the phenomena we expect to be present, and arresting those we expect to be absent.

Discussion by Prof. Starr.

(7) *A Note on Anaximander.* By Professor NICHOLAS MURRAY BUTLER, Columbia College.

Zeller, Teichmüller, Tannery, and others have called attention to the interesting character of the observations on evolution, inorganic and organic, preserved in the fragments of Anaximander. But a very significant phrase in those fragments has hitherto escaped notice. It is found in a passage, quoted from Plutarch, in Eusebius, *Præp. Evan.*, I : 8d, which may be translated as follows :

"Further, he [Anaximander] says that in the beginning man was born from animals of a different species. His reason is that while other animals quickly find food for themselves, *man alone requires a prolonged period of suckling.* Hence, had man been originally such as he is now, he could never have survived."

The significance of the italicized phrase was pointed out, and its relation to the doctrine of Mr. John Fiske as to the meaning of human infancy noted.

(8) *Accurate Work in Psychology.* By Dr. E. W. SCRIPTURE, Yale University.

The greatest danger to the development of modern psychology lies in the careless amateurism prevalent in many laboratories. The struggle for ever-increasing accuracy is the vital principle of all science, and must not be violated by psychology. The measurement of reaction-times was used as an illustration of the proper methods of eliminating, reducing, or computing the errors of apparatus, of the surroundings, of poor powers of introspection, and of incorrect statement.

(9) *The Problem of Psychological Measurement.* By Mr. GEORGE H. MEAD, University of Michigan.

Measurement is the breaking up of a quantum of energy into equal units. In undeveloped consciousness we have an original plenum without parts. These are introduced by those processes, generally rhythmical and bilateral, by which the important contacts of touch are mediated through the eye and ear, and which on the biological side are the expression of the means of carrying out the general life-process—involving the attaining of food, the avoiding of danger, and the process of reproduction.

Measurement becomes possible when these rhythmical bilateral processes can be brought into consciousness in tension—e.g., in estimating a distance. The number of the rhythmical processes required to attain the object constitutes its temporal character, the sum of them its spatial character, the one being expressed in terms of the other. The finer exact measurements of the mathematical sciences are functions of the coarser measurements which the eye can directly effect. The postulate of such finer measurements is a continuum capable of infinite extension and infinite division. The psychological expression of such a continuum is the mediating activity abstracted from the stimulus.

Coming back to the problem of psycho-physical measurement, the quantum measured is, as in the personal equation of the astronomer, a personal error. The least perceptible difference in weight is evidently that limit within which our judgment is unable to detect a difference, and if we depended upon these judgments for our estimate of relative weights it would be an error that the physicist would have to consider. To determine whether this element—the personal error—is a psychical or a physical one we must determine where the line is to be drawn between the physical and psychical in consciousness. The most important division that we find is between the world as composed of means and of ends. Our objects are teleological, i.e., means to possible ends.

Biologically these means are sensations that act as stimuli to bring us to certain important tactile contacts or to enable us to avoid deleterious ones. This, as has been shown, is the province of measurement. By rhythmical, generally bilateral movements, we break up the continua into equalizable units. We find now that with this process of gaining tactile contacts corresponds the objective spatial world—a world of teleological objects; that to the world of thought—the so-called psychical world—correspond the ends or purposes in consciousness. Measurement can belong, therefore, only to that which is objective and spatial, and the psycho-physical quanta must stand for the physiological elements of our reactions, expressed as personal equations.

(11) *The Perception of Magnitude and Distance.* By Dr. JAMES H. HYSLOP, Columbia College.

The object of the paper was mainly to give an ocular illustration of certain effects which might not be very well understood in a description, especially by such as were unable to perform the experiments. The experiments described and presented went to show that magnitude as well as localization was affected by the degree of convergence, a fact which does not very well consist with the theory that the perception of solidity is due to binocular muscular tension. In addition it was shown that, in the experience of the writer, the degree of convergence affected the perception of solidity in a reverse order: stereoscopic figures were found to increase in length with the decrease of the convergence necessary to produce fusion. In regard to magnitude, it was shown that it was not the distance of stereoscopic figures from the eyes, nor retinal magnitude, but the degree of convergence necessary to effect combination that determined the apparent magnitude of these figures. This decreased with the increase of convergence and in proportion to the distance of the figures from the median plane, but was not affected by any point of fixation in the median line. One experiment was shown also in which localization varied with attention, an experiment which succeeds in separating attention and the muscular tension of convergence. They coincide in all the other experiments. But throughout all of them one generalization could be expressed, and this was that both localization and magnitude were not determined by peripheral conditions, nor always by muscular tension, but more probably by central functions, sensory perhaps, but not motor, and independent of the nature of the stimulus. [*In press*, The Psychological Review.]

Discussion of (9), (10), and (11) by Profs. James and Cattell and Drs. Witmer, Warren, and Scripture.

(12) *Pain and Pleasure.* By Mr. HENRY RUTGERS MARSHALL, New York.

In this paper was presented a sketch of the argument of Mr. Marshall's book 'Pain, Pleasure, and Æsthetics' which has since been published by Messrs. Macmillan & Co. Pain and Pleasure cannot be classified with Sensations or Emotions, with Intellect or Will. Upon general grounds it appears that our experience may be accounted for under the hypothesis that *Pleasures and Pains are qualities one of which must and* [*given the proper conditions*] *either of which may belong to any element of consciousness.* An examination of the 'Emotions' considered as 'Instinct Feelings' separates them from pleasure-pain phenomena: and furthermore leads us to look for a blind instinct to act to attract others by pleasing; which instinct seems to be identifiable with the instinctive tendency to artistic production. This view is corroborated by a consideration of the field of æsthetics; it appearing that no other than a hedonic basis for Æsthetic Science can be found: the beautiful is that which produces *relatively-permanent pleasure in revival.* This conception of æsthetics is made clear under the psychological hypothesis defended, which therefore itself receives corroboration from the argument. We are thus compelled to look upon Æsthetic phenomena as special data in hedonic consideration. Discussion of the physical basis of pleasure and pain leads to the hypothesis that all pleasures and pains connected with cessation of activities can be traced to activities other than those directly inhibited; hence that all pleasures and pains are functions of *activities:* and, further, that *Pleasure is experienced whenever the physical activity, coincident with the psychic state to which the pleasure is attached, involves the use of surplus stored force. Pain is experienced whenever the physical action which determines the content is so related to the supply of nutriment to its organ that the energy involved in its reaction to the stimulus is less in amount than the energy which the stimulus habitually calls forth.* This physiological theory, entirely in accord with the psychological hypothesis maintained, is supported by a large amount of evidence. In particular, the physiological implications of the theory translated into psychological terms give us the recognized laws of habit in relation to pleasure and pain; and 8 physiological laws, also implied by the theory, give us 8 verifiable laws of pleasure-pain experience. The empirical laws of Æsthetics and the practice of artistic workers are also found to accord with the implications of this physical hypothesis, and they in their turn therefore corroborate the general psychological theory maintained.

(13) *Pain Contrasts.* By Professor E. A. PACE, Catholic University.

The relation between pain and attention is a familiar fact. Suffering is often alleviated by distraction of a pleasant sort or, for a time at least, by sudden shock. In all these cases the painful feeling is removed from the focus of apperception, and, in some instances, from the field of perception as well. It is possible, moreover, to obliterate one pain by another of greater intensity. If the excess be considerable, the weaker stimulus is at once blotted out; but if the difference be slight, an appreciable time is required. This time I have tried to determine by two lines of experiment on the skin-sense, and by simultaneous application of the stimuli. In the first series, heat pains were contrasted. The range of stimulation is obviously narrow, as too rapid adaptation and unbearable pain are alike disturbing factors. Of the experiments made between 48° and 60°, the most constant results were obtained at 55°. When the first joint of the right middle finger was plunged into water at this temperature, while an area 1 cm in diameter of the left received the same stimulation, the first pain suppressed the second in 7 sec. for one observer, and in 9.2 sec. for the other. The obliteration is gradual, the feeling of pain first disappearing, then the heat sensation, and finally the touch impression. If the stronger stimulus be then withdrawn, the other is again perceived, though blunted by contrast with the more vivid impression which has preceded.

In the second series, heat pains were compared with pressure pains. A column of mercury forced down a piston 6 mm in diameter with a point 2 mm in diameter. The pain produced by a column 1 meter high on the back of the left middle finger—first joint—was equivalent to that produced by thrusting the first joint of the right middle finger into water at 50°. When the temperature was raised to its former level of 55°, the pain which it caused eliminated the one arising from pressure in 7.2 sec. for one person and 10 sec. for the other. Within this time it is only the painful feeling that is expelled: the sensations of pressure and touch from the weaker stimulus, persist. But when the temperature pain is removed, the pressure is more keenly felt than at first and soon becomes intolerable.

Discussion of (12) and (13) by Profs. James, Dewey, and Strong, Dr. Miller, and Mr. Marshall.

In addition to the preceding papers, which made up the official programme, members were invited to present informal communications. The following communications were made:

(14) *Studies from the Harvard Psychological Laboratory.* By Professor HUGO MÜNSTERBERG.

At two sessions informal reports were made describing studies in acoustical and optical sensations, associations, imagination, etc., and studies on the subjective side of mental life as feelings, emotions, attention, and will. [Partly printed in The Psychological Review, Vol. I. pp. 34–60, 1894. Others will be printed in the course of the year.]

Discussion by Prof. Cattell and Dr. Scripture.

(15) *Contributions from the Psychological Laboratory of Columbia College.* By Professor J. MCKEEN CATTELL.

An informal account was given of several researches just completed or still in progress. (1) *On Reaction-times and the Velocity of the Nervous Impulse;* in conjunction with Professor Dolley. [Abstract in The Psychological Review, Vol. I. March 1894. The full paper will be printed in the Memoirs of the National Academy of Sciences.] (2) *On After-Images.* The nature and duration of the after-image are being studied as dependent on the intensity, time, and area of stimulation. For example, the 'threshold' of after-images has been investigated (that is, the light which will just cause an after-image) and the correlations of time intensity and area at this threshold. One after-image (exposure to a large area of clear sky for one minute) had lasted ten months. This after-image appeared only in case the illumination was altered, when it would last for some seconds and then disappear. It was positive at first, but might change to negative later. (3) *On differences in sensation and the time of perception.* Lights (whose intensities are measured by the angle of incidence of the rays) and other stimuli are being used. The time of perception is measured when the difference between two lights or other stimuli is altered, and when the absolute intensities and areas are altered. Equal differences in sensation are thus determined by the fact that they require equal times for discrimination. (4) *On the sensation resulting from the combination of colors* (in conjunction with Dr. Farrand). The retina is stimulated, e.g., by two colors, one following the other. The result is not the same, as in the revolving wheel with an indefinite number of interruptions, but more like the results of binocular combination. The intensity and space relations and the perception of moving objects have discovered unexpected results. (5) *On the perception of dermal stimuli* (by Mr. Griffing). The error of observation for touch has been determined, and more especially the relation between area and weight, and between velocity and mass. (6) *On perception and attention of school children* (by Mr. Griffing and Mr. Rowe). Experiments are

being made in the schools intended to measure the range of perception and variations in attention. The subjects of several other researches were also mentioned: *the accuracy of memory, the perception of harmony and discord, the rhythm used in poetry, the measurement of pain,* and *clinical applications of psychological tests.*

Discussion by Profs. Starr, Baldwin, Armstrong, Dr. Hyslop, and Prof. Cattell.

(16) *Demonstration.* By Dr. E. W. SCRIPTURE, Yale University.

A ready and accurate method of measuring the suggestive influence of the size of a weight on the judgment of its actual weight by the muscle-sense was tried on two persons. A set of test-weights and a set of graded reds for rapidly measuring the fineness of the muscle-sense and the color-sense were shown. A full account of these tests will be included in a monograph by J. A. Gilbert on mental development as established by over 40,000 measurements on children of the New Haven schools.

A new reaction-key was shown, a description of which was published in *Studies from the Yale Psychological Laboratory*, edited by E. W. Scripture [1892–3], p. 89.

Discussion by Profs. Baldwin and Krohn.

REPORT OF THE SECRETARY AND TREASURER.

The second annual meeting of the American Psychological Association was held at Columbia College, New York, on Dec. 27th and 28th, 1893. In the absence of President Low the meeting was called to order by Professor Butler, Dean of the Faculty of Philosophy of Columbia College, who introduced the President of the Association, Professor Ladd of Yale University. There were in all five sessions, extending from eleven o'clock on the 27th to half-past four o'clock on the 28th. Abstracts of the papers read at the meeting are subjoined. It may be recorded that the address of the President was given in the evening of Dec. 27th, and a paper announced in the programme by Professor Bryan on 'Auditory and Visual Memory' was not read owing to the absence of Professor Bryan.

The members in attendance were Armstrong, Baldwin, Burnham, Butler, Calkins, Cattell, Chrysostom, Dewey, Duncan, Farrand, Fullerton, Gardiner, Griffin, Hyslop, James, Krohn, Ladd, MacDonald, Marshall, Mead, Miller, Münsterberg, Murray, Newbold, Pace, Pierce, Royce, Scripture, Sneath, Starr, Strong, Warren, Witmer—thirty-three in all. The institutions represented were Bryn Mawr, Catholic, Clark, Chicago, Columbia, Harvard, Illinois, Johns Hopkins, McGill, Michigan, Pennsylvania, Princeton, Smith, Wellesley, Wesleyan, Yale—sixteen in all.

The following nominations for membership were made by the Council, and the elections were made by the Association:

Mr. James R. Angell,	University of Minnesota.
Professor Earl Barnes,	Sanford University.
Miss M. W. Calkins,	Wellesley College.
Brother Chrysostom,	Manhattan College.
Professor H. H. Donaldson,	University of Chicago.
Professor G. M. Duncan,	Yale University.
Dr. Livingston Farrand,	Columbia College.
Mrs. C. Ladd Franklin,	Baltimore, Md.
Mr. A. H. Lloyd,	University of Michigan.
Dr. D. S. Miller,	Bryn Mawr College.
Mr. Edgar Pierce,	Harvard University.
Professor E. Hershey Sneath,	Yale University.
Professor M. Allen Starr,	College of Physicians and Surgeons, Columbia College.
Mr. H. C. Warren,	Princeton College.

These have all signified their acceptance of membership to date from 1893–4, excepting Professor Barnes and Mrs. Franklin, who were not present at the meeting and preferred to have their membership date from 1894–5.

Professor Jastrow presented his resignation as Secretary and Treasurer. The report of Professor Jastrow as Treasurer is as follows (Dec. 21, 1893):

Balance on hand at last account	$50.30	
Dues received since last statement	30.00	
		$80.30
Expenditures:		
250 copies of programme	$3.00	
Postage and stationery.....	4.20	
Clerical aid	3.60	
		10.80
Balance on hand.....		$69.50

The account was approved and the check for $69.50 received.

The Association, accepting the invitation of President Patton of Princeton College and Professor Baldwin, decided to meet at Princeton on Dec. 27th and 28th, 1894. Professor James was elected President of the Association for the coming year, and Professor Cattell, Secretary and Treasurer. The President, the Secretary, and Professor Baldwin were elected as committee to make arrangements for the next meeting, and were also instructed to draw up a constitution for the Association to be submitted in 1894. The Secretary was instructed to prepare and have published Proceedings of the Association.