

THE  
PSYCHOLOGICAL BULLETIN

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PROCEEDINGS OF THE FORTY-FIFTH ANNUAL  
MEETING OF THE AMERICAN PSYCHOLOGICAL  
ASSOCIATION, INCORPORATED, MINNEAPOLIS,  
MINNESOTA, SEPTEMBER 1, 2, 3, 4, 1937

REPORT OF THE RETIRING SECRETARY, DONALD G. PATERSON,  
UNIVERSITY OF MINNESOTA

The American Psychological Association, Inc., held its Forty-fifth Annual Meeting at the University of Minnesota, Minneapolis, Minnesota, on Wednesday, Thursday, Friday, and Saturday, September 1, 2, 3, 4, 1937. A total of 854 persons registered, 163 being Members, 355 being Associate Members, 30 being newly elected Associates, and 306 being persons not affiliated with the Association. An analysis of the registration by geographical districts and states is as follows: New England States, 54 (Connecticut 23, Massachusetts 20, Rhode Island 3, New Hampshire 4, Maine 1, Vermont 3); Middle Atlantic States, 140 (New York 87, Pennsylvania 36, New Jersey 16, Delaware 1); South Atlantic States, 29 (Washington, D. C., 6, Maryland 5, Georgia 1, North Carolina 9, Florida 5, West Virginia 1, Virginia 2, South Carolina 0); East North Central States, 237 (Illinois 80, Indiana 19, Michigan 35, Ohio 72, Wisconsin 31); East South Central States, 16 (Kentucky 7, Tennessee 4, Mississippi 1, Louisiana 2, Alabama 2); West North Central States, 300 (Iowa 42, Kansas 18, Minnesota 195, Missouri 19, South Dakota 3, Nebraska 15, North Dakota 8); West South Central States, 10 (Arkansas 2, New Mexico 1, Texas 5, Oklahoma 2); Mountain States, 19 (Colorado 8, Wyoming 4, Arizona 1, Montana 1, Utah 5); Pacific States, 39 (California 25, Oregon 2, Washington 11, Idaho 1); Foreign, 10 (Canada 6, Australia 1, Switzerland 1, Scotland 2).

The program consisted of twenty-two sessions in which 130 of the 140 scheduled papers were presented by Members and Associates.

On Wednesday evening 10 research and instructional films were shown.

The Business Meeting of the Clinical Section was held at 4:00 P.M. on Wednesday at which time the membership voted to disband as a section of the American Psychological Association.

The Business Meeting of the Psychometric Society was held at 4:00 P.M. on Wednesday at which time Dr. Joy Paul Guilford was elected President for 1937-1939. Dr. Jack W. Dunlap continues as Secretary and Dr. Albert K. Kurtz continues as Treasurer.

The Business Meeting of the National Institute of Psychology was held at 4:00 P.M. on Wednesday. The officers for 1936-1941 are: President, Samuel W. Fernberger; Vice-President, F. L. Wells; Secretary-Treasurer, Karl M. Dallenbach; Directors, Franklin Fearing and Herbert Woodrow.

A round table on the "Psychology of Learning" was held on Thursday afternoon with Dr. Hulsey Cason as chairman. Dr. Harvey A. Carr read a paper on "The Law of Effect" which was followed by five prepared speeches in answer to Professor Carr's paper. The discussion was then thrown open to the floor.

A round table on "Motion Pictures and Sound Film" was held on Thursday afternoon with Dr. Milton Metfessel as chairman.

A round table on "Clinical and Therapeutic Problems in Mental and Educational Deficiency as Illustrated by Cases" was held on Thursday afternoon with Dr. Thorlief G. Hegge as chairman.

A round table on "Psychological Service in the Federal Government" was held on Thursday afternoon with Dr. C. L. Shartle as chairman.

On Friday afternoon a round table on the "Use of the I.Q." was held with Dr. Francis N. Maxfield as chairman.

On Friday afternoon a round table on "Clinical Psychology and Social Work" was held with Dr. Clara H. Town as chairman.

A round table to discuss the "Selection of Students for Teachers' Colleges" was held on Friday afternoon with Dr. Goodwin B. Watson as chairman.

A panel discussion on the "Experimental Approach to Psychoanalytic Concepts" was held on Friday afternoon with Dr. Saul Rosenzweig as chairman.

On Friday evening a general session of the entire Association

was held in Northrop Memorial Auditorium at which time Dr. Edward C. Tolman delivered his Presidential Address, "The Determination of Behavior by Stimuli—Past and to Come." At the conclusion of this general session the University of Minnesota entertained members and guests in the foyer of Northrop Memorial Auditorium.

A book and apparatus exhibit was held throughout the meeting in the Minnesota Union.

A joint meeting of the Council of Directors and the Board of Editors was called at 9:12 A.M. on Tuesday, August 31, and was adjourned at 11:40 A.M. The meeting of the Council of Directors was called at 11:45 A.M. on Tuesday, August 31, and was adjourned at 11:45 P.M.

On Monday and Tuesday, August 30 and 31, the organization meeting of the American Association of Applied Psychologists was also held at the University of Minnesota. Of the 854 persons who attended the meeting of the American Psychological Association 452 also attended the meeting of the American Association of Applied Psychologists and 14 persons attended this meeting only. Of the 466 persons attending the meeting of applied psychologists 104 were Members of the American Psychological Association, 191 were Associates, 18 were newly elected Associates, and 153 were non-members.

The program of the American Association of Applied Psychologists consisted of nine formal sessions at which 58 papers were scheduled. Ten round tables were scheduled, five on Monday, and five on Tuesday.

On Tuesday evening the organization meeting of the American Association of Applied Psychologists was held at which time Dr. Douglas H. Fryer was elected President, Dr. Horace B. English was elected Secretary, and Dr. Edward B. Greene was elected Treasurer.

#### TRANSACTIONS OF THE ANNUAL BUSINESS MEETING

Due notice having been given the Annual Business Meeting of the American Psychological Association, Inc., a quorum being present, was held on September 2, 1937, in Burton Auditorium, University of Minnesota, Minneapolis, Minnesota, at 8:10 P.M., with President Tolman in the chair.

Upon motion duly made and seconded it was voted that the minutes of the Forty-fourth Annual Meeting at Dartmouth College

be approved as printed in the November, 1936, issue of the *PSYCHOLOGICAL BULLETIN*.

On the recommendation of the Council of Directors it was voted to elect the three persons named below as Members:

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|-----------------------|-----------------|
| 1. David Ballin Klein | 3. A. A. Roback |
| 2. Frank A. Pattie    |                 |

On the recommendation of the Council of Directors it was voted to transfer the twenty-seven Associates named below to the status of Member:

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|---------------------------|---------------------------|
| 1. Harold Homer Anderson  | 15. Louis William Max     |
| 2. Josephine Ball         | 16. Grace O. McGeoch      |
| 3. Jack Buel              | 17. Quinn McNemar         |
| 4. Marion E. Bunch        | 18. John Gray Peatman     |
| 5. Mason N. Crook         | 19. George M. Peterson    |
| 6. Mervin A. Durea        | 20. Robert T. Ross        |
| 7. J. McVicker Hunt       | 21. Robert R. Sears       |
| 8. John G. Jenkins        | 22. Karl Ulrich Smith     |
| 9. Wendell Johnson        | 23. Stanley Smith Stevens |
| 10. Daniel Katz           | 24. Mazie Earle Wagner    |
| 11. Edward Harris Kemp    | 25. Griffith W. Williams  |
| 12. Elaine Flitner Kinder | 26. Edmund G. Williamson  |
| 13. Theodore F. Lentz     | 27. Joseph Zubin          |
| 14. Donald G. Marquis     |                           |

On the recommendation of the Council of Directors it was voted to elect as Associates the 233 persons whose names appear below:

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|--------------------------------|--------------------------------------|
| 1. Raymond V. P. Abbate        | 19. Albert Breneman Blanken-<br>ship |
| 2. Lorraine B. Abel            | 20. Walter S. Bloom                  |
| 3. Earl L. Allgaier            | 21. Samuel Bojar                     |
| 4. Sylvia Altman               | 22. Marcia Boynton                   |
| 5. Katie Stills Anderson       | 23. Roy Brener                       |
| 6. Roy N. Anderson             | 24. Bertha Brewer                    |
| 7. Hubert Coslet Armstrong     | 25. Hubert Edward Brogden            |
| 8. Charles L. Bane             | 26. John A. Bromer                   |
| 9. Mary Helen Banker           | 27. Reginald Beswicke Bromiley       |
| 10. Edward Norton Barnhart     | 28. Spencer Franklin Brown           |
| 11. Marguerite Frederica Barre | 29. William Ferdinand Bublitz        |
| 12. Ruth White Beebe           | 30. Hermann Frederick Buegel         |
| 13. Thomas Albert Bendrat      | 31. Charles Heath Bumstead           |
| 14. Ann Virginia Bennett       | 32. Janet Burwell                    |
| 15. Mary Woods Bennett         | 33. Ruth Kennedy Caille              |
| 16. Leo Berman                 | 34. Jean M. Callahan                 |
| 17. William Wishart Biddle.    | 35. James Sutherland Calvin          |
| 18. Sidney William Bijou       |                                      |



36. Sarah Calista Dunlap Cann
37. Ronald Kenneth Campbell
38. Genevieve Wiley Carter
39. Honora Chambers
40. Ray Delos Chard
41. James Andreas Christenson, Jr.
42. Dorothy Eloise Clifton
43. Thomas Erwin Coffin
44. Edgar Marion Cook
45. Frederick A. Courts
46. Edward Spencer Cowles
47. David Ross Craig
48. William J. Eliot Crissy
49. Anita Brown Croft
50. Lysle Warrick Croft
51. Richard S. Crutchfield
52. Olga Dau
53. Alethea R. Davenport
54. Edith Atwood Davis
55. Dawson Frank Dean
56. Lillian Dick
57. Kenneth Diven
58. John Manning Doess
59. Virginia Zerilli Ehrlich
60. Ralph Waldo Erickson
61. Solomon David Evans
62. Thomas Newell Ewing, Jr.
63. James David Falls
64. S. Margaret Foltz
65. Sister Helen de Sales Forrest
66. Roberta Parkinson Foster
67. Charles Warren Fox
68. Margie Elizabeth Francis
69. Thomas Morton French
70. Luella Pearl Gardner
71. J. W. Gebhard
72. Edward William Geldreich
73. Robert Wilfred George
74. Jean Campbell Giesey
75. Gustave M. Gilbert
76. William Michael Gilbert
77. Edward M. Glaser
78. Harry Goldstein
79. Harriet Phoebe Gordon
80. Tom Jay Gorham
81. John Henderson Gorsuch
82. Abraham Ber Gottlober
83. Miriam C. Gould
84. Mary Elizabeth Grier
85. William Griffiths, Jr.
86. Ray Carter Hackman
87. Milton Edwin Hahn
88. Roy Miller Hamlin
89. John William Hancock
90. Henry Hansburg
91. Lindsey R. Harmon
92. Ernst Harms
93. Dale Benner Harris
94. Robert E. Harris
95. Ellwood Ross Harrison
96. Glen Leon Heathers
97. Edgar Herbert Henderson
98. Audell Herndon
99. Louise R. Hewson
100. Davenport Hooker
101. Edward Porter Horne
102. Eugene L. Horowitz
103. Lloyd Girton Humphreys
104. Charles William Huntley
105. Leo Maurice Hurvich
106. Charles Clement Irwin
107. Marshall R. Jones
108. Margaret Patricia Killian
109. Philip Morton Kitay
110. Irving Knickerbocker
111. John Russell Knott
112. Benjamin Kotkov
113. Raymond G. Kuhlen
114. Samuel B. Kutash
115. Walter Charles Langer
116. Charles Ruggles Langmuir
117. C. M. Beatrice Lantz
118. Clarence David Leatherman
119. Robert John Lewinski
120. Don Lewis
121. Juanita Lilliedale
122. Robert Mitchell Lindner
123. James Kenneth Little
124. Halsey Myron MacPhee
125. Cecil William Mann
126. Wallace Marshall
127. Dorothy Randolph Martin
128. Katharine M. Maurer
129. Willis Harrison McCann
130. Charles Haven McClure
131. Sue Cook McClure

132. Frances McGehee
133. William McGehee
134. Sister Mary McGrath
135. Leonard C. Mead
136. Ruth T. Melcher
137. Clara Menger
138. David Raymond Meranze
139. Mortimer Meier Meyer
140. Joseph Miller
141. Edward A. Monaghan
142. Arthur Russell Moore
143. Roland C. Moore
144. Clifford T. Morgan
145. James T. Morton, Jr.
146. Frederick Albert Mote, Jr.
147. William Charles Murphy
148. Margaret Elizabeth Miriam Murray
149. Caroline Juliette Muskat
150. Helen Marr Nelson
151. Vincent Nowlis
152. Edwin Broomell Newman
153. Walton Archie Owings
154. Elsie Kaplan Palter
155. Milton Marvin Parker
156. Herbert Claire Peiffer, Jr.
157. Dorothy Sherman Pencharz
158. Harold Clair Phillips
159. Milton L. Phillips
160. Alice Jane Philp
161. Edith Margaret Potts
162. Joseph Gaither Pratt
163. Esther Elizabeth Prevey
164. Earl Vivon Pullias
165. Gertrude Raffel
166. George Elmore Reaman
167. Margaret Mary Reilly
168. Dorothy Rethlingshafer
169. Sister M. Berenice Rice
170. Austin Herbert Riesen
171. Ethel Sandt Roeger
172. Chester Henry Ruedisili
173. W. Donald Rugg
174. Joseph Edwin Runkel
175. James Thomas Russell
176. Roger Wolcott Russell
177. Thomas Arthur Ryan
178. Jack Howard Sanders
179. Robert Nevitt Sanford
180. Raymond Edward Scharpen
181. George Ernest Schlessler
182. Zbyszko John Schoen
183. Robert B. Selover
184. Fred Ferdinand Senerchia, Jr.
185. Sister Loretta Maria Sheehy
186. Nathaniel Rutherford Sheffield
187. Joseph Russell Sherlock
188. Meyer S. Siegel
189. William Berkeley Singer
190. Alec Skolnick
191. Raymond Franklin Sletto
192. William Sloan
193. Ulric Sloane, Jr.
194. Kingsley Richard Smith
195. Mary Katherine Smith
196. Veronica M. Smith
197. Dorrice Snyder
198. Elizabeth Brown Sperling
199. Harvey Albert Stackman, Jr.
200. James C. Stauffacher
201. Seymour P. Stein
202. Verne Steward
203. Mary Elizabeth Stippich
204. Christian H. Stoelting
205. Sybil Alice Stone
206. Sherley E. Stotts
207. Raymond Cornelius Strassburger
208. May Monya Sukov
209. Carla Swan
210. Frederic Washburn Swift
211. Robert Brodie Taylor
212. William Frederick Thomas
213. George Russell Thornton
214. John Edward Todd
215. Read Duncan Tuddenham
216. Alexander Waite
217. Hans Wallach
218. Sister Annette Walters
219. Albert Walton
220. Herman Robert Weiss
221. Ruth E. Welty
222. Alexander Wesman
223. Charles Hart Westbrook
224. Robert James Wherry

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| 225. Ralph Gault Whisler      | 230. Sarah Jones Woodward |
| 226. Wendell White            | 231. Philip Worchel       |
| 227. Frederic Wickert         | 232. Ruth Evelyn Wright   |
| 228. Winfield McCoy Wickham   | 233. Jesse H. Ziegler     |
| 229. Ralph Robinson Wolf, Jr. |                           |

The Secretary announced the deaths of the following two Members: Edwin A. Kirkpatrick, January 10, 1937; and Edward Stevens Robinson, February 27, 1937; and the following two Associates: Chester Roy Garvey, January 26, 1937; and Florence Richardson Robinson, December 4, 1936.

On the recommendation of the Council of Directors the Association voted that Article IV, Section 9 of the By-Laws be amended by the insertion of the phrase "or of a Director" after the second word in line two in order to provide for appointment of a successor to a deceased member of Council.

The Secretary announced the resignation of the following nine Members: William M. Brown, Isador H. Coriat, Ernest N. Henderson, Nathaniel D. Hirsch, Robert MacDougall, Alice E. Paulsen, Agnes Low Rogers, Curt Rosenow, and Aaron Moyer Snyder.

The Secretary announced the resignation of the following thirty-four Associate Members: Elysbeth C. Allen, Samuel Allentuck, Esther S. Beckwith, Cecil R. Broyler, Herbert A. Carroll, Louis Harold Cohen, William J. Crozier, Lawrence Gahagan, Maxwell Gitelson, Janet S. Goldschmidt, Winslow N. Hallett, Louise Mary Horner, I. Huang, Nathene Turk Loveland, Hilda J. I. Malmstrom, W. Proctor McElroy, R. Bruce McKeown, Lawrence W. Miller, Ray E. Starbuck Miller, Jared Sparks Moore, Edith Symmes Morsh, Willie Mae Cook Mowrer, Chung-Fang Ni, Beatrice R. Rubin, James T. Russell, Sarah E. St. Clair Scheck, Fred A. Schumacher, Charles A. Selzer, Marjorie E. Shaw, Harry Charles Steinmetz, Arabella Sterrett, Lois E. Curry Strayer, Lambertus Wartena, and Katherine Adams Williams.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report of the Committee to Consider the Desirability of Formulating By-Laws for Establishing an Honorary Membership Classification, to adopt the proposed changes in the By-Laws, and to order the report printed in the Proceedings and to discharge the Committee. See Reports.

The report of the Committee on the Election of Officers was then presented by the Chairman, Clark L. Hull, as follows:

President for 1937-1938: John Frederick Dashiell, University of North Carolina.

Directors for 1937-1940: Leonard Carmichael, University of Rochester; and Gardner Murphy, Columbia University.

Nominees for appointment to the Division of Anthropology and Psychology of the National Research Council: Edmund S. Conklin, Indiana University; Donald G. Paterson, University of Minnesota; and Christian A. Ruckmick, University of Iowa.

Representative on the Social Science Research Council: A. T. Poffenberger, Columbia University.

On the unanimous recommendation of the Council of Directors it was voted to elect Willard C. Olson of the University of Michigan as Secretary for the term 1937-1940.

The Secretary announced that the Council of Directors unanimously approved the actions of the President in making the following appointments:

(a) Dr. Karl M. Dallenbach of Cornell University to act as a representative of the American Psychological Association at the inauguration of William Alfred Eddy as President of Hobart College and William Smith College on October 2, 1936;

(b) Dr. C. E. Seashore of the University of Iowa to act as a representative of the American Psychological Association at the inauguration of Charles Edwin Friley as President of Iowa State College on October 7, 1936;

(c) Dr. David Camp Rogers of Smith College to act as a representative of the American Psychological Association at the Centenary Celebration of the Founding of Mount Holyoke College on May 7 and 8, 1937;

(d) Dr. William W. Rogers of Winthrop College to act as a representative of the American Psychological Association at the Celebration of the One Hundredth Anniversary of the Founding of Davidson College on June 6, 7, and 8, 1937.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report of the Program Committee and ordered the report printed in the Proceedings. See Reports.

The Secretary announced that the Council of Directors has appointed Edmund S. Conklin of Indiana University, Edward B. Greene of the University of Michigan, and the Secretary as the Program Committee for 1938 with Edmund S. Conklin as Chairman.

On the recommendation of the Council of Directors the Association voted that the new Program Committee be requested to study the problem of coordinating the programs of the affiliated organizations with the American Psychological Association program and to submit a report to the Council of Directors at the 1938 meeting.

On the recommendation of the Council of Directors the Association voted unanimously to accept the invitation from Ohio State University to hold its Forty-sixth Annual Meeting on the campus of Ohio State University on Wednesday, Thursday, Friday, and Saturday, September 7, 8, 9, and 10, 1938, and appointed Harold E. Burr of Ohio State University as a member of the Executive Committee for 1937-1938.

On the recommendation of the Council of Directors the Association voted unanimously to accept the joint invitation from Stanford University and the University of California to hold its Forty-seventh Annual Meeting on the campus of Stanford University and the University of California on Wednesday, Thursday, Friday, and Saturday, September 6, 7, 8, and 9, 1939, and appointed Calvin P. Stone of Stanford University as a member of the Executive Committee for 1938-1939.

On the recommendation of the Council of Directors the Association voted unanimously to accept the invitation from Pennsylvania State College to hold its Forty-eighth Annual Meeting on the campus of Pennsylvania State College on Wednesday, Thursday, Friday, and Saturday, September 4, 5, 6, and 7, 1940, and appointed Bruce V. Moore of Pennsylvania State College as member of the Executive Committee for 1939-1940.

The Secretary then announced the desirability of receiving invitations from colleges and universities to hold the Annual Meeting in 1941 and subsequent years.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report of the Committee on Precautions in Animal Experimentation and ordered the report printed in the Proceedings. See Reports.

On the recommendation of the Council of Directors the Association elected Harry F. Harlow of the University of Wisconsin as a member of the Committee on Precautions in Animal Experimentation for the term 1937-1940.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report of the delegates to the Inter-Society Color Council, to order the report printed in the Pro-

ceedings, and to order continuance of affiliation with the Inter-Society Color Council for 1937-1938. See Reports.

The Secretary announced the resignation of Donald McLean Purdy as delegate to the Inter-Society Color Council.

On the recommendation of the Council of Directors the Association voted to reappoint our voting delegates and additional delegates to the Inter-Society Color Council for the term 1937-1938.

On the recommendation of the Council of Directors the Association voted to accept with thanks the two reports of the Committee to Study Problems Connected with the Teaching of Psychology, ordered the reports printed in the Proceedings, and voted that 1,500 extra reprints be ordered of the report on the teaching of psychology in high schools, and that 800 extra reprints be ordered of the report on the teaching of psychology in junior colleges and that these reports be sent to the institutions covered in the survey. See Reports.

On the recommendation of the Council of Directors the Association voted to continue the Committee to Study the Problems Connected with the Teaching of Psychology with Goodwin B. Watson as Chairman, and Calvin P. Stone and Arthur I. Gates as members with power to add to its membership, and authorized the Treasurer to budget \$150.00 for the expenses of the Committee in 1938.

The Secretary announced that the first joint meeting of the Council of Directors and Board of Editors was held on Tuesday, August 31, 1937, at 9:00 A.M., at which time editorial and business management policies were discussed.

On the recommendation of the Council of Directors the Association voted that a double number of the *Journal of Abnormal and Social Psychology* be issued in the fall of 1937 to complete Volume 32 with the current calendar year.

On the recommendation of the Council of Directors the Association voted to authorize the Editor of the *Journal of Abnormal and Social Psychology* to adopt an improved format for the Journal and to increase the size of its annual volume from approximately 480 pages to approximately 560 pages.

On the recommendation of the Council of Directors the Association voted to adopt the following resolution:

“The results of the thorough and careful audit of the books of the Association by Ernst and Ernst, certified public accountants, including those of the Treasurer, the Business Editor and the Editor of the *Psychological Abstracts*, show in no uncertain manner the care and accuracy with which Professor Carmichael

as Treasurer, Professor Hunter as Editor, and Professor Langfeld as Business Editor, have served the interests of the Association over a period of many years. The Association wishes to congratulate these men upon the excellence of their service and their devotion to the Association and to psychology. In particular it wishes to extend to Professor Langfeld its keen appreciation of his many services as Business Editor and of his very substantial contribution to the publication interests of psychology in a difficult and trying post."

The Secretary announced that the Council of Directors had approved reports of financial status of the *Psychological Abstracts*, the Psychological Review Company, and the *Journal of Abnormal and Social Psychology* for 1936 as printed in the March issue of the PSYCHOLOGICAL BULLETIN.

On the recommendation of the Council of Directors the Association voted to accept the Ernst and Ernst report on the audited accounts of the Association for 1936, approved the adjusted bill amounting to \$375.00, authorized the retiring Secretary to print in the Proceedings a condensed form of the Ernst and Ernst report, and authorized the Treasurer to include in the budget for 1938 a sum of \$375.00 to cover the estimated cost of the audit of accounts for the year 1937. See Reports.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report of the Committee to Study the Problem of Costs of Continuing the *Psychological Abstracts* for the Next Ten Years, to order the report printed in the Proceedings, and to discharge the Committee. See Reports.

The Secretary announced that an informal report of progress had been received from the Committee to Secure Financial Guarantees for the Continuation of *Psychological Abstracts*. On the recommendation of the Council of Directors the Association voted to continue the Committee to Secure Financial Guarantees for the Continuation of *Psychological Abstracts* with its present membership.

On the recommendation of the Council of Directors, the Association voted to accept with thanks the report of the Committee to Study the Costs of Conducting the Affairs of the American Psychological Association as Now Operated and to Make Estimates of Probable Costs of Other Modes of Organization; to order the report printed in the Proceedings; to adopt Proposal 2 in the Committee's report, Proposal 1 being held in abeyance; and to discharge the Committee. See Reports.

On the recommendation of the Council of Directors the Asso-

ciation authorized the necessary expenditures for the transfer of the Business Office records from Princeton, New Jersey, to Columbus, Ohio; the Secretary's records from Minneapolis, Minnesota, to Ann Arbor, Michigan; and for the additional clerical expenses involved in the transfer of the Business Office from Princeton to Columbus during the remainder of the calendar year 1937.

On the recommendation of the Council of Directors the Association voted to make the following changes in the By-Laws: In Article IV, Section 2, delete the phrase "and the Treasurer" in the second sentence making the sentence read "The Secretary must be a Member of the Association and shall serve for a term of three years." Add an additional sentence "The Treasurer must be a Member of the Association and shall serve for a five year term." In Article IV, Section 7, insert a sentence prior to the next to the last sentence as follows: "He shall also serve as Business Manager of the Association publications with duties as defined in Section 5, Article X, of these By-Laws."

On the recommendation of the Council of Directors it was voted to elect Willard L. Valentine of Ohio State University as Treasurer of the Association and Business Manager of the Association's publications for a five year term to cover the period from 1937 to 1942.

On the recommendation of the Council of Directors the Association voted that the resignation of the Business Editor submitted under date of December 12, 1936, to take effect not later than December 31, 1937, be accepted to take effect at the time of the transfer of the Business Office records from Princeton to Columbus during the latter part of September, 1937.

On the recommendation of the Council of Directors the Association voted to authorize the Council of Directors to take the necessary legal steps to dissolve the Psychological Review Company.

On the recommendation of the Council of Directors the Association voted that the Committee on Psychology and the Public Service be commended for its good work and be continued, and that its report be accepted with thanks and ordered printed in the Proceedings. See Reports.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report of the Committee on Psychology of the National Advisory Council on Radio in Education, approved the recommendations included in the report and ordered the report printed in the Proceedings. See Reports.

On the recommendation of the Council of Directors the Asso-



ciation voted to accept with thanks the report of the Committee on Motion Pictures and Sound Recording Devices in Instruction of Psychology, to order the report printed in the Proceedings, and to continue the Committee with the following membership: Milton Metfessel of the University of Southern California, Chairman; Leonard Carmichael, University of Rochester; Edgar A. Doll, Vineland Training School; William A. Hunt, Connecticut College; Walter R. Miles, Yale University; and Willard L. Valentine, Ohio State University. See Reports.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report of the representatives on the Social Science Research Council and ordered the report printed in the Proceedings. See Reports.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report from John F. Dashiell regarding the activities of the Division of Anthropology and Psychology of the National Research Council and ordered the report printed in the Proceedings. See Reports.

On the recommendation of the Council of Directors the Association voted to accept with thanks the report of its representatives to the American Association for the Advancement of Science and ordered the report printed in the Proceedings. See Reports.

On the recommendation of the Council of Directors the Association voted to appoint Walter R. Miles of Yale University and Christian A. Ruckmick of the University of Iowa as representatives of the American Psychological Association on the Council of the American Association for the Advancement of Science for 1938.

The attention of the Association was called to an instance of unethical psychological practice carried on by a certain psychologist, who is an Associate Member of the American Psychological Association, who appears to be offering psychological diagnosis and treatment by mail. On the recommendation of the Council of Directors the Association voted to go on record as disapproving psychological diagnosis and treatment by mail and to communicate a copy of this action to the individual concerned.

The following resolution from the Psychometric Society was presented for the consideration of the Association:

“RESOLVED that the Council of Directors of the Psychometric Society request the President to direct the Secretary of the Society to transmit the following propositions to the proper authorities of the American Psychological Association:

" 1. The fact that a member of the Psychometric Society presents a paper at a meeting of the Psychometric Society shall not prevent that person from presenting a paper at a meeting of the American Psychological Association, providing he is also a member of the American Psychological Association.

" 2. That papers in the Psychometric Society may be read by persons other than the author if the author finds it impossible to attend.

" 3. That the deadline for abstracts to the Psychometric Society and to the American Psychological Association be fixed on the same date."

On the recommendation of the Council of Directors the Association voted that the resolution from the Psychometric Society be referred to the 1938 Program Committee for report at the 1938 Annual Meeting concerning the policies involved.

On the recommendation of the Council of Directors the Association voted that the Society for the Psychological Study of Social Issues be affiliated with the American Psychological Association in accordance with the provisions of Article XI of the By-Laws.

The Council of Directors recommended to the Association that the Association of Consulting Psychologists be affiliated with the American Psychological Association in accordance with the provisions in Article XI of the By-Laws. On motion of P. M. Symonds, duly seconded, the Association voted to lay the petition on the table.

On the recommendation of the Council of Directors the Association voted that the petitions from the Midwestern Psychological Association, the Western Psychological Association, and the American Association of Applied Psychologists to become affiliated with the American Psychological Association be placed on the agenda for the Business Meeting for final action at the 1938 Annual Meeting. See Reports for copies of the petitions.

The Secretary read a letter received from Edward B. Greene, Secretary and Treasurer of the Clinical Section, in which it was stated that the Clinical Section had voted to disband as a section. On the recommendation of the Council of Directors the Association voted to make the following amendment to the By-Laws of the Association: that Article XII in its entirety be deleted and that Article XIII relating to amendments be renumbered to become Article XII. See Reports for copy of letter.

On the recommendation of the Council of Directors the Association voted to appoint Henry E. Garrett of Columbia University and Walter R. Miles of Yale University as representatives from the

American Psychological Association to serve on the Joint Committee of the American Psychological Association, the Association of Consulting Psychologists, and the Psychologists' League.

On the recommendation of the Council of Directors the Association voted to appoint a Committee on the Preparation of Examination Questions in Psychology with Ben D. Wood of the Coöperative Test Service as Chairman; and F. C. Dockeray, Ohio State University; Alvin C. Eurich, Northwestern University; Richard W. Husband, University of Wisconsin; Theodore F. Karwoski, Dartmouth College; Floyd L. Ruch, University of Southern California; and Lewis M. Terman, Stanford University, as members.

On the recommendation of the Council of Directors the Association voted to accept the invitation of the American Documentation Institute to appoint a member of the Institute and that John E. Anderson of the University of Minnesota be appointed for the term 1937-1940.

Dr. Richard S. Uhrbrock, Chairman of the Committee to Study the Qualifications of Industrial Psychologists, when called on to read his report, requested that the report be presented without comment, because of the lateness of the hour, and the Committee discharged. This was interpreted as a motion which was seconded and carried. The Association voted that the report of the Committee to Study the Qualifications of Industrial Psychologists be accepted with thanks, and that the Committee be discharged.

On the recommendation of the Council of Directors the Association voted to approve the Treasurer's report for 1936-1937 as printed in the March, 1937, issue of the *PSYCHOLOGICAL BULLETIN*.

On the recommendation of the Council of Directors the Association voted to approve the Treasurer's budget for 1938 and ordered it printed in the Proceedings. See Reports.

The following motion by Dr. John A. McGeoch having been duly seconded was passed unanimously: That the Association express its appreciation of the valuable services of the retiring Secretary, Donald G. Paterson, and congratulate him upon the high standards set and maintained by his office in the conduct of Association business for two terms.

Upon motion by Dr. C. E. Seashore duly seconded it was voted unanimously to express the thanks of the Association to Dr. L. D. Coffman, President of the University of Minnesota; to Professor R. M. Elliott, local member of the Executive Committee in charge of arrangements, and to psychologists and other officers and members

of the University of Minnesota for the excellent facilities provided for the Forty-fifth Annual Meeting of the American Psychological Association.

The meeting adjourned at 10:45 P.M.

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REPORT OF THE COMMITTEE TO CONSIDER THE DESIRABILITY OF  
FORMULATING BY-LAWS FOR ESTABLISHING AN  
HONORARY MEMBERSHIP CLASSIFICATION

August 1, 1937.

This Committee is agreed that a class of Honorary Membership should be instituted in the Association and that election to such membership should take place under prescribed conditions which would involve both a long period of membership in the Association and an advanced age that would insure retirement from a professional or academic post. Because the Committee is distrustful of the principle that judgments of the value of a man's career be made at the end of that career, it recommends that election be automatic rather than selective and then only upon application.

To attain these ends, the following amendments to the By-Laws are recommended:

1. That Section 1 of Article I of the By-Laws be amended substituting the word "three" for the word "two" in the first line and by adding the phrase "and third, Honorary Members" after the word "Associates."

2. That a new Section 4 be inserted in Article I of the By-Laws as follows and that the present Sections 4, 5, 6, 7, 8, and 9 be renumbered to become Sections 5, 6, 7, 8, 9, and 10 respectively:

Section 4. Honorary Members shall be persons who, having reached the age of seventy years and having been Members of the Association for at least twenty years, request such status. Although Honorary Members shall be exempt from paying dues, they shall retain all the other rights and privileges of the Association, except that of receiving the *Psychological Abstracts*, for which they may subscribe if they so desire, at the rate paid by the Association for active members.

LEONARD CARMICHAEL

JOHN E. ANDERSON, *Chairman*

REPORT OF THE PROGRAM COMMITTEE OF THE AMERICAN  
PSYCHOLOGICAL ASSOCIATION

August 24, 1937.

*To the Council of Directors and Members of the American  
Psychological Association:*

A total of 193 abstracts were submitted for the 1937 program. The following disposition was made of these papers: 140 were accepted and given a place on the program, of which 6 were submitted by the program committee of the Psychometric Society and 12 by the program committee of the Clinical Section. Twenty-one abstracts dealing with applied psychology were referred to the program committee of the American Association of Applied and Professional Psychology. Four abstracts were rejected because they were received too late. A total of 28 abstracts were rejected for other reasons.

In view of the fact that applied psychologists planned a two day pre-A.P.A. meeting, the Program Committee was relieved of the necessity of providing sessions for papers in the following fields: vocational psychology, industrial psychology, advertising and market research, educational psychology, college personnel problems, and clinical psychology. At the request of the Clinical Section, however, two sessions for papers on clinical psychology were scheduled during the regular meeting period for twelve papers accepted by the Clinical Section's program committee.

In spite of the fact that papers on applied psychology were cared for by the pre-A.P.A. meeting, no diminution in the volume of abstracts submitted for the A.P.A. meeting is discernible.

The Committee scheduled the 140 papers in 22 sectional meetings. It was necessary to schedule four simultaneous sections on one of the half days.

In preparing the 1937 program, the Committee was guided by the results of the mail ballot authorized at the 1936 meeting. The following tabulations indicate the views of 1,104 members on seven questions of program policy:

1. Should the Program Committee arbitrarily select and schedule only a limited number of papers?

Yes	886	80.26%
No	179	16.21%
Blank	39	3.53%

2. If arbitrary selection and limitation of the number of papers were followed as a policy, what is the upper limit of the number of papers to be scheduled in a 3½ day period?

Under 25	9	0.82%
25-49	9	0.82%
50-74	23	2.09%
75-99	33	2.92%
100-124	140	12.68%
125-149	142	12.86%
150-174	188	17.03%
175-199	10	0.91%
200-224	12	1.09%
Over 225	5	0.46%
Blank	533	48.28%

3. Some persons believe that the Program Committee should not exercise even the slight amount of censorship that has been customary but should schedule all papers submitted provided the formal requirements are met. Do you favor this policy, realizing that the programs would then necessarily be more crowded than at present?

Yes	75	6.79%
No	995	90.13%
Blank	34	3.08%

4. At present, the meetings are scheduled for Wednesday to Saturday inclusive, but no sessions are scheduled for Saturday afternoon. Do you favor scheduling papers for Saturday afternoon?

Yes	206	18.66%
No	855	77.45%
Blank	43	3.89%

5. Assuming that 140 to 160 papers are to be scheduled, do you favor four simultaneous sessions in a given half day?

Yes	738	66.85%
No	269	24.37%
Blank	97	8.78%

6. In 1932, the Annual Meeting was extended from three days to four days. Do you favor a further extension to a five day meeting?

Yes	200	18.12%
No	859	77.81%
Blank	45	4.07%

7. Some persons have expressed the opinion that the Program Committee should schedule a long, single session for the presentation of one or more longer contributions on a given topic. Would you favor this policy, realizing that to do so would eliminate some 18 or 20 submitted short papers that would ordinarily be presented at three simultaneous sessions?

Yes	473	42.84%
No	566	51.27%
Blank	65	5.89%

The following interpretations would seem justified. The membership approves of the policy of selecting and scheduling only a limited number of papers. The upper limit of the number to be selected and scheduled, however, is quite liberal. It would appear that 100 to 150 papers meets the expressed views of the majority of those voting on this point. A large majority are opposed to scheduling papers at a Saturday afternoon session. A majority favors scheduling four simultaneous sessions in a given half day if the number of acceptable papers is 140 or more. A large majority oppose more than a four day meeting. A strong minority favors a policy of having longer papers in a given session.

The results of the ballot proved helpful as a guide to the Committee.

In accordance with several requests, the Program Committee scheduled all papers for the Friday morning sessions on a time basis allowing five minutes leeway for discussion of each paper. It is suggested that the Secretary should ascertain the views of those attending these sessions as a means of aiding the 1938 Program Committee to decide whether or not to continue further experimentation with this type of scheduling device.

The policy of scheduling numerous round tables and panel discussions as well as a special session for films has been continued.

The Committee appreciates the coöperation of members submitting abstracts and the coöperation of the other program making committees. As a result of such whole-hearted coöperation, the Committee's task was greatly simplified.

Respectfully submitted,

DONALD G. PATERSON

HERBERT WOODROW

FLORENCE L. GOODENOUGH, *Chairman*

REPORT OF COMMITTEE ON PRECAUTIONS IN ANIMAL  
EXPERIMENTATION

July 14, 1937.

Your Committee has again been much indebted to the vigilance and courtesy of Dr. William C. Woodward, Director of the Bureau of Legal Medicine and Legislation, American Medical Association. In the course of the year, four bills were reported by him to this Committee, to wit:

District of Columbia, House bill 3890 and Senate bill 1818.

New York, Assembly bill 1285.

Wisconsin, Senate bill 172,S.

Though differing in detail, all of these were designed to prohibit or restrict what we consider legitimate experimentation on animals. Letters were accordingly dispatched to representative members of the Association in the districts affected for their information and guidance in appropriate action. So far as known to us, none of the measures were enacted into law.

Your Committee entreats every member, when publishing material involving any surgical procedure, to make clear that due anesthetic and operative precautions were maintained throughout the experiment. It may not be generally known that scientific journals are being systematically searched by hostile agencies in quest of material with which to inflame public opinion against the scientific utilization of animals.

Every department which houses animals for any purpose is requested to post in its quarters a copy of the Official Rules, which may be received gratis upon application to the chairman of this Committee.

Respectfully submitted,

DONALD K. ADAMS

NORMAN L. MUNN

E. A. CULLER, *Chairman*

REPORT OF THE DELEGATES OF THE AMERICAN PSYCHOLOGICAL  
ASSOCIATION TO THE INTER-SOCIETY COLOR COUNCIL

July 24, 1937.

The reorganization of the I.S.C.C. reported by your delegates last year has been in operation for 18 months and the activities of the Council have been expanded accordingly. Among its projects are the following:



(1) The lists of definitions of color terms have been completed by each of the member societies. The Committee is now in a position to recommend to the Council that the lists be combined and coördinated into a dictionary of color. Some such action is planned.

(2) The several member societies have reported the various color problems current in the societies. The Problems Committee is examining the possibilities of coördinating the related activities.

(3) The Committee handling the proposed "Who's Who in Color" has reached the final stages of compilation of data. No action has been taken in the matter of publication.

(4) A Committee of the I.S.C.C. in conjunction with a Committee of the Optical Society has undertaken a careful revision and relocation of the color samples of the "Munsell System."

(5) The News Letter has been expanded and placed in the hands of a board of editors. This has increased its usefulness by giving it a definite policy and program. It now contains more informational material and the attempt is being made to improve its general appeal.

(6) The executive committee through its chairman has been active in bringing into closer coöperation with the I.S.C.C. independent groups which have been organized for the study of color problems. Two such groups, one in Washington, D. C., and another in Chicago, have been particularly active and are now affiliated with the Council. Preliminary steps have been taken to sponsor similar groups in Boston and in other important centers.

The foregoing list covers some of the activities of the I.S.C.C. which, in the opinion of your delegates, will be of interest to the membership of the A.P.A. Your delegation has been properly represented in all of the above activities. The entire delegation coöperated in preparing the lists of color terms and of color problems. One delegate is a member of the committee preparing the "Who's Who in Color." Another delegate who is also a member of the O.S.A. is in charge of the work of revising the "Munsell Colors." Another delegate is a member of the organizing group for the Boston region. The Chairman of the delegation is on the Executive Committee. Representation on that Committee will be continued in the new slate of officers to be elected this fall.

Your delegation recommends the renewal of the membership of the A.P.A. in the I.S.C.C. and the continuation of the personnel of the present delegation with the exception of D. M. Purdy who has resigned. We suggest that the vacancy caused by this resignation be left open unless or until some member of the A.P.A. expresses a

desire to avail himself of the advantages of membership in the delegation.

Respectfully submitted,  
SIDNEY M. NEWHALL  
M. J. ZIGLER  
FORREST L. DIMMICK, *Chairman*

COMMITTEE TO STUDY PROBLEMS CONNECTED WITH THE  
TEACHING OF PSYCHOLOGY

*Report A. Survey on Teaching Psychology in Secondary Schools*

August 1, 1937.

*To the Council of Directors and Members of the American Psychological Association:*

Previous investigations have shown some offerings of psychology at the high school level. Superintendents in several southern states report that high schools introduced psychology as a part of their program to prepare teachers, and that some of these psychology courses continue although the general level of teacher preparation has been advanced to higher institutions. A survey made in 1934 in the State of Kansas showed an offering of psychology in approximately two-thirds of the Kansas High Schools. From 1929 to 1934 there was a steady increase in the popularity of psychology courses. Instructors reported their preparation in 215 cases as follows:

College major in psychology or philosophy and education . . . . .	32%
College minor in psychology . . . . .	24%
Twelve units in psychology . . . . .	6%
Four to ten units in psychology . . . . .	31%
Three units or less . . . . .	7%
	<hr/>
	100%

The Kansas survey reports for 337 schools that 49% use Robinson's "Practical Psychology" and 13% use Bett's "The Mind and Its Education" as their text.

The principal activity of your Committee during 1936-1937 has been correspondence with local school administrators. A letter of inquiry was sent to all (965) Superintendents of Schools in communities with 10,000 or larger population, and to 100 heads of private secondary schools with enrollment greater than 200, as reported in

Sargent's handbook. Responses came from 80 superintendents (8%) and 22 directors of private schools (22%). This very disappointing response to a carefully framed request probably indicates that 90% of our public school administrators do not yet share our concern that youth should have a better understanding of psychology than is now being given.\* The letter of inquiry follows:

Many states require the teaching of the hygiene of the human body. Is it not fully as important to know the human mind and personality? A committee of the American Psychological Association asks your cooperation in a study designed to help you to make more vital the curriculum offered to youth.

What, if any psychology do you think should be taught in the junior or senior high school? How can this best be done?

We have no plan to urge. We are of the opinion that the scientific study of human nature could and should contribute more than it does today toward individual personality adjustment, efficient learning, and the solution of major social problems. Different schools will probably use varying approaches.

Some may want to rely upon more and better-trained psychological counselors.

Some may welcome texts and teachers adapted to secondary school pupils.

Some may want a course which presents practical psychology but which is called by some other name.

Some may wish for pamphlet or booklet materials which can be integrated within present offerings in social studies, health, biology, homemaking, English or other areas.

Somehow the simple psychological truths which might make for saner living, more effective study, better social relationships, more intelligent parenthood and more constructive political action, ought to reach the masses of young people who will never get to college.

We are not enclosing any questionnaire. We would prefer to have you, or someone whom you may designate as more directly responsible for secondary school curriculum, think this problem through and answer in your own way. It might be helpful if there were opportunity to discuss with your staff possible lines of expansion in your psychological offering. Then we would ask for some statement about:

- a. what is now being done;
- b. what you plan to do;
- c. what help, if any, this Committee or other members of the American Psychological Association might bring to you; and

\* *Note:* We are informed that a questionnaire concerning secondary school psychology is being circulated as the basis for a more detailed study than we have made, by Earl R. Dent, Graduate School, University of Akron, Akron, Ohio.

d. names and addresses of any teachers or counselors employed especially to teach psychology in high schools.

Willard E. Givens, Executive Secretary of the N.E.A., has suggested that a small manual, giving the results of this inquiry, might be made available for school administrators. Would you desire this?

Yours very cordially,

GOODWIN WATSON  
Teachers College  
Columbia University

CALVIN P. STONE  
Stanford University

### 1. *Present Courses in Psychology*

Ten public schools and two private schools reported present courses specifically in psychology, while thirty more among the public school leaders and seven more among the headmasters, agreed that such courses should be given. Nearly half of those responding approved the teaching of psychology, as such, to secondary school pupils. Sample responses follow:

For a long time, the school has been conscious of the fact that students should not graduate from high school without having benefited somewhat by what the scientific study of human nature could contribute toward the solutions of the major problems of life.

The school believes that some psychology should be taught in high school because of the fact that in the rapidly changing, over-complex social situation of today, adolescents have no longer the same fair chance to be appropriately directed by their parents in adjusting emotionally to a society which is so fundamentally different when their parents were adolescents. (16)\*

For the past ten years we have been offering elementary courses in psychology in the S. High School. In the past two or three years there has been so much interest that the enrollment has practically doubled in this course. It is being taught by a former superintendent who has attempted to organize his course along practical lines. I believe that it is serving a real purpose and we are quite satisfied with it and expect to extend this work. (44)

This year we have seven semester classes in psychology with a total enrollment of approximately 210 juniors and seniors; mostly seniors. We expect to continue these classes. (26)

As far as formal psychology is concerned, we have very little of it. Out of four high schools only one presents a course in the 12th grade. At present there are 69 students enrolled in two divisions. (4)

In some of the schools psychology has long been a recognized subject. Here, for example, are two reports of a generation of experience with psychology in high school.

\* *Note:* Numbers refer to letters in the correspondence.

An alumnus of the school, whose boys are now pupils here, expressed his obligation the other day to a one-period a week course in psychology taught by my predecessor more than twenty-five years ago. (82)

I can't remember having taught a class which gave me more personal enjoyment, neither can I recall having taught a class where I observed any greater enthusiasm and any finer reactions than the elementary class in psychology in that small high school thirty years ago. (98)

In one case the interest in psychology extended down to the grade school.

In recent years we have had, first, informal and lately, more formal work in this general field in the fifth grade. This began when our director of group and creative activities asked the children in various grades to give her lists of things they were curious about. The fifth-graders handed in a good many questions concerning both psychology and physiology, and she suggested that the rooms, themselves, invite me to answer these questions. As a result, I have spent a good many hours in the various fifth grades in almost an entirely informal way, answering the questions that they brought out. Interestingly, the fifth-graders have shown a strong tendency to discuss dreams. They were interested in the psychology of dreams; also, they appeared to get some emotional relief from talking about nightmares and other sleep disturbances. (18)

The most complete report came from the Francis Parker School in Chicago. Their statement of objectives is as follows:

The objectives of a psychological course now being given to the seniors of our school are—(1) To show that a *psychological* problem is a *social* problem, that of putting ourselves in relationship to somebody else towards whom we adopt a certain attitude. (2) To show that many times it is not easily grasped that *our actions are attitudes toward others*, because we are not ready to understand the meaning of those actions and the nature of the relationship. For example: the social meaning of nail-biting may be to express a protest against the social burden of good behavior. (c) To show that the meaning of our action and the nature of our relationships can be studied by analyzing especially childhood recollections and dreams, neither of which have anything mysterious or puzzling or shocking, but are to be soberly understood as documents of our outlook on life, itineraries, as it were, of the direction we intend to go. (d) To show that people can be classified according to the degree of their awareness *that their own problems are common ones*.

Social minded, and coöperative individuals will be *more inclined to think of their problems as being the problems of all of*

us, while less social minded persons will be more inclined to feel essentially "different" or "set-apart." (e) To show that a set of typical childhood situations are likely to explain the degree of people's social mindedness. For example: spoiled children, children with poor health, etc., as the result of the increased amount of attention they received, may be more likely to consider themselves later on as more important than other people. (f) To show that one's approach to life may be too narrow because of the person's prejudiced attitudes towards situations in which he might have been or thought himself to be unsuccessful. An understanding of those critical situations might show that this person has hastily overrated the importance of certain difficulties which have made him *experience failure*. With a broader outlook, he may be brought to experience success in situations where he never expected it before, and so by giving him the satisfaction of successful coöperation, we may make this person more of a coöperation-minded social being. (16)

Three educational leaders who approve the study of psychology are opposed to the use of the term because of its "academic flavor" or its rather sensational popular associations.

Two administrators suggested that a psychology course should be limited to a selected group of students.

In my opinion, probably not more than fifty per cent of those who enter high school would be able to grasp the significance of psychology in life; but at least this number are sufficiently intelligent and competent in reasoning to make practical use of psychology. (96)

While teaching psychology in the evening school I find previous education and experience counting far more toward success than native ability. (69)

Only one writer challenged the value of psychology for high school students, and his doubts seem based on the popular fallacy that knowledge of the human mind leads to morbid introspection. Several other educators expressed a hope that the "abnormal" would not be given too much attention in high school.

I personally go so far as to doubt whether psychology can be advantageously taught in high schools. I strongly fear the introspection which such courses would probably develop, and I feel that practical psychology is being given in other courses and in the various sports. (58)

## 2. *Mental Hygiene and Personality Adjustment*

Nineteen public schools and five private schools reported that psychological counselors dealing with individuals presented most of

the psychology now being taught. In addition eleven public school men and three private school men believe that this is the type of teaching they would like best to provide. This viewpoint, that psychology may well be taught through individual guidance may be said to characterize about one-third of those responding.

Classics in mental hygiene and personality development were reported by five schools and advocated by three more.

The following quotations from our correspondence with school administrators support the proposal to teach courses in mental hygiene in the high school:

I think first of all that a course in mental hygiene is very much needed in the high schools, and secondly, that such a course if simple and practical and written in non-technical language can be offered successfully in any good high school. (14)

We have been of this opinion for the last four or five years and I was able to interest one of our English teachers in developing a course which is a combination of Mental Hygiene and Psychology. This course is better known as a Personality Adjustment Course. It is open to Seniors and Juniors in the high school and is offered for one semester only. Since we did not have a book, we had the teacher in the department prepare some mimeographed material which has been bound together and is a nucleus of about one-half of the course. It is our hope that she will be able to find more time and complete the mimeographed outline so that we will be able to have a complete text. At present the class is a very active class and does a wide amount of reading in the classroom and the high school library. (72)

The course is now abstract Psychology. Next year it is hoped to make all classes personality courses. (9)

Nothing is being done in our system along this line with the exception of one course in mental hygiene at the colored high school. This might be considered as related to your field. (19)

I have scratched the ground a little in this field, and find that high school pupils are eager to talk about those conditions in their lives which so affect their emotional attitudes that normal progress in the development of personality is thwarted. (52)

I have felt again and again, in dealing with acute individual problems, that much could be avoided if the child had earlier had some instruction in general psychological principles, and perhaps even more important than this, is my conviction that for every acute problem that comes to me, there must be dozens of less obvious difficulties of a similar nature which are never reached at all by individual approach, and perhaps are never even recognized, but which might be materially helped through class instruction in the principles of mental hygiene. (18)

### 3. *Integration of Psychology with Other Subjects of the Curriculum*

The following table indicates the courses within which some psychology is now being taught, or within which school men believe psychology could profitably be taught :

TABLE I  
SUBJECTS INCLUDING SOME PSYCHOLOGY

(All figures are number of school administrators making this suggestion)

	As Now Taught	Should Be So Taught (Additional)
Social studies . . . . .	12	10
Science, especially biology . . . . .	11	8
Health and hygiene . . . . .	11	6
Home making . . . . .	5	7
Orientation, guidance, personal management, ethics, home room, life problems, etc. . . . .	5	6
English, speech . . . . .	4	3
Salesmanship . . . . .	1	1

Integration with existing subjects was usually preferred to the establishment of a separate course. Thirty-nine replies indicated that this was their present method of teaching psychology, and fourteen others stressed the desirability of relating psychology to present offerings rather than developing a new subject. The following quotations give ample illustration of the prevalent viewpoint :

We do not offer a separate course in psychology and do not believe that such a course should be offered. We much prefer to integrate the subject matter with courses which are now offered or may be offered in the future. We are inclined to favor integration and a corresponding reduction of subject fields in the secondary schools. (42)

Why can't your association determine ways in which psychology can come into the field we already have. For instance—home economics, English, social studies, and the others. The American Psychological Association, I think, would be progressive if it would indicate means by which psychology could help tie together the fields we now have rather than to bring it in as another addition to the high school program. (19)

At the present time a good deal of elementary psychology is taught by subject matter teachers in their own class rooms. We seldom hear it called psychology, as such, but to my way of thinking many psychological principles are often mentioned ; *i.e.* pupils are constantly being taught how they can get along better with one another and with their teachers. They are told how to improve their personality, how to make friends, how to avoid difficulties, how to control their emotions, how to tackle problems most



effectively. It seems to me that any good teacher naturally teaches a good deal of elementary psychology. (36)

For instance, in our orientation course for all incoming ninth grade students, special emphasis is placed on proper attitudes and study habits, and in connection with this certain of the psychological elements involved in behavior are brought out. In the twelfth grade course in social problems considerable emphasis is placed on personality adjustment, marriage and the family, recreation, mental health, various types of community problems and public opinion. It seems to us that by bringing in the elements of psychology involved in some of the above problems, we might accomplish more than in having a separate course in psychology. (3)

In less organized ways, psychological interpretations of behavior come in when teachers are alert to such opportunities in our social problems and literature classes, particularly the class in creative writing which is conducted by a teacher who is more than usually sensitive to indications of children's problems. She finds the children particularly eager to discuss their fears and anxieties in groups, and finds that there is considerable relief from these when the children discover that they are far more universal than they had supposed. (18)

The practically unanimous feeling in our school at present is that instruction in practical psychology to be most effective should be tied up and closely integrated with the other subjects of the curriculum. We believe the social studies, biology, health, English, and in fact practically every subject of the curriculum offers excellent opportunity for emphasizing practical psychological values. Without a rather concrete background our feeling is that principles of psychology are likely to be so abstract as not to carry over very effectively in practical situations with high school students. We do feel that a more conscious emphasis might very well be placed upon practical psychological principles in some of our subjects such as health and home making. I believe we are at present making a very conscientious effort to bring out the psychology involved in political propaganda and other phases of our civic life. (99)

We have tried to lay our experiences out in a few so-called trunk lines: Language, arts, mathematics, science, social studies, fine arts, and useful arts. We have included some work in these various lines especially in the social studies, health units, and science on mental hygiene but it is so inadequate. I have a feeling that materials of the right kind in this field should be integrated with these lines of work. (23)

The children show an increasing tendency to talk about various problems of child raising largely in connection with the way their parents handle their younger brothers and sisters, and the difficulties which they, themselves, have with them. For example, a group of them sent a message to me asking me to come in and talk to them about two general topics: first, about babies,

mentioning thumb sucking, spoiling, how to deal with spoiled children, temper tantrums, etc.; second, about themselves. Under this second topic they listed four things: necking, smoking, cosmetics, and alcohol. In other words, the children, themselves, are ready to go beyond mere problems of biology. (18)

We have one young man in the high school, a teacher of Social Science, who is attacking the problem of teaching the children to think by giving them some work in logic. (52)

Our present civics course for freshmen is being reorganized and in it a unit on psychology is being developed. (68)

Our courses in salesmanship and public speaking are at present the only ones in which certain principles of psychology are at this time taught. (46)

Most of our pupils today have a 90-minute class in Religion, meeting alternate weeks and are taught some psychology through this medium. (82)

The few progressive schools which build curricula directly from the needs of pupils do not utilize subject-matter categories, but find considerable opportunity for helping to solve psychological problems.

Nothing that the child himself brings into the picture is taboo. And the aim of the teacher is that he himself shall bring nothing in the picture which is beyond the psychological capacity of the child. . . .

Controversial subjects are never avoided. The subject matter of the high school, the books handled in literature, science, social science naturally contain all problems of individual and social psychology and morality. These subjects are discussed. The effects on individual students are watched. Further students come with their individual problems.

We do not feel that any course in psychology could meet the needs of these young people in their development toward a saner handling of life problems so well as the method now in our school. We do feel that essential to our method of psychological instruction are: the informal school set-up and the mature psychological understanding of teachers. (62)

There are only a few educators who express doubts about the wisdom of attempting to teach psychology without the services of a trained psychologist.

If teachers in the various subjects were adequately qualified, they could integrate the fundamental and practical aspects of psychology with their other school offerings. But few teachers are so qualified. (6)

Ideally, this material might be integrated with present offerings at the level best suited to the student; practically, it is likely that it would more surely and successfully be done by one teacher, well-qualified to present such a course to all sophomores (one

term of content applicable to that level) and a second term to seniors with content more adapted to adult needs. (55)

One psychiatrist, associated with public schools, is critical of the current health teaching.

While I believe strongly in the possibility of doing a great deal through group teaching, I also feel that there is very great danger in this sort of thing if the courses aren't extremely well-planned, and if they aren't given by teachers who are unusually well-prepared and themselves, really healthy. So much, in the field of so-called health education has, in the past, consisted in laying down a set of more or less arbitrary, and often not well-founded rules of living, with the result that, for most of the children, they have no effect at all, and for a few, the result was to make them a group of obsessional neurotics. The purpose of such a course, which should be kept constantly in mind by all working with it, should decidedly not be to lay down rules of mental health, but rather to give the child an understanding of himself and his feelings and particularly of himself as a social being. (18)

It was obvious from course outlines submitted to your Committee that the section on "mental health" in some of the health courses amounted to little more than exhortation not to worry. One such course listed among specific objectives:

To know that concentration is a matter of will power and practice.

To know that to act self-reliant, brave and truthful helps to establish these traits.

We may well question how far the discussion of psychological problems within these other subject-matter areas accords with present knowledge of our science. It seems likely that prevailing practice is to have psychology taught incidentally, by persons who do not know psychology.

#### 4. *Psychology Related to New Courses*

The social studies are coming to occupy a larger place in the curriculum of the secondary school. In some of the experimental schools a "core curriculum," largely from the social science field, occupies from one-third to two-thirds of the total school time. "Human relations" is the name commonly given to one course or section containing a considerable amount of psychology. The outline of one such unit, and comments from three other schools follow:

We do offer a course to a few of the very ablest Sixth Formers known as Sixth Form Human Relations. The corpus of this

course is Man and the light thrown upon his nature and behavior by contemporary science including psychology. We devote with this group about six weeks of work through the course of the year, discussing:

Motives to action—Why we behave as we do;

The rôle in our living, and behavior of heredity and environment;

The living and learning process covering learning and understanding;

The limits of learning;

Learning without understanding;

Principles of efficient learning;

What is thought;—the undercurrents of knowledge including common type of wish thinking, rationalizing, etc.;

The rational man;

What his reasoning is;

The whole man covering personality, influence of bodily health, physique;

Experiences of early childhood;

The childhood of adolescents;

The hazards of maturity;

Nature of intelligence; etc., etc.

We do not at any time touch on or develop any abnormal features of psychology.

A committee of teachers in our community is at work at the present time on a study of the Social Studies curriculum. One of the sub-committees which will be engaged in the study will consider the matter of Social Psychology. (38)

I am glad to be able to answer this letter in a positive way with the statement that our curriculum for the year 1937-1938 will contain an experimental course in mental hygiene to be called Human Relations. (39)

The Commission on Human Relations of the Progressive Education Association (Alice V. Keliher, Chairman) has continued the excellent work mentioned in our report last year, and will publish about January, 1938, three or four volumes. One by Dr. Walter Langer is specifically "Psychology," written for adolescents. Another entitled "Life and Growth," and a third, "Do Adolescents Need Parents?" have already appeared in tentative experimental form. A source book on the family is promised which will contain a wide variety of materials from the fields of anthropology, psychology, biology, and sociology. Moving picture films which present typical human problems and conflicts have been selected and are in process of experimental try-out.

The next several quotations come from schools developing psychology in relation to home-making.

We have established in our high school home economics department a new course entitled "Home Management." This course includes many things which were done in the past, but it also includes many other things which most schools are afraid to include as a part of the curriculum. For instance, we have one unit in which our girls observe the kindergarten children. The teacher in the department under a plan program provides various types of stimuli, and our high school girls have the opportunity to observe the reactions of the children under many different conditions. They return to their department and discuss the elementary psychology underlying the reaction of these children. We have another unit on courtship in which these girls study the psychology of that phase of human coöperation. Another very interesting unit is "cross-currents" in family life in which the girls discuss very freely the psychology of living together and the underlying difficulties which create home problems. (98)

We have been arranging that all of them get a certain time to spend in the nursery school observing the ways children are handled there. This is of genuine interest to boys and girls and they raise a good many questions about the principles of child care and training as a result. (18)

New courses in life problems are fairly popular, and the following quotations come from educators who see these as places for teaching psychology.

It is my own conviction that perhaps we had better put in some type of course which might be called "Practical Ethics." By this I mean to say that such a course would center in and about many of our great problems in our civilization and a good many personal problems as well. Some day we will be able to work out such a course. (48)

It would be well to have a course in the high schools designated "Life Problems" wherein the students would make some investigations into the matter of personal hygiene, practical problems of personality, and many other subjects. (93)

Clubs as well as classes are included in many modern curricula.

The hope is that we may create an interest on the part of teachers and formulate a plan for the organization of personality clubs, probably under some other name, among the pupils. (86)

Again we note that the success of the attempt to teach psychology in connection with courses in other fields, old or new, depends upon the psychological training of the teacher. As one high school principal of long experience expressed it:

Putting a new course into the curriculum with the same old staff members does not eventuate, in any particular, new emphases. (48)

### 5. *Help Wanted*

The most frequent demand, expressed in twenty-seven letters, was for texts which express in simple form the psychological truths which should make for improvement in personal living and the understanding of our society. Two requests are quite specific.

What we would desire is a book containing about one hundred pages of such things as definition of psychological terms, laws of attention, memory, imagination, reasoning, habits, suggestion, etc. The rest of the book—three hundred and fifty pages would be orientation matter—development of personality, how to get along with people, psychology of manners, use of indirect argument, consumer motives, sales resistance, presentation of material to large or small groups or to individuals, meaning of negativism, psychology of rationalization, mental hygiene and such topics. All of this should be in an elementary form for use by boys and girls of ages seventeen or eighteen. (9)

A laboratory manual of simple experiments which would require little if any equipment would be beneficial. (22)

The demand for better trained teachers and counselors indicates a second widespread need. Twelve writers stress better training for psychologists, while thirteen remind us that these teachers in other fields who seem so poorly prepared in psychology have had at least one or two required courses in psychology.

The ineffectiveness of our psychological courses for teachers must be well known to you for very few of the teachers get the implications of such a course in relation to our work. In other words they fail to make their courses in psychology contribute effectively to teaching. Let's do a good job with teachers before we begin with the pupils. (66)

The plan of guidance which we used during 1933-1935, fell short of anticipated results, partly due to the fact that the home-room teachers who were in charge of the guidance phases of this work were not specifically trained in the fields of educational psychology and guidance, and partly because we did not have adequate instruction and exploratory materials. (15)

For some time early in the last decade, we employed a person trained in psychology as educational counselor and remedial teacher. Five women held this position in succession. It was abolished with a universal sigh of relief early in 1933 as part of the retrenchment program. The last incumbent was a highly academic Ph.D. without social grace or human touch. (82)

Membership in the American Psychological Association is not a full guarantee of ability to succeed as a teacher of psychology in the secondary school, but it should be a matter of concern to this Asso-

ciation that among the sixty-two persons named in these letters as responsible for guidance or psychology teaching, not one was a member of the American Psychological Association.

A few criticisms are directed at the field of psychology in general. Some writers charge us with so little agreement among ourselves that they doubt whether we have anything ready to offer to secondary schools. The last individual quoted apparently confuses the teaching of psychology with the estimation of I.Q.'s, but psychologists are probably in part to blame for such a narrow interpretation.

You have here the situation that you have in some other fields, though it is a little bit more extreme:—whose psychology shall we teach?

About the only thing that I have found psychologists agree on is that the early years of the child's life are most important in the development of character and establishing attitudes. These because of the rapid physical and mental growth during this period. (17)

For the past seven years we have assiduously and with complete failure attempted the formulation of a series of tests in general psychology at the college level. Terman had charge of the project. He simply could not get enough agreement among even a few departments to warrant the production of an objective examination. (102)

We have found by thirty years' experience that every day contact with boys in the classroom, on the playing fields, at meals, in chapel, and in social activities, gives us an opportunity to understand a boy's personality and character more completely than if he had a psychological test or an examination by someone outside using the standard methods of measurement. We find that the I.Q.'s given us on a boy's entrance are very unstable indications of what he is going to do and what he will be at . . . . . (10)

## 6. *Recommendations*

a. That a reprint of this report be sent to the administrators to whom the original letter was addressed.

b. That an accompanying letter to those administrators urge that membership in the American Psychological Association be a required qualification for counselors or teachers whose main responsibility is psychological guidance or the teaching of psychology or mental hygiene.

c. That members of the American Psychological Association be hereby urged to seek opportunities to cooperate with secondary school teachers and administrators in the preparation, try-out, and evaluation of new-type teaching materials concerned with psychology.

d. That members teaching in institutions which prepare secondary school teachers consider the advisability of new courses designed to improve the quality of psychology teaching in secondary schools, especially for teachers of psychology, mental hygiene, home making, health, biology and social studies.

e. That the appropriate program committee shall attempt to make provision during the 1938 meetings for a round table conference of teachers of psychology in secondary schools and junior colleges, and that special invitations shall be sent in this connection to known teachers.

Respectfully submitted,

CALVIN P. STONE

GOODWIN B. WATSON, *Chairman*

COMMITTEE TO STUDY PROBLEMS CONNECTED WITH THE  
TEACHING OF PSYCHOLOGY

*Report B. The Teaching of Psychology in Junior Colleges*

July 28, 1937.

*To the Council of Directors and Members of the American Psychological Association:*

The 1936 directory of the junior colleges lists 518 institutions (*J. College Jour.*, 1936, Vol. 6, pp. 209-223). Most of these are junior colleges in the usual sense of that term; some, however, are teacher training schools, small denominational colleges, or even lower divisions of regular four-year colleges. The number of junior colleges has increased rapidly during the past decade.

In the autumn of 1935 a comprehensive questionnaire\* was sent by H. Curtis Davis, of Stanford University, to the presidents of all junior colleges enrolling 200 or more students, for the purpose of securing information on the teaching of psychology in these institutions. Two hundred and twelve were mailed. Completed questionnaires were obtained from 145 institutions (40 states represented). In the autumn of 1936 a brief questionnaire was sent by your Com-

\* Prepared by H. Curtis Davis, Graduate Student in the Department of Education, Stanford University, under the direction of Professors Reginald Bell and Wm. M. Proctor. We are grateful to Mr. Davis and the directors of his study for permission to use data assembled from this questionnaire. His study, when completed, will be published in *The Junior College Journal*.



mittee to those institutions failing to answer the first sent out by Mr. Davis, and, in addition, to all others listed in the directory for 1936. Three hundred and fifty of the briefer form were mailed; 245 replies were obtained. (Total possible, 518; total received from the two questionnaires, 390.)

Data from the more comprehensive questionnaire are not as yet completely analyzed by Mr. Davis. However, data from his questionnaire were made available for assemblage with data from the briefer questionnaire for the present report.

### I. Location of Institutions Completing Questionnaires

Table 1 gives the location of institutions completing the questionnaires and the number that offer psychology. Possibly the per cent of institutions not giving psychology would have been slightly decreased by complete returns, for one would surmise that more of those giving no psychology failed to reply than of those teaching this subject. On the basis of a conservative estimate, however, one may assume that the total number of junior colleges in the United States giving some psychology is between 415 and 425.

TABLE 1  
LOCATION OF INSTITUTIONS REPLYING TO QUESTIONNAIRES

State	Total No. J.C.'s	Total Replying	No. Giving Psychology	% Those Replying Giving Psychology
Alabama . . . . .	8	7	5	71
Arizona . . . . .	2	2	2	100
Arkansas . . . . .	10	6	5	83
California . . . . .	55	35	34	97
Canal Zone . . . . .	1	1	1	100
Colorado . . . . .	5	3	3	100
Connecticut . . . . .	5	3	3	100
District Columbia . . . . .	10	9	9	100
Florida . . . . .	7	4	3	75
Georgia . . . . .	19	17	14	82
Idaho . . . . .	5	2	2	100
Illinois . . . . .	21	17	12	71
Indiana . . . . .	6	6	6	100
Iowa . . . . .	37	33	27	82
Kansas . . . . .	19	14	12	86
Kentucky . . . . .	17	10	8	80
Louisiana . . . . .	7	3	3	100
Maine . . . . .	3	2	1	50
Maryland . . . . .	6	6	5	83
Massachusetts . . . . .	9	8	7	87
Michigan . . . . .	12	11	10	91
Minnesota . . . . .	9	7	6	86
Mississippi . . . . .	21	13	13	100
Missouri . . . . .	22	20	13	65

TABLE 1—Continued

State	Total No. J.C.'s	Total Replying	No. Giving Psychology	% Those Replying Giving Psychology
Montana . . . . .	2	1	1	100
Nebraska . . . . .	7	5	4	80
New Hampshire . . . . .	3	2	2	100
New Jersey . . . . .	10	8	7	87
New Mexico . . . . .	2	2	2	100
New York . . . . .	6	6	6	100
North Carolina . . . . .	23	16	13	81
North Dakota . . . . .	2	1	1	100
Ohio . . . . .	8	4	3	75
Oklahoma . . . . .	24	19	11	58
Oregon . . . . .	2	2	2	100
Pennsylvania . . . . .	10	8	6	75
South Carolina . . . . .	4	3	3	100
South Dakota . . . . .	4	4	4	100
Tennessee . . . . .	12	9	2	22
Texas . . . . .	43	34	25	74
Utah . . . . .	5	5	5	100
Vermont . . . . .	1	1	1	100
Virginia . . . . .	13	10	10	100
Washington . . . . .	10	5	4	80
West Virginia . . . . .	5	5	5	100
Wisconsin . . . . .	6	3	2	66
Totals . . . . .	518	390	324	83.0

In 1936, eleven of the states listed in Table 1 (California, Georgia, Illinois, Iowa, Kansas, Kentucky, Mississippi, Missouri, North Carolina, Oklahoma, and Texas) had 58% of the junior colleges and enrolled 85,875 students. That was 70% of the 122,311 students enrolled in all junior colleges during that year. Should the A.P.A. desire to set up permanent committees to bring about closer affiliations between the teachers of psychology in the junior colleges and those in the senior colleges, it would be advantageous to begin with the foregoing list of states wherein the junior college movement has become a distinctive feature of the educational system of the state and where already a large number of students is enrolled.

## II. Type of Control of Junior Colleges

Table 2 indicates the type of control of institutions responding to the questionnaires. Under "public" are listed those that are state supported, those that receive support from a district of the state, and those having a combination of district and state support. "Denominational" embraces all junior colleges that are definitely affiliated with a church or religious body. Under this heading a few Y.M.C.A. colleges are included. The term "private" is used to embrace all endowed or tuition supported junior colleges that are operated without church, state, or district support.

TABLE 2  
TYPE OF CONTROL OF THOSE ANSWERING QUESTIONNAIRE

	Public	Denomina- tional	Private	Total
Total No. J.C.'s in U. S. (1936) . . . . .	213	175	130	518
Total No. this type answering Q. . . . .	182	130	78	390
% of total this type in U. S. . . . .	85.4%	74.3%	60.0%	95.3%
Total No. this type giving psych. . . . .	152	100	70	324
% of total this type answering Q. . . . .	84.6%	76.9%	89.7%	83.1%
Total No. this type not giving psych. . . . .	28	30	8	66
% of total this type answering Q. . . . .	15.4%	23.1%	10.3%	16.9%

As evidenced by Table 2, psychology has been placed into the curriculum of all types of junior colleges, but somewhat less in the church schools than in private or public schools. Possibly the large number of church schools having small enrollments and few teachers is a causative factor here. Some institutions stated that a shortage of teachers prevented their giving psychology, and most schools not giving psychology have an exceedingly small total enrollment.

III. Courses in Psychology Offered

In Table 3 are given the names of courses in psychology listed by those answering the questionnaires. Beside our list is given that from Husband's study published in 1929 (PSYCHOL. BULL., 1929, 26, 39-40). Husband inspected 131 catalogues from 31 states for their listings in psychology. Of these, 117 gave one or more courses in psychology. In preparing Table 3, no account was taken of the fact

TABLE 3  
COURSES OFFERED IN PSYCHOLOGY

Name of Course	This Investigation		Husband's Study	
	No. Schools Giving Psych.	% Those Answ. Q.	No. Schools Giving Psych.	% Those Studied
1. Introductory or general. . . . .	294	75.4	86	73.5
2. Educational; applications to school subjects . . . . .	138	35.4	60	51.3
3. Applied, business, vocational. . . . .	62	15.9	10	8.5
4. Child . . . . .	59	15.1	..	..
5. Adolescent . . . . .	12	3.1	..	..
6. (Child and adolescent 4 and 5 above)	71	18.2	26	22.2
7. Abnormal, mental hygiene. . . . .	24	6.2	1	0.9
8. Social . . . . .	20	5.1	7	6.0
9. Experimental . . . . .	12	3.1	2	1.7
10. Personality and social adjustment..	7	1.8	..	..
11. Advanced general . . . . .	6	1.5	1	0.9
12. Comparative and psychobiology. . . . .	4	1.0	..	..
13. Tests and measurements. . . . .	2	0.5	2	1.7
14. Rational, empirical . . . . .	1	0.3	3	2.6
15. Family psychology . . . . .	2	0.5	..	..
16. Miscellaneous . . . . .	4	1.0	1	0.9

that in certain institutions a given course is repeated each semester, whereas in other schools it is given but once annually, and, in a few instances, semi-annually.

Since most junior college students never go on to a senior college, it would seem desirable that more subject matter in applied psychology be introduced, particularly industrial, child, adolescent, and that centering in personality development and mental hygiene. In bringing this about the senior colleges can be of incalculable aid to teachers in junior colleges by aiding them in outlining first and second semester courses, in selecting suitable illustrative materials, in choosing books for the libraries, and in the preparation of books especially suited for terminal students of the junior college.

Precisely those fields of psychology which today are least well crystallized as to content and as to methods of teaching offer the most valuable subject matter to students whose formal education ends with the junior college. The Committee believes that psychology cannot be properly presented by teachers who, for the most part, have had little or no systematic training in psychology and who in most instances have taken courses only as required for certification as teachers in the elementary or the high schools.

#### *IV. Number of Individuals Instructing in Psychology in Junior Colleges*

In Table 4 is given the number of individuals teaching psychology in those junior colleges reporting one or more courses in psychology. Given in this table, also, are the number of Members and Associate Members of the A.P.A. (names taken from the 1937 year book). It should be understood that the number of individuals given in this table is slightly lower than the total number in junior colleges who classify themselves as psychologists, for some of the latter were doing purely administrative work and for that reason were not reported in our questionnaire.

A conservative estimate of the total number of persons instructing in psychology in the junior colleges of the United States would be between 475 and 485. Although the per cent of those individuals having the qualifications to become Associate Members of the A.P.A. unquestionably is small, the aggregate number of eligibles may be quite large. With some encouragement from the A.P.A. the number

TABLE 4  
 NUMBER OF INDIVIDUALS INSTRUCTING IN PSYCHOLOGY;  
 NUMBER OF INSTRUCTORS WHO ARE IN THE A.P.A.

Type of Control	No. Schools Reporting	No. Instructors Listed	In the A.P.A.	
			Member	Associate
Public . . . . .	154	180	2	12
Denominational . . . . .	100	119	1	2
Private . . . . .	70	84	1	6
Total . . . . .	324	383	4	20

might grow rapidly in the near future as a result of summer school enrollments.

Your Committee has provided the Secretary of the A.P.A. with the names and addresses of all individuals reported as instructing in psychology in order that he might apprise them of the advantages of affiliation with the A.P.A. and invite those eligible to apply for Membership or Associate Membership.

*V. Fields of Work of Instructors in Junior Colleges Prior to Present Position*

The study of Mr. Davis provided information as to the fields of teaching or other activities in which instructors in psychology were engaged. The report is based upon returns from 107 colleges enrolling 200 or more students.

How much significance may be attached to the foregoing data is not known, for we now lack exact information as to the circumstances under which individuals moved from their previous work into the present position which involves some teaching of psychology. It is not to be expected that a large number of university teachers will move down into the junior colleges. It is to be expected, however, that many instructors will be placed into junior colleges after attendance at a

TABLE 5  
 PREVIOUS WORK OF INSTRUCTORS

Previous Work	No. Individuals	Per cent of Total
1. University teaching . . . . .	10	9.1
2. College or junior college . . . . .	29	26.4
3. Senior or junior high school . . . . .	43	39.1
4. Elementary school . . . . .	5	4.5
5. Attending university . . . . .	16	14.5
6. Other scattered fields, including administration . . . . .	8	7.3
Total No. instructors . . . . .	111	

university where they have been completing subject matter and technical requirements for junior college credentials.

Possibly the alarming feature of the foregoing table is the large number of teachers who went from elementary or high school teaching into junior college positions. For in the majority of states, those who hold high school credentials may teach in junior colleges without further certification or special examinations. This makes it possible for one to undertake the teaching of psychology without any systematic preparatory work in that subject. Your Committee strongly urges that the A.P.A. as a body and that individual members use their influence to rectify this situation.

TABLE 9

OTHER DUTIES OR OTHER SUBJECTS TAUGHT BY INSTRUCTORS IN PSYCHOLOGY  
IN 39 PUBLIC JUNIOR COLLEGES OF CALIFORNIA (62 Instructors)

Subject or Duty	Frequency	Subject or Duty	Frequency
1. Administrative		4. English and modern language	
Counselor . . . . .	2	English . . . . .	1
Dean . . . . .	9	Public speaking . . . . .	1
Director of research . . . . .	3	French . . . . .	1
Vice-President . . . . .	1	German . . . . .	1
2. Biological sciences		Spanish . . . . .	1
Bacteriology . . . . .	1	5. Orientation . . . . .	6
Botany . . . . .	1	6. Natural sciences . . . . .	2
Epidemiology . . . . .	1	7. Social sciences	
General biology . . . . .	2	Anthropology . . . . .	1
Hygiene . . . . .	1	Economics . . . . .	3
Physiology . . . . .	1	History . . . . .	4
3. Commercial subjects		Political science . . . . .	3
Business English . . . . .	1	Sociology; soc. prob- lems . . . . .	6
Typing . . . . .	1	8. Physical education . . . . .	2
		9. Philosophy or logic . . . . .	21

VI. *Other Subjects Taught by Teachers of Psychology, or Other Duties Performed*

The information in Table 9 is based upon data for public junior colleges of California published in the Directory of Secondary Schools in the autumn of 1936.

As will be seen, there is a very wide range of additional subjects taught by instructors of psychology in these schools. Undoubtedly, some diversity is necessary because of the fact that many schools have small enrollments and small teaching staffs. These factors are not the only ones at work, however. The most important factor is the tentative status of psychology as a practical subject that is believed

by school authorities to prepare young people for life, apart from further attendance at college or university. Since psychologists working in junior colleges may expect to carry additional service or teaching projects, some attention should be directed to courses of study that afford the best preparation of those looking ahead to junior college work. The frequencies of psychology being combined with administration, social science, philosophy and orientation are suggestive.

### VII. *Certification*

There is no uniformity of requirements for junior college certificates in the several states; some states do not require certificates at all. Where certificates are required, these approximate the requirements for teaching in the high schools of the state.

Example: In 1936, California had 38 public junior colleges which enrolled over 38,000 students annually. Of 797 instructors, 95% hold the General Secondary Certificate which is the one most generally used for high school teaching. Anyone with this certificate may teach any subject either in the junior college or high school to which he is assigned by the administrative officers of the school. It matters not whether he has had course work in the subject taught. Fortunately, those teaching psychology have had some preparation in this subject, although but few have had a major in it.

### VIII. *Recommendations*

Your Committee recommends that further study of psychological service and teaching in junior colleges be done by regional committees. (In those states having several junior colleges, a state committee might be appointed.) This committee should be made up of men who are well-established professionally in order that they may command the attention of university and college administrators and that they may, if necessary, properly represent their institutions before State Superintendents of Public Instruction. These committees might undertake at the outset such tasks as the following:

- a. Making personal contacts with teachers of psychology in junior colleges during the year and discussing with them their teaching problems and opportunities for the extension of psychological service.
- b. Encouraging teachers of psychology in junior colleges to attend psychological meetings held in their district under the auspices of the regional psychological association in order to

- foster friendly and mutually beneficial relations between junior and senior college teachers.
- c. Coöperating, when it seems feasible, in the preparation of suitable textual materials for special courses in psychology having special value to the terminal students.
  - d. Coöperating with directors of summer schools in the planning of graduate courses in psychology for those who wish to continue their training during summer quarters. (In psychology, at the present time, very few courses suitable for advanced training in psychology are offered in the summer schools, set up as they are chiefly for high school teachers.)
  - e. Assisting teachers in junior colleges in selecting books for psychological libraries.
  - f. Making available to teachers in junior colleges such information as they have on illustrative materials for class instruction which may be manufactured in their own shops at little cost, possibly even by students who are interested in individual project-work.
  - g. Serving as special committees of the A.P.A. to assist the Secretary of the A.P.A. in evaluating applications for Associate Membership and encouraging teachers of psychology in junior colleges to qualify for membership, if not already qualified.

Respectfully submitted,

CALVIN P. STONE

GOODWIN B. WATSON, *Chairman*

REPORT OF THE COMMITTEE TO STUDY THE PROBLEM OF COSTS OF  
CONTINUING THE *Psychological Abstracts* FOR  
THE NEXT TEN YEARS

August 3, 1937.

*To the Council of Directors and Members of the American Psychological Association:*

Your Committee has canvassed the question whether the operating costs of the *Abstracts* can properly be reduced, and the question whether the available resources will enable the Association to continue publication, even with no reduction in costs and with no subvention.

The business costs, including chiefly printing, cannot be reduced but must increase slightly from year to year to cover larger editions. The size of the journal cannot be further decreased without dissatisfaction to many users. The allowance for editorial staff can perhaps



PSYCHOLOGICAL ABSTRACTS

RECEIPTS, DISBURSEMENTS, AND BALANCES, PREVIOUSLY REPORTED AND FORECAST IN 1937

RECEIPTS	Reported			Estimated									
	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946
Grant.....	\$6,577	\$7,300	\$6,182										
A.P.A.....	5,808	5,112	7,417	\$8,500	\$9,100	\$9,500	\$9,900	\$10,300	\$10,700	\$11,100	\$11,500	\$11,900	\$12,300
Sales, etc.....	3,303	4,006	4,143	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000	5,100
<b>TOTAL.....</b>	<b>\$15,685</b>	<b>\$16,418</b>	<b>\$17,743</b>	<b>\$12,700</b>	<b>\$13,400</b>	<b>\$13,900</b>	<b>\$14,400</b>	<b>\$14,900</b>	<b>\$15,400</b>	<b>\$15,900</b>	<b>\$16,400</b>	<b>\$16,900</b>	<b>\$17,400</b>
<b>DISBURSEMENTS</b>													
Editorial Office.....	\$6,799	\$6,892	\$6,790	\$6,500	\$6,800	\$6,800	\$6,800	\$6,800	\$6,800	\$6,800	\$6,800	\$6,800	\$6,800
Business Office.....	6,373	6,912	7,086	7,300	7,500	7,700	7,900	8,100	8,300	8,500	8,700	8,900	9,100
<b>TOTAL.....</b>	<b>\$13,173</b>	<b>\$13,805</b>	<b>\$13,876</b>	<b>\$13,800</b>	<b>\$14,300</b>	<b>\$14,500</b>	<b>\$14,700</b>	<b>\$14,900</b>	<b>\$15,100</b>	<b>\$15,300</b>	<b>\$15,500</b>	<b>\$15,700</b>	<b>\$15,900</b>
<b>BALANCES</b>													
For Year.....	\$2,511	\$2,613	\$3,867	—\$1,100	—\$900	—\$600	—\$300	\$ 0	\$300	\$600	\$900	\$1,200	\$1,500
Previous.....	4,862	7,374	9,988	13,855	12,750	11,850	11,250	10,950	10,950	11,250	11,850	12,750	13,950
Forward.....	\$7,374	\$9,988	\$13,855	\$12,750	\$11,850	\$11,250	\$10,950	\$10,950	\$11,250	\$11,850	\$12,750	\$13,950	\$15,450
Less Advance Receipts	\$5,767	\$6,382	\$8,101	\$8,000	\$8,500	\$9,000	\$9,500	\$10,000	\$10,500	\$11,000	\$11,500	\$12,000	\$12,500
Net Balance (without inventory).....	\$1,607	\$3,605	\$5,754	\$4,750	\$3,350	\$2,250	\$1,450	\$950	\$750	\$850	\$1,250	\$1,950	\$2,950

- Notes: 1. Cents have been omitted from the reported amounts.  
 2. The Grant from the Laura Spelman Rockefeller Memorial terminated in 1936.  
 3. Editorial Office expenses are temporarily low for 1937. In case of the resignation of the present Associate Editor his successor may probably start at a lower salary; but other expenses of this Office may be expected to increase slightly.  
 4. Advance receipts accruing toward the end of each year from the Association and from outside subscribers are estimated throughout and quite roughly.  
 5. "Net Balance" shows the approximate financial status of the enterprise year by year, and affords a rough indication of the low point of the cash balance during the year.

be slightly reduced a few years hence, should retrenchment then be necessary.

With the \$4.00 contribution from the Association for each Member and Associate, with the recent large increase in membership, and with some recent increase in income from outside subscriptions, sales and advertisers, the *Abstracts* account is now in a strong position and warrants continued publication, even with no reduction in costs. If we forecast a net annual increase of 100 Members and Associates and a net increase of \$100 each year in other income, and if we hold editorial costs constant at the recent figure of \$6,800 and allow business costs to increase by \$200 a year, the operating deficit of the present year and the next few years will give place about 1942 to a small annual surplus, and the surplus of about \$5,700 accumulated in 1933-1936 will probably cover the expected deficits.

Your Committee accordingly recommends that the Association continue publication of the *Psychological Abstracts* on a plan of annual budgets.

Estimated future budgets, used by the Committee in making its forecast, are appended.

Respectfully submitted,

LEONARD CARMICHAEL  
WALTER S. HUNTER  
HERBERT S. LANGFELD  
A. T. POFFENBERGER  
WILLARD L. VALENTINE  
R. S. WOODWORTH, *Chairman*

REPORT OF THE COMMITTEE TO STUDY THE COSTS OF CONDUCTING  
THE AFFAIRS OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION  
AS NOW OPERATED AND TO MAKE ESTIMATES OF PROBABLE  
COSTS OF OTHER MODES OF ORGANIZATION

June 18, 1937.

*To the Council of Directors and Members of the American Psychological Association:*

Your Committee with the above title appointed at the 1935 meeting of the Association and continued at the 1936 meeting without change in personnel offers the following report:

Several facts make appropriate at this time a serious consideration of the administration of the affairs of the A.P.A. Among these are:

1. The rapidly increasing size of the membership of the Association, particularly the Associates.

2. The rapidly changing character of the membership with the increase in the number of Associates, particularly the increase in the number of non-academic activities represented.

3. The growing responsibilities of the Association to its varied membership and to the public which might be more readily met by way of a permanent office or headquarters.

4. The increasing duties of the elected Secretary, together with further desirable services which would make the position still more burdensome.

Further considerations at the time the Committee was established made a study and report particularly appropriate at the present time. These were:

1. The ending of the present Secretary's term of service at the close of 1937.

2. The ending of the Treasurer's term of service at the close of 1936.

3. The resignation of the Business Manager of the Psychological Review Company to take effect at the close of 1937.

4. The decision of the Association to establish an annual audit of its various accounts and the desire in connection with the first audit to set up an efficient record keeping system.

It seemed, in the light of all these facts, that if any changes were to be made in the near future, a propitious moment for such changes had come. However, certain events have occurred which modify the picture somewhat; namely, the election of a Treasurer for a three-year term at the 1936 meeting of the Association, the selection by the Council for presentation at the 1937 meeting of the Association of a new Secretary to serve for a three-year term, and the consolidation of the offices of Treasurer of the A.P.A. and Treasurer of the Psychological Review Company and other publications by act of the Association at its 1936 meeting. Consequently, your Committee is impelled to present two alternative proposals, the first set up on the assumption that the various offices above named will be vacant at the close of this year, and the second a compromise proposal adjusted to the conditions as modified since your Committee began the development of a program.

In formulating these two alternative plans, the Committee had before it the following facts concerning the costs of administering the business affairs of the Association and the Psychological Review

PAGE MISSING

PAGE MISSING

ership of the various publications of the Association and consequently has or will have much of the machinery and records needed for the combined Treasurer-Business Manager. It is not so farsseeing in its program as it does not relieve the burden of the Secretary nor provide for services beyond those at present performed. It may with some cogency be offered as a transition plan looking toward Proposal 1 as the final goal. It is proposed on the assumption that the present incumbent of the Treasurer's office would accept the added duties and that his institution would approve and would provide the necessary office space. Your Committee has reason for believing this assumption is correct. If it is not correct, then one advantage of the compromise plan would be lost as the present Treasurer would have to be replaced.

Your Committee considers it unnecessary to go into any of the details of organization or of the administration of the two proposed plans at this time.

Whatever the action of the Council and the Association may be, the Committee requests its discharge as having fulfilled the function for which it was created.

Respectfully submitted,

LEONARD CARMICHAEL  
H. S. LANGFELD  
D. G. PATERSON  
L. L. THURSTONE  
A. T. POFFENBERGER, *Chairman*

#### REPORT OF THE COMMITTEE ON PSYCHOLOGY AND PUBLIC SERVICE

August 27, 1937.

The Committee on Psychology and Public Service reports that steps are under way to coördinate specifications for psychologists in Federal, state and municipal services. In the past these have been so different in each service, and the specifications have differed so widely from time to time for the same duties, that it has been impractical for universities to train students for them. The Chairman of the Committee is preparing specifications, with the coöperation of the Committee, for the state and municipal Civil Service Commissions. Copies of recent announcements for psychologists in Federal service have been inspected by the Committee and by other members of the Association.

As soon as the first set of specifications is adopted by the Federal

and one or more city and state Commissions, they will be sent to all members of the American Psychological Association engaged in university teachings. The Committee wishes to draw the attention of the American Psychological Association to the fact that the number of positions for which psychology is being required, or accepted as qualified by education and experience, is rapidly increasing in the public service. It points out, however, that many positions for which the duties clearly call for psychological training and experience are not open to psychologists because the American Psychological Association has done little to acquaint management with what psychology has to offer, whereas certain other associations have over-accentuated the significance of courses in their fields.

Your Committee will take up with certain cabinet officers in the Federal service, and with certain state and municipal Civil Service Commissions, the selection of qualified psychologists for specific positions in their respective services. It will call upon certain members of the Association to cooperate with the Committee in their respective localities. The Committee will volunteer its services in a consulting capacity to state and municipal Civil Services for a period of one year. Its services will consist of advice in regard to qualifications for the selection of men and women to construct examinations and perform duties for which psychological training and experience are, or should be, required.

Respectfully submitted,

HAROLD E. BURTT

WALTER R. MILES

L. J. O'ROURKE, *Chairman*

REPORT OF THE CHAIRMAN OF THE COMMITTEE ON PSYCHOLOGY OF  
THE NATIONAL ADVISORY COUNCIL ON RADIO IN EDUCATION

August 24, 1937.

There has been this year a healthy interest among psychologists in the broadcasting of psychology from university stations and also in scientific studies of radio problems related to educational broadcasting.

The National Advisory Council on Radio in Education has not, however, undertaken again to sponsor nationwide broadcasts on psychological topics, nor has it called upon the Committee on Psychology to make any special studies.

The Committee Chairman has answered several inquiries from individual psychologists and from educational institutions. He has

also kept an eye on various radio programs listed as psychological. Those broadcast from commercial stations have with some exceptions been disappointing: thin of substance, dull, superficial or smacking of charlatanry. Among the exceptions may be cited as an example the program, "For Worriers Only," broadcast from a local New York station by Chappell and Stevenson, which impresses the writer as being at once sound, practical and effective, and which might be adapted for presentation to a national audience. A controlled experiment is now in progress to measure the effectiveness of the means here employed for helping listeners to get the better of their anxieties and to reduce emotional tensions such as those which commonly interfere with recovery from gastric ulcer. Other promising local developments in the broadcasting of psychology have appeared in a number of centers.

Pseudopsychologists can be crowded off the air whenever professionally competent psychologists with a flair for radio technique have time and inclination to devote themselves wholeheartedly to the arduous preparation necessary. The demonstration made during the first year of this Committee's activities, reported in detail to the membership of the Association in 1932, still stands as evidence that important findings of scientific psychology *can* be broadcast interestingly; and that the listening public welcomes such broadcasts in preference to those made by self-styled psychologists with axes to grind.

This is a final report. As it is being written, the National Advisory Council on Radio in Education is completing its work and will shortly be succeeded by an organization with broader scope, namely, the Committee on Scientific Aids to Learning. This Committee, sponsored by the Carnegie Corporation, will not limit itself to radio, to motion pictures, or to any one segment of its vast field. Its personnel is as follows: James B. Conant, *Chairman*, Vannever Bush, Lotus D. Coffman, Ludwig Hektoen, Frank B. Jewett, Bethuel M. Webster, Ben D. Wood, Irvin Stewart, *Director*.

The new organization will begin its activities early in the fall. It is suggested that the American Psychological Association go on record at this time as ready to be of service to the Committee on Scientific Aids to Learning in any way that may be found mutually satisfactory.

Two resolutions are therefore proposed for consideration at this annual meeting:

1. *Resolved*, that the present Advisory Committee be discharged.



2. *Resolved*, that the officers of the American Psychological Association be instructed to express to the Committee on Scientific Aids to Learning the interest of this Association in the inquiries contemplated, and its readiness to coöperate in the new undertakings; and that, to this end, the President of the Association be authorized, with the consent of the Council of Directors, to appoint such committee or committees as may, during the year, be deemed by him necessary for facilitating this coöperation.

Respectfully submitted,

GORDON W. ALLPORT

HADLEY CANTRIL

GOODWIN WATSON

WALTER V. BINGHAM, *Chairman*

REPORT OF THE COMMITTEE ON MOTION PICTURES AND SOUND  
RECORDING DEVICES IN INSTRUCTION OF PSYCHOLOGY

August 13, 1937.

Your Committee circularized 156 different institutions in an effort to find out:

1. Whether the demand for films on the university level is sufficient to warrant the expense of producing them.
2. What the various departments of psychology have done or are doing.
3. Whether such films are available for distribution.
4. Phases of psychology in which the instructors would like to see motion pictures used.
5. A critique of the existing films in psychology and related fields.

A mimeographed bulletin incorporating the results probably will be distributed to psychology departments by the Committee. Among the results are: (a) the desirability of the 16 mm. size of film, since 92% of those owning equipment have that size; (b) 74 psychologists have made films; and (c) there are 154 films available at this time.

We are considering the preparation of a Manual of Instructions in the making of films.

We call to the attention of those concerned in the annual programs the advisability of the following items:

1. A preview of motion pictures prior to acceptance.
2. Required short synopses of films to be printed in the program of the meeting, such synopses to point out the intents of the films.

3. A labeling and separate grouping of research and instructional films.

4. Permission granted to film authors for supplementary verbal description of silent films, during the projection period only.

The listing and description of films in the *Psychological Abstracts* has been continued during the past year.

The Committee believes that there is sufficient interest in motion pictures to seek support for the production of films in psychology.

Respectfully submitted,

PAUL S. ACHILLES  
LEONARD CARMICHAEL  
WALTER R. MILES  
WILLARD VALENTINE  
EDGAR A. DOLL, *Chairman*

Submitted for the Committee by  
MILTON METFESSEL

REPORT OF THE REPRESENTATIVES OF THE SOCIAL SCIENCE  
RESEARCH COUNCIL

August 27, 1937.

Two events during the current year should be of interest to this Association. There appeared the final report of the sub-committee set up by the Social Science Research Council to make an intensive survey of a restricted portion of the general field of Personality and Culture. The field with which the sub-committee was concerned is "Competition and Coöperation." The purposes of the survey and the general program were outlined in the report submitted to the American Psychological Association last year. The report appears in two parts: (1) A printed volume of 191 pages "Coöperation and Competition" which presents a tentative orienting theory of coöperation and competition, organizes existing knowledge that is relevant to coöperation and competition, and selects a few promising research problems to be renewed from the standpoint of existing knowledge and techniques and possible future development. (2) A mimeographed document "Memorandum on Research in Coöperation and Competition" dealing with the problem of Coöperation and Competition from the psychological, social, anthropological and economic points of view. There are two parts. The first is a general survey

of the problem together with an integrated summary of the seven projects into which the problem was divided (87 pages). The second is a series of six appendices carrying the reports of six investigators on five of the projects (302 pages). The other two reports were to be published separately.

This method of attack upon a field of research represented by this study is in the nature of an experiment. Its value will be demonstrated in the degree to which research is stimulated (along the lines prepared). Psychologists should study this suggestive material for fruitful lines of research.

With completion of this survey there are no primarily psychological projects receiving the attention of the Council, although there are, of course, psychological aspects to many of the studies in the other fields of Social Science. Your representatives wish to bring this matter to the attention of the Association with the suggestion that proposals are in order for the survey of other restricted fields.

A survey of the whole grants-in-aid program since its inception in 1936 was made by a special committee of which one of your representatives was a member. The report concludes "through grants-in-aid there is a greater return in research output than under any other form of grant of funds, that sporadic and exploratory studies originating in the interest and initiative of individuals are fundamental to broader institutionally organized programs—that well-equipped workers often see their research efforts dragged out for years through lack of relatively small funds, or discouraged by the lack, abandon well-advanced studies of scientific and social importance and finally cease work altogether in the field of research." An expanded program of grants is recommended.

The statistical tables prepared by the Committee showed distribution of a total of 305 grants and of approximately \$225,000, according to institution and size of institution, according to age, salary, research interest and geographical location of the recipient. The data cannot be reviewed here beyond the fact that of the 305 grants 24 or 11 per cent were awarded to psychologists. It is entirely appropriate for members of our Association to bring the grants to the attention of those who are in need of them and are worthy of receiving them. For the year 1937-1938, two grants were made to psychologists out of a total of 44.

GORDON ALLPORT  
MARK A. MAY  
A. T. POFFENBERGER

REPORT OF THE DIVISION OF ANTHROPOLOGY AND PSYCHOLOGY,  
NATIONAL RESEARCH COUNCIL

August 23, 1937.

The work of the Division of Anthropology and Psychology continues to be carried on for the most part by committees under the authority of the Division sitting in annual meetings. Committees reporting at the annual meeting of April, 1937 (under the chairmanship of Walter S. Hunter) included those on State Archeological Surveys (Carl E. Guthe, chairman), on Auditory Deficiency (Knight Dunlap, chairman), on Survey of South American Indians (John M. Cooper, chairman), on Ethnological Utilization of Motion Pictures (M. J. Herskovits, chairman), on Personality in Relation to Culture (W. Lloyd Warner, chairman), and others about to be mentioned.

The Committee on Child Development (R. S. Woodworth, chairman), which has served effectively for several years by fostering the Society for Research in Child Development and its journals, *Child Development*, *Child Development Abstracts*, and *Monographs of the Society for Research in Child Development*, is to be continued as an avenue of contact between the Society and the National Research Council.

The Committee on the Psychology of the Highway (H. M. Johnson, chairman) and its Mid-Western Sub-Committee (A. R. Lauer, chairman) reported several lines of productive activity: systematic studies of the accident histories of persons taken as samplings from a population of general drivers; individual case studies of drivers involved in fatal accidents; critical statistical analysis of tests of driving skills being developed at the Iowa State and the Harvard laboratories; and certain relationships of scores on these tests with age, sex, and driving experience.

Of much significance was the report of the Executive Committee (W. S. Hunter, chairman; Carl E. Guthe, vice-chairman) on one matter. One of the purposes for which the National Research Council was founded was to promote the coöperation of scientific men. As an appropriate interpretation of this ideal, inter-divisional activities are being initiated by the formation of borderland committees. In January the three executive committees of the Divisions of Biology and Agriculture, Medical Sciences, and Anthropology and Psychology formed an inter-divisional committee on Borderland Problems in the Life Sciences, with the problem of neuroses and the problem of aging put forward. Under its auspices a conference was

held in April on Experimental Neuroses and Allied Problems (psychoanalysis being included) at which various points of contact between the clinical and the experimental approaches were discussed. The Division of Anthropology and Psychology voted to recommend to the Council the appointment of a permanent Committee on Problems of Neurotic Behavior from this Division and with the chairman of the other two divisions mentioned above to serve as *ex officio* members. The second borderland problem mentioned, that of aging, is also in process of being followed up actively.

A departure has been made in the method of appointment of fellows. The appointing boards of the National Research Council have been reorganized to permit a small board to allocate fellowships in all the sciences except Medicine. Recommendations are, however, to be made by committees of the various divisions. Two fellowships have been granted in psychology, none in anthropology.

Respectfully submitted,

J. F. DASHILL

REPORT OF THE REPRESENTATIVES OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION TO THE COUNCIL OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

August 2, 1937.

As representatives appointed by the Council of Directors of the American Psychological Association to the Council of the American Association for the Advancement of Science for 1937 we wish to report that we attended the Winter Meeting of the American Association for the Advancement of Science, held at Atlantic City, New Jersey, from December 27, 1936, to and including January 2, 1937. We attended the several sessions of the Council, as much as our interests in the program offered by Section I of the Association would permit, and to the best of our knowledge and ability represented the interests of the American Psychological Association on those occasions. There were no business matters of primary importance to our Association which were discussed, but several topics presented for discussion were significant for psychology in the company of other sciences. It is most valuable for our science to be represented in this group and we hope that this relationship will continue to be beneficial to both organizations in the future. The greatest net result comes from the participation of qualified psycholo-

gists in the discussion of proposals affecting science in general with representatives of other sciences present in the sessions of the Council.

WALTER R. MILES  
CHRISTIAN A. RUCKMICK

May 12, 1937.

*To the Council of Directors of the American Psychological Association:*

GENTLEMEN: AS Secretary of the Midwestern Psychological Association, and in compliance with the recommendation of the Council and the vote of the members of that Association at their annual meeting, May 7, 1937, I wish to present a petition for affiliation of the Midwestern Psychological Association with the American Psychological Association in accordance with the conditions of affiliation for regional associations as set forth in Article XI of the revised By-Laws of the American Psychological Association.

Very truly yours,  
(Signed) ARTHUR G. BILLS  
*Secretary-Treasurer of the  
Midwestern Psychological Association*

August 26, 1937.

Prof. Donald G. Paterson, Secretary  
American Psychological Association  
University of Minnesota  
Minneapolis, Minnesota

DEAR PROFESSOR PATERSON: At the last business meeting of the Western Psychological Association a resolution was passed petitioning the Council of Directors of the American Psychological Association for affiliation, the type of affiliation requested being that specified in the American Psychological Association By-Laws, Article XI. Will you please inform the Council of this action at the next meeting of that body?

Sincerely yours,  
(Signed) FRANK C. DAVIS, *Secretary,*  
*Western Psychological Association*

September 1, 1937.

*To the Secretary of the American Psychological Association:*

In accordance with the Constitution and By-Laws of the American Psychological Association, the group now organized under the tentative name of the American Association of Applied Psychologists hereby petitions for affiliation with the American Psychological Association. The standards set for membership in the American Association of Applied Psychologists include the Ph.D. degree and four years of professional experience for Fellows and one year of experience for Associates. The Constitution of the Association of Applied Psychologists and any other desired details will be available to the Council of the American Psychological Association prior to the 1938 meeting of the Association when this proposal for affiliation must be acted on.

(Signed) HORACE B. ENGLISH, *Secretary,*  
*American Association of Applied Psychologists*

September 1, 1937.

*To the Council of Directors of the American Psychological Association:*

During the past year a study of the wishes of the members of the Clinical Section of the American Psychological Association was made by means of a printed ballot. This showed that approximately 70 per cent of the 135 members who responded wished to disband the organization in favor of one which would more fully meet their professional needs. The other 30 per cent in many cases requested changes in organization which are not allowed under the constitution of the American Psychological Association.

On the basis of these findings the members of the Clinical Section at the Annual Meeting this afternoon voted to disband as a section. This action was to become effective as soon as the unfinished business could be completed. Membership in the newly formed American Association of Applied Psychologists was suggested for those who might qualify.

At the same meeting the Clinical Section instructed its Secretary to express to you its appreciation of the many services and courtesies received from the Executive Committee and members of the American Psychological Association. A number of speakers stated that the Clinical Section's work had been greatly aided during every year of its existence by thoughtful acts and considerate allowances of space.

It was the unanimous vote of the meeting that this note of gratitude should be transmitted.

Respectfully yours,

(Signed) EDWARD B. GREENE, *Secretary and Treasurer,*  
*Clinical Section, American Psychological Association*

AMERICAN PSYCHOLOGICAL ASSOCIATION, INCORPORATED

Budget, Fiscal Year, January 1, 1938, to December 31, 1938

*Estimated Income*

Interest on bonds and saving accounts.....	\$680.00
Dues of members and associates.....	16,200.00
Sale of Programs, Year Books, etc.....	100.00
	<hr/>
Total Estimated Income.....	\$16,980.00
	<hr/> <hr/>

*Estimated Expenditures*

Printing and supplies.....	\$300.00
Postage and express.....	900.00
Telephone and telegraph.....	25.00
Reprints and Proceedings.....	600.00
Year Books.....	1,000.00
Treasurer's bond and safe deposit box.....	95.50
Secretary's stipend.....	1,500.00
Treasurer's stipend.....	300.00
Incidentals, annual meeting.....	700.00
Exchange and collection fee on checks.....	10.00
Subscriptions to <i>Psychological Abstracts</i> and BULLETIN.....	9,200.00
Editorial Office.....	\$6,800.00
Business Office.....	2,400.00
Committee on Animal Experimentation.....	25.00
Apparatus Exhibit.....	50.00
Inter-Society Color Council.....	25.00
Binding Year Books and Proceedings.....	10.00
Committee on Study of Teaching Psychology in Junior Colleges and Secondary Schools.....	150.00
Auditing accounts of Association.....	375.00
Petty cash.....	20.00
	<hr/>
Total Budget of Expenditures.....	\$15,285.50
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CONDENSED REPORT OF EXAMINATION  
AMERICAN PSYCHOLOGICAL ASSOCIATION, INC., AND  
PSYCHOLOGICAL REVIEW COMPANY  
Year Ended December 31, 1936

October 15, 1937.

*Auditor's Certificate*

*American Psychological Association, Inc.:*

We have made an examination of the records of American Psychological Association, Inc., and of Psychological Review Company, the capital stock of which is owned by the Association, and have prepared therefrom the accompanying statement of condition as at December 31, 1936, and statements of cash receipts and disbursements for the year ended at that date. In connection therewith, we examined or tested accounting records of the Association and the Company and other supporting evidence, and obtained information and explanations from their officers and employees but we did not make a detailed audit of all the transactions.

Cash on deposit was verified by reconciliation of the balances reported directly to us by the depositories with balances shown by the books. Cash on hand was verified by count at the time of our examination and reconciled to the balance shown by the books to be on hand at December 31, 1936. Recorded cash receipts for the year were traced to deposits as shown by bank statements on file. Recorded disbursements were compared with paid bank checks on file and major expenditures were compared with invoices.

U. S. Government bonds were inspected by us. Accounts receivable were determined from data on file and provision has been made for loss on those which appear to be doubtful of collection.

Provision has been made in the accompanying balance sheet for all liabilities disclosed by our examination and information furnished us. Unexpired subscriptions were computed by us. No provision has been made in the statement of condition for any amounts that may be refunded to Laura Spelman Rockefeller Foundation from surplus funds of *Psychological Abstracts*.

In our opinion, based on our examination and the foregoing, the accompanying statement of condition fairly presents the financial position of the American Psychological Association, Inc., and Psychological Review Company as at December 31, 1936. Further, it is our opinion that the statement has been prepared in accordance with accepted accounting principles.

ERNST & ERNST

[SEAL]

*Certified Public Accountants*

CONSOLIDATED STATEMENT OF CONDITION  
 AMERICAN PSYCHOLOGICAL ASSOCIATION, INC., AND PSYCHOLOGICAL REVIEW COMPANY  
 December 31, 1936

ASSETS	Consolidated	Eliminations	American Psychological Association, Inc.	Psychological Review Company
Cash on deposit and on hand.....	\$47,549.30		\$40,612.30	\$6,937.00
U. S. Government bonds—at cost (market value \$13,065.00)...	12,000.00		12,000.00	
Accounts receivable (less allowance \$471.54).....	1,613.56			1,613.56
Association's equity in net tangible assets of Psychological Review Company .....		\$2,310.19	2,310.19	
Intangibles—value placed on back numbers, etc.....		5,500.00		5,500.00
	<u>\$61,162.86</u>	<u>\$7,810.19</u>	<u>\$54,922.49</u>	<u>\$14,050.56</u>
<b>LIABILITIES</b>				
Accounts payable.....	\$943.66			\$943.66
Unexpired subscriptions.....	14,356.83		\$9,060.12	5,296.71
Funds reserved for special purposes.....	5,203.81		5,203.81	
Capital stock.....		\$5,500.00		5,500.00
Surplus.....	40,658.56	2,310.19	40,658.56	2,310.19
	<u>\$61,162.86</u>	<u>\$7,810.19</u>	<u>\$54,922.49</u>	<u>\$14,050.56</u>

CASH RECEIPTS AND DISBURSEMENTS

AMERICAN PSYCHOLOGICAL ASSOCIATION, INC., AND PSYCHOLOGICAL REVIEW COMPANY

Year Ended December 31, 1936

	Combined	American Psychological Association, Inc.	Psychological Review Company
<b>RECEIPTS</b>			
Dues.....	\$17,175.50	\$17,175.50	
Subscriptions.....	17,577.99	5,780.17	\$11,797.82
Reprints, back numbers, commissions, etc.....	7,077.29	932.71	6,144.58
Advertising.....	475.10	460.10	15.00
Interest.....	896.20	799.18	97.02
Contribution by Laura Spelman Rockefeller Memorial Fund.....	6,182.84	6,182.84	
<b>TOTAL RECEIPTS</b> .....	<b>\$49,384.92</b>	<b>\$31,330.50</b>	<b>\$18,054.42</b>
<b>DISBURSEMENTS</b>			
Printing and mailing.....	\$24,866.04	\$8,843.10	\$16,022.94
Compensation to officers, editors, and employees.....	10,944.46	8,861.16	2,083.30
Paid to authors for prior year.....	461.67		461.67
Office and miscellaneous expense.....	2,892.95	2,543.88	349.07
Year Book, annual meeting, etc.....	1,243.26	1,243.26	
<b>TOTAL DISBURSEMENTS</b> .....	<b>\$40,408.38</b>	<b>\$21,491.40</b>	<b>\$18,916.98</b>
<b>NET RECEIPTS—DISBURSEMENTS</b> .....	<b>\$8,976.54</b>	<b>\$9,839.10</b>	<b>\$862.56</b>
CASH BALANCE—at beginning of period.....	38,572.76	30,773.20	7,799.56
CASH BALANCE—December 31, 1936.....	\$47,549.30	\$40,612.30	\$6,937.00
<b>NET RECEIPTS—BY DIVISIONS</b>			
Treasurer's office.....	\$4,789.93	\$4,789.93	
Journal of Abnormal and Social Psychology.....	30.89	30.89	
Psychological Abstracts—Business office.....	5,629.85	5,629.85	
Psychological Abstracts—Editorial office.....	549.79	549.79	
Psychological Review.....	593.10		\$593.10
Psychological Bulletin.....	58.69		58.69
Journal of Experimental Psychology.....	438.08		438.08
Psychological Index.....	721.67		721.67
Psychological Monographs.....	354.60		354.60
	<b>\$8,976.54</b>	<b>\$9,839.10</b>	<b>\$862.56</b>

## ABSTRACTS OF PAPERS

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### GENERAL

WEDNESDAY, SEPTEMBER 1, 9:30 A.M.

### MUSIC AUDITORIUM

E. C. TOLMAN, *Chairman*

*The Psychology of Carl Stumpf.* HERBERT S. LANGFELD, Princeton University.

Carl Stumpf was one of the few psychologists of his period who did not publish a systematic treatise. It is for his contributions to the psychology of tone and music that he is best known. Yet he held very clearcut views on fundamental principles, as is evident from some of his shorter treatises. These principles and their applications to the important problems of psychology he described in a unified form in his introductory course in psychology. On the basis of lecture notes from this course, a sketch will be presented of Stumpf's treatment of some of the important problems of his day, such as the methods and material of psychology, the relation of sensation to perception, the function of analysis and synthesis, the relation of parts to the whole, the classification of the affective processes, and the nature of voluntary action. [15 min.]

*Some of the Child's Conceptions of Time and Speed.* EDITH MEYER and JEAN PIAGET, University of Geneva.

We have undertaken to study the development of the child's conceptions of physical or exterior time (as opposed to the interior duration) and of speed.

There is no perception of physical time in the same sense as there is a perception of space. To perceive time is to measure time. This is a relation between speed and space. Accordingly we are actually studying the child's measurement of time.

We have been able to observe a certain number of interesting points:

1. Until about 4-5 years of age, the child does not realize the constancy of the movement in an instrument of measurement: for instance a sand-glass seems to him to run quicker when measuring a fast exterior movement than when measuring a slow one, etc.

2. From the age of 6 even until 9, two identical lengths of time, which are measured with two different instruments of measurement (a stop-watch, sand-glass, etc.) seem different: for instance, the child thinks that he will accomplish a greater amount of work during a period which is measured by an instrument, the movement of which is quicker.

3. And again, speed does not in every case provoke a univocal perception. No doubt, a child at any age is able to appreciate whether one object is moving faster than another when they are both running along a straight course. But if we have two concentric courses of different length, children of 4 till 8 years of age believe that the object on the interior course moves faster than the one on the exterior when both start together and arrive at the starting point at the same time.

These few perceptions or representations seem to show that a genetic study of the child's notions of time and speed would be of great psychological interest. [15 min.]

*A Critique of Operational Definition.* JOHN A. MCGEOCH, Wesleyan University.

Ten years ago, Bridgman formulated the notion of operational definition as a technique of building concepts in physics. It has only recently been given any attention in psychology. The central idea of operationism is that a concept is defined by the operations involved in knowing it. The purpose of this paper will be to examine the applicability of operational definition to psychology.

Agreement in psychology will probably not be reached until we have a unitary set of concepts which are unequivocally defined. The possibility that an operational definition could provide such unequivocality is worth examining. It will be held that operational definition has certain real advantages: (1) it offers a means of reaching scientific agreement; (2) by means of it we can more readily cross the boundaries between the different fields of psychology; (3) it is a thoroughgoing relativism; (4) it is a thoroughgoing empiricism; (5) it is the procedure actually used in building the concepts employed in laboratory work.

Operational definition has, however, certain limitations which must be recognized. (1) Discriminations are made in terms of extra-operational criteria. (2) Can operationism, then, deal with subjective quality? Probably not. (3) We cannot by operations define the operations themselves.

It will be held that these limitations are not fatal and that operational definition is the best available procedure for the construction of the concepts of psychology. Acceptance of it involves no espousal of a new system; it is no more than an explicit formulation of the procedure which careful experimenters actually employ. [15 min.]

*Transfer of Learning in Elementary Psychology (1) to Popular Misconceptions, and (2) to Social Science Courses.* JOHN W. MCGARVEY, Yale University.

(1) Previous work has shown that studying psychology decreases belief in certain popular misconceptions. To find whether such decreased belief is limited to, or is more general than, misconceptions specifically discussed in an elementary psychology course, equated groups of 24 "discussed" and 24 "non-discussed" items in a misconceptions test were treated separately. The misconceptions test was given to two experimental groups, one ( $n=167$ ) commencing, and the other ( $n=132$ ) finishing introductory psychology; and to two groups ( $n=50$  and  $78$ ) not taking psychology. The four groups were equated for average grades in all courses taken the previous year. No student took the test twice. Reliable decreases of belief in both the discussed and non-discussed misconceptions occurred, indicating the presence of transfer. Unreliable decreases were found in the belief of the control groups. From a practical standpoint, the changes in scores of the psychology students were not much larger than the changes for the control subjects.

(2) Six social science courses were selected, taken concurrently with elementary psychology by from 38 to 107 students. On the basis of average grades in all courses taken the previous year, each psychology student was paired with a student not taking psychology. The psychology students made unreliably superior grades in five courses, and an unreliably lower average in the sixth. This procedure was repeated with four social science courses taken by from 26 to 59 students the year after studying introductory psychology, each student paired with another who had taken no psychology course. The psychology students obtained unreliably higher averages in three courses, and an unreliably lower average in the fourth. [15 min., slides.]

## POLITICAL ATTITUDES

WEDNESDAY, SEPTEMBER 1, 10:00 A.M.

101 WESBROOK HALL

H. E. JONES, *Chairman*

*The Relation of Liberal Attitude Toward Knowledge of Current Affairs.* C. ROBERT PACE, University of Minnesota.

Unlike achievement tests where one must really possess information in order to receive a high score, most attitude tests permit one to reveal whatever viewpoint he may choose. The present test aims to measure attitudes more subtly, to reduce the probability of untrue answers by asking subjects what they would do in a number of specific situations rather than asking them whether they agree or disagree with a group of generalized opinions. The test describes thirty current social-political-economic situations, listing five ways of behaving in each. Split-half, test-retest, and alternate form reliability coefficients center around .80. Validity, indicated by the ability of each situation in the test to discriminate between carefully selected groups of known radicals and known conservatives, is highly satisfactory. The test also correlated .67 with the economic conservatism section of the Rundquist-Sletto Scales for the Survey of Opinions.

Approximately 400 students from the University of Minnesota, Hamline, and St. Thomas took both the attitude test and an information test (*Current Affairs, Time, Feb., 1937*). Correlations between liberal attitude and information were generally about .20 to .35. When specific responses on the attitude test are compared with information concerning the specific situation responded to, the relation between liberalism and information is somewhat higher. Data is also given showing that students who have taken courses in social sciences are more liberal than others. Within the limited range of college groups such factors as age, sex, number of quarters in school, size of home town, and College Aptitude Test percentile had no significant effect on attitude. The chief factor influencing attitude toward current social-political-economic situations appears to be the possession of specific information about those situations. [15 min.]

*A Further Investigation of the Measurement of an Attitude Toward Fascism.* STUART W. COOK and EVELYN RASKIN, University of Minnesota.

The purpose of this study was to validate further Stagner's Attitude Toward Fascism scale in terms of the scores of individuals known to differ in social-economic philosophies. The subjects were over 500 R.O.T.C. members, students, Socialists, Communists, and nurses.

Consistently large differences between various political groups show that the scale distinguishes between individuals whose ideologies correspond to or conflict with that of Fascism. An odd-even correlation of  $.82 \pm .01$  (uncorrected) indicates that subjects with extreme scores have a generalized attitude; this is absent in a middle group of subjects who give internally inconsistent responses. A test-retest correlation of  $.91 \pm .02$  was obtained.

A significant finding is that all individuals with attitudes most favorable to Fascism disagreed with a supplementary statement, "Fascism is the form of government most capable of solving our national problems." [10 min.]

*A Controlled Study of the Development and Attitudes of Radicals.*  
MAURICE H. KROUT, Chicago City Junior Colleges.

The technique of this study consisted in the use of an *autobiographical schedule* consisting of 219 questions ranked for statistical analysis and covering most of the important early developmental and recent behavior patterns. The schedule was given to 50 members of the Y.P.S.L. and the Y.C.L., and to 100 professed non-radicals serving as controls. The data consist of per cent-d's and sigma-d's, those accepted being d's which were at least 10% and twice the sigma-d's. The most significant single indication was the overwhelming similarity of the early developmental and non-political present trends. The following significant d's are indicated: both male and female radicals are less generally favored by the father or the mother; the punishment used took more frequently the form of nagging, reproach, and ridicule than that of corporal punishment, in both males and females; there is less desire on the part of the females to be like the mothers and less desire on the part of the males to be like the fathers; there is a greater frequency of talking in sleep in the males and a smaller tendency of talking in sleep in the females; there are less pleasant recollections connected with face-washing in



the females and there is more frequent indifference toward face-washing in both males and females; there is more difficulty in expressing affection in the females and less difficulty in the males; the inferiority attitudes of the females center about intellectual pursuits while those of males more frequently center in athletics. Both male and female radicals are less highly socialized than the controls and have a less optimistic attitude toward life.

The study was partially supported by a N.R.C. grant and received assistance from N.Y.A. students and Ross and Margaret Stagner. [15 min.]

*A Study of Social Attitudes of Individuals in Relation to Their Economic Position and Personal Desires.* ARTHUR W. KORNHAUSER, University of Chicago.

This was a preliminary study aimed at securing quantitative information on the following two questions: (1) What differences in attitudes exist among occupational and income groups with respect to certain broad social-political questions (extent of "class" feelings)? (2) Within the economic groups, what relationship exists between the individual's social attitudes and certain of his general desires and feelings of adjustment. Data were secured from 600 persons in Chicago by means of a personally administered formal question-blank. Important differences in response were found for the different occupational groups and for three income levels. Within each economic group, persons who express dissatisfaction with their work and status differ significantly from the satisfied. Likewise the individual's system of desires is related to differences in attitudes on public questions. These relationships will be illustrated. [10 min.]

*The Relative Influence of Immediate and Remote Goals in Motivating Political Behavior.* GEORGE W. HARTMANN, Teachers College, Columbia University.

Animal and child data suggest that organisms obey some kind of psychic gravitational law, tentatively formulated as follows: The attraction of a goal is [directly?] proportional to its "value" and inversely proportional to [the squares of?] the spatio-temporal "distance" between the organism and the objective. Applied to group behavior, this hypothesis led to the specific question: What difference is there in the degree of support given by voters to a party, policy, or candidate whose appeals are based upon short-term aims (S) as compared with one in which long-term (L) ends are domi-

nant? Two political leaflets (5,000 of each kind) in behalf of Norman Thomas, embodying these contrasted motives and of equal "merit" as judged by a jury of 55 adults, were distributed in a complete house-to-house canvass in two contiguous areas of Altoona, Pennsylvania, during the week preceding the presidential election of 1936. No other Socialist campaign effort occurred locally. Thomas' recorded vote in the "immediate gain" wards (S) was 22, in the "remote gain" wards (L), 28, and in the "control" wards (C), 25; in 1932, his corresponding vote had been 200; 165; and 204, respectively. The total ballots cast in each type of district in 1936 were 10,177; 10,110; and 8,402. Since the percentage of Thomas voters remained alike in all these areas, the propaganda effect of these 10,000 broadsides was precisely nil. The spurious equivalence of the S and L appeals under these conditions seems best explained by the assumption that dynamically the stronger S factors were all operating on the side of the Roosevelt-Democrat candidacy against the weaker L forces of the Thomas-Socialist ticket. [15 min.]

#### ANIMAL BEHAVIOR

WEDNESDAY, SEPTEMBER 1, 10:00 A.M.

BURTON AUDITORIUM

H. A. CARR, *Chairman*

*The Rat's Systematized Habits of Response in a Non-problem Situation.* H. A. WITKIN, New York University.

Will an animal in a non-problem maze situation (one containing no blinds) behave similarly at each choice-point and on each trial or will its behavior be variable? The situation consisted of a succession of four equivalent choice-points, each followed by a right- and left-going pathway. Eight trials were given per day for seventeen days.

Each animal early began to systematize the choices made at successive choice points and on successive trials (right-going, left-going, and perseverative). Except for occasional shifts, the systematized routine adopted generally persisted throughout.

Thus, systematized and stereotyped responses are characteristic. The absence of blinds indicates that these responses are not related

to problem solution. Departure from the routine adopted is apparently facilitated by such external changes as the random introduction of blinds. Intrinsic and extrinsic types of variability are recognized. [10 min.]

*Comparisons of Food-Tokens with Other Incentives for Learning by Chimpanzee.* JOHN T. COWLES, Yale University.

At the recent Eastern Branch meeting of the Association, results were presented demonstrating that young chimpanzees will learn various standard laboratory problems in which the incentives were discs exchangeable for food from a vender. The present paper reports the effectiveness of these food-tokens as incentives as compared to that of food received directly (food) and also to that of differently colored discs which never obtained food upon deposit in the vender (non-food-tokens).

Preliminary training established the animals' stable preference for food-token in choice with non-food-token. Food was always preferred to food-token or non-food-token. Data obtained from the learning of successive position habits, from a series of reversals of visual discrimination habits, and from numerous delayed response trials, indicate that the food-token was slightly less efficacious an incentive for learning and retention than was directly received food, yet was a much more efficacious incentive than the non-food-token. This evidence and certain qualitative observations, which are described, suggest that food-tokens were adequate incentives primarily by virtue of association with food through exchange. Concepts such as "perseveration" or "irradiation" are needed to explain an apparent incentive strength of the non-food-tokens. Further data indicate that food-tokens immediately exchangeable are more effective incentives than food-tokens exchangeable only in a group collected during successive trials.

The function of food-tokens as incentives for learning new acts, compared with their function in eliciting previously learned responses, is discussed. Emphasis is placed upon the unique, sustained effectiveness of food-tokens as incentives for learning and retention, although exchange for food occurs only after groups of 10 to 36 trials. A relation is suggested between manipulable tokens and "tools" in studies of instrumentation with primates. The application of "conditioning" principles is also discussed. [15 min., slides.]

*Pressure Stimulation and the Specificity versus Generality of Response in Fetal Life.* LEONARD CARMICHAEL, University of Rochester.

Many recent publications on the development of behavior use as an almost universal formula the statement that all specific responses or reflexes are individuated out of previously more general patterns of behavior. Last year, Mr. G. F. Lehner and the writer demonstrated that, among other factors, the intensity of a thermal stimulus was a determiner of the degree of specificity of response in the fetal guinea-pig.

In experiments reported here, Miss S. M. Foltz and the writer have been able to show that an approximately similar result holds with quantified pressure stimuli. A series of fifteen calibrated hair aesthesiometers of the von Frey type were constructed, varying from .14 to 7.75 in the tension  $\left(\frac{\text{milligrams}}{\text{micra of radius}}\right)$  which they exerted when properly applied. Typical reflexogenous zones were investigated. Groups of guinea-pig fetuses ranging from the early motile period to the period just before birth have been studied. The procedure has been to compare the behavior released by just supra-liminal pressure and by more intense pressures.

In general, but with exceptions, at all ages, in all reflexogenous zones, more intense stimulation releases responses involving a larger or more "total pattern" of response than do less intense stimuli. This finding supports the observation that specific reflexes are early established but that the result of certain forms of stimulation is to mask them in more general patterns. The distinction between the two intensities of stimulation in regard to specificity and generality of response is less clear in late fetuses than in early ones, and in some reflexogenous zones, notably those including mucous membrane areas, than in others. Tables showing quantified results are presented. [15 min., slides.]

*Analysis of the Army-ant Behavior Pattern: the Nature of an "Instinct."* T. C. SCHNEIRLA, New York University.

This was chosen as a representative problem in "instinct." From evidence gained in field observations and experiments a theory was developed. As a special test of this theory a colony of the type species *Eciton hamatum* was studied during six weeks. During an initial 17-day *nomadic period* the colony raided vigorously and, near

the close of each day, moved to a new site. At the beginning of this period the colony hatched a brood of thousands of callow workers. A further brood developed into full-size larvae during the same period. When these larvae had spun their cocoons, the colony sharply decreased in its raiding activity and remained in place for 18 days. During this *statory period* the enclosed brood developed through the pupal stage. When this brood hatched from cocoons, a further *nomadic period* began. At the time, a new brood was in the early larval stage.

The causal factors and the organization of this behavior may be analyzed. Growing larvae maintain (or newly hatched workers initiate) the nomadic condition because their activity augments "social" stimulation directly and indirectly. The highly excited workers leave the bivouac readily, in far greater numbers, and raid much more vigorously than in the statory period. Because of a day-night activity rhythm, new raiding "systems" develop daily, and toward dusk conditions arise which occasion a colony migration. During the statory period, with social stimulation greatly decreased, the colony remains in place, raiding minimally until its brood hatches. The evidence concertedly shows that the queen's ovulation cycle fundamentally controls the alternation of nomadic and statory conditions, giving army-ant behavior its unique character. Factors such as the day-night rhythm, equipment of the workers, and learning, are highly important but are essentially subordinate. [15 min., slides.]

*Imitation: Observational Learning of Discrimination Problems by Chimpanzees.* MEREDITH P. CRAWFORD AND KENNETH W. SPENCE, Yale Laboratories of Primate Biology.

A discrimination apparatus was placed between two cages. A chimpanzee who had already learned the discrimination demonstrated to an untrained animal (imitator) who watched from the opposite side. Depressing the correct stimulus by the demonstrator made food available to both itself and the imitator. Two methods of delivering the food to the imitator were employed. In one there were two cups immediately adjacent to each of the two stimuli, the food always being delivered in the cup near the positive stimulus. In the second a single cup, midway between the stimuli, was used. To obtain evidence of learning critical choices by the imitator were inserted at intervals during the demonstration trials.

The chimpanzees learned the discrimination under both experimental conditions. Results indicate that the two cup method is learned much more easily than the single cup. [10 min., slides.]

## PERCEPTION

WEDNESDAY, SEPTEMBER 1, 1:30 P.M.

BURTON AUDITORIUM

H. S. LANGFELD, *Chairman*

*The Blind Have "Optical Illusions."* C. H. BEAN, Louisiana State University.

The paper is a report of a research in illusions of active touch in twenty-eight children, adolescents and adults, all totally blind, all but three blind from birth. These results are compared with records of twenty-eight children, adolescents and adults with normal sight.

The stimuli were similar to six of those used in experiments in optical illusions, except that the lines were in relief and were both equal and in varied degrees of inequality so as to eliminate suggestion and halo. These were presented to the preferred hand under a tent-like screen.

The quantitative results show that the blind experience, in high but varied degrees, the illusions in active touch that others do in sight, but that the seeing do not have these illusions in active touch. [10 min.]

*Determinants of the Threshold of Closure in Simple Geometric Forms.* JOSEPH M. BOBBITT, Northwestern University.

The general purpose of the experiment was that of determining whether or not the phenomenon of closure may be subjected to threshold measurement. The specific purpose of the study was that of determining whether or not the threshold is the same for each of three different cases of the same geometric form (*i.e.*, three different contour triangles).

For each of three triangles used (*i.e.*, a narrow and a wide base isosceles triangle and an equilateral triangle) there was a series of 18 incomplete forms, differing from each other only in terms of the percentage of the total perimeter present. The individual forms consisted of two opposed angles, representing incomplete portions of opposite sides of the triangle.

The figures were so constructed that equivalent forms of the three series were matched in terms of percentage of the figure present. The angles of the more incomplete forms possessed a *twoness* quality; *i.e.*, they were separately perceived. The angles of the more complete forms possessed a *oneness* quality; *i.e.*, they were perceived as a unit. Using tachistoscopic exposure and the method of minimal changes, thresholds of closure (defined as the point of transition from the quality of twoness to the quality of oneness) were determined for each of 25 subjects.

The results indicate conclusively that closure may be subjected to threshold measurement. The three triangles have different closure thresholds as measured in terms of the percentage of the total perimeter necessary to effect closure. The narrow base triangle has the lowest threshold of the three forms; the wide base triangle, the highest threshold; and the equilateral triangle, a threshold of intermediate value. All differences are statistically significant. [15 min.]

*Perceptual Size-Constancy in Early Infancy.* EGON BRUNSWIK, University of Vienna, and RUTH M. CRUIKSHANK, Brown University.

In the present study an analysis was made of the response of infants to the following three stimulus situations: a visual object (rattle) presented to the child at the distance of 25–30 centimeters (situation A), the same object as in situation A at a distance three times as great (situation B), and an object of the same form and color pattern but three times as large at the same distance as in situation B (situation C). The reaching responses of babies in the age groups from three to eight months were studied in order to determine whether there could be found a phase in early perceptual development in which bodies at different distances but of the same retinal projective size are confused, or whether constant, *i.e.* adequate responses to the physical properties of the bodies in the environment are established in spite of the random changes in their retinal size representation.

Around four to five months of age, there seems to be a stage in perceptual development at which there is but a relatively slight degree of size-constancy under the conditions of our experimental situation. However, on the average, situation C is not responded to with complete equivalence to situation A as would be the case if there were no constancy. Subsequently, *i.e.* about six months of

age, a differential response to situations A and C is developed, whereby the response to C approaches the response typical for situation B. In other words, the larger body far away is differentiated from the smaller one near at hand despite the equality of their retinal projective stimulus-size. This implies that there is a considerable approach towards the establishment of size-constancy within the perceptual system by the second half of the first year. [15 min., slides.]

*Experimental Development of Color-Tone Synesthesia.* T. H. HOWELLS, University of Colorado.

Reports of cases of synesthesia raise the question as to whether the coupling of senses is native or acquired. The problem arises also as to whether sensory qualities are necessarily a discrete product, limited to a particular sensory mechanism, or whether, on the other hand, they may be the joint product of a plurality of mechanisms, or perhaps of the organism as a whole. Sense theories may be affected by the resolution of such an issue. There is also need to supplement available subjective accounts with objective data in regard to synesthesia. The specific experimental problem was to influence apparent color by means of accompanying tones previously associated with different color stimuli.

The method of the experiment was to present for one second identical patches of either red or green light in random order. Red was characteristically associated with a low tone (low C), and green with a higher tone (middle C), although opposite associations were introduced occasionally. The object for the observer was to name the color correctly in every instance. After 5,000 trials the intensity of hue was diminished at a fixed rate until the colors reached a pale but recognizable standard.

Eight subjects completed 20,000 or more trials. The ratio of errors increased significantly for seven subjects, ranging finally from 24% to 66%. These subjects also made a significant excess of errors over a control series without the tones. A test series, using only white stimuli, was run with three conditioned subjects. Color reports corresponded with the tones, except that one subject finally suspected that the patches were white. Subjects reported that subjectively the hues corresponded with the associated tones but seemed to shift to the other color when the tone ceased. [15 min.]



## MENTAL MEASUREMENT

WEDNESDAY, SEPTEMBER 1, 2:00 P.M.

## MUSIC AUDITORIUM

L. L. THURSTONE, *Chairman*

*The Individual-to-Individual Variability of Learning Scores Obtained with Materials Commonly Employed in the Study of Memory.*  
ARTHUR W. MELTON, University of Missouri.

Attempts to determine the relative reliability of learning scores obtained with different memory materials by using the coefficient of relative variability,  $\sigma/\text{Mean}$ , assume a linear relationship between the obtained  $\sigma$ 's and Means. To test this assumption and to enable comparisons of absolute variability an experiment was performed in which 48 Ss learned lists of 9, 12, 15, and 18 3-letter words, 3-letter nonsense syllables, and 3-place numbers in counterbalanced practice order on successive days after 15 days of habituation to the anticipation method. In this way the difficulty of the three materials may be equated by varying the number of units in the lists before making comparisons of the absolute variability of the trial scores.

For each material the curve for the relation between the Mean trials to learn and the  $\sigma$  of the trials to learn shows positive acceleration. Thus, the use of coefficients of relative variability in such comparative studies is invalid. Furthermore, these curves for the relation between the  $\sigma$  and the mean have characteristically different slopes in the case of the three memory materials, such that, for comparable degrees of difficulty as measured by the average trials to learn, the absolute variability decreases in the order: numbers, nonsense syllables, words, when the number of trials required for mastery is less than 10, and the reverse of this relationship is present when the materials require more than 12 trials for mastery. An attempt to interpret these relationships requires an emphasis on the absolute length of the list as one of the determinants of individual-to-individual variability of learning scores. [15 min., slides.]

*A Comparative Study of Scales Constructed by Three Psychophysical Methods.* MILTON A. SAFFIR, Bureau of Child Study, Chicago Board of Education.

The object of this study is to compare, on the basis of empirical data, the scales constructed through the use of the Method of Paired Comparison, the Rank Order (Order of Merit) Method, and the Method of Successive Intervals. The latter is a modification of the Method of Equal Appearing Intervals developed by Thurstone, as yet unpublished. The present study extends this method to Rank Order data. It deals with three methods for gathering psychophysical data and two statistical procedures for treating them. Comparisons are made between the scales resulting from the following combinations:

- (1) Paired Comparison data treated according to Thurstone's Law of Comparative Judgment;
- (2) Order of Merit data treated according to Thurstone's Law of Comparative Judgment;
- (3) Order of Merit data treated according to the Method of Successive Intervals;
- (4) Equal Appearing Interval data treated according to the Law of Successive Intervals.

In addition to data published by Hevner, dealing with judgments of excellence of handwriting specimens, new data has been collected dealing with the preferences of 133 students among 25 nationalities and races. It is thus possible to compare the psychophysical methods as applied to two types of psychological activities that are quite distinct.

Two sets of scale values were calculated for the nationality preferences and four for the handwriting specimens. Graphical comparisons indicate that in all cases the relationship between any two sets of scale values is linear.

It is concluded that all the psychophysical methods employed produce equally valid scales, so that any single method may be used with considerable confidence. Choice among these methods may therefore be made on the basis of practical convenience, rather than relative validity. [15 min., slides.]

*An Experimental Analysis of Certain Performance Tests.* CHARLES M. MORRIS, Bucknell University.

To further the study of factors which may be assumed to account for Performance Test behavior, a battery of well-known tests were

administered by the author to a group of fifty-six nine year old boys in a New York City grade school. The ages of these subjects ranged within three months of 9 years 5 months ( $\sigma=2$  months). The tests selected included the Pintner-Paterson Battery, the Seguin-Witmer-Sylvester Form Board, the Lincoln Hollow Square, the Witmer Cylinder Test, the Dearborn Form Board 3, the Porteus Maze, Revised Minnesota Paper Form Board Test, Henmon Nelson Intelligence Test, the Brown Personality Test and several other tests devised by the author or selected to measure the assumed factors. The results obtained from administering these tests are compared with the norms reported in the literature.

The intercorrelations were obtained for seventy-seven variables and Thurstone's method of factor analysis was applied to the correlational matrix. The factors necessary to account for the performances will be reported.

A correlational analysis of the sub-tests of the Pintner-Paterson Performance Scale is included. [15 min.]

*The Factorial Analysis of Mental Ability in Elementary School Children.* M. A. WENGER and FRANK N. FREEMAN, University of Chicago.

To supplement the language tests used by Freeman and Flory in their study of intellectual growth a battery of tests is being prepared to measure also non-language ability and memory. As a first step in this project, twenty-four tests were presented to every child between the ages of 10-6 and 13-6 in a small midwestern town. Eight of the tests were represented without time limit. The testing required a total of five to eight hours per subject and continued through three or four successive days. Data are complete on 291 subjects and afford intercorrelations between 32 variables which have been analyzed by Holzinger's bi-factor method. The results contribute in particular to an analysis of memory ability and throw light upon the question of the "power" factor in intelligence. [10 min., slides.]

*A Comparative Study of the Intellectual Performance of Mentally Ill Patients and Normal Subjects.* JAMES W. LAYMAN, Psychopathic Hospital, State University of Iowa.

The present study is based on the intellectual performance of approximately 900 subjects examined in the Psychopathic Hospital during the years 1934 and 1935. The Stanford-Binet (short form)

was used as a measure of the intellectual performance. In order to make the comparisons valid only those test records with a vocabulary mental age of twelve or more years were employed; on this basis the groups are approximately evenly matched.

The examination of the data is approached from two angles: (1) a comparison of the success and failure in the individual subtests of the Stanford-Binet; (2) a Thurstone Factor Analysis on all subtests for which tetrachoric correlation coefficients could be computed.

On the basis of this analysis the various successes and failures are related to the disease syndromes as well as to normal performance. Deviations from the normal performance appear which are common to all of the psychoses studied and also characteristic of particular syndromes. These differences are discussed in terms of the fundamental factors which appear as a result of the factor analysis. [15 min.]

*Comprehension Maturity Tests—A New Technique in Mental Measurement.* D. D. FEDER, University of Iowa.

The assumption that individual differences are due to the fact that the *perceived* situation to which a reaction is made differs from individual to individual has been made the basis of a new technique in mental measurement. This technique involves differentially graded responses, and has been applied to college adult subjects, using reading as the testing medium. The experimental findings of a number of studies employing these techniques are presented in this report.

Two apparently distinct types of reading have been revealed, with a third type indicated but not clearly distinguished from the other two as yet. Experimentally determined are the "reading for information" and "reading for inference" attitudes. "Reading for appreciation" bears a close relationship to the "reading for inference," but has also certain factor loadings not yet completely identified. Through a newly devised technique the influence of rate of reading upon the experimental results has been effectively controlled.

Analysis of the responses reveals a marked tendency for most individuals to react quite consistently upon that level of response which characterizes the quality of their insight. However, these levels may vary from test to test depending upon the difficulty of the material, the nature of the material, the type of response required, and the attitude of the individual.

The utility of the comprehension maturity test technique has been demonstrated in its application in the Reading Clinic and in several instructional departments of the University. In addition to its validity for the measurement of the more complex characteristics of intelligence, the technique has been used with a marked degree of success in measuring those aspects of learning which require discrimination, functional application, and valid interpretation of the learned materials. [15 min.]

### CONFLICT AND FRUSTRATION

WEDNESDAY, SEPTEMBER 1, 2:00 P.M.

101 WESBROOK HALL

CLARK L. HULL, *Chairman*

*Differences in Resolution of Approach-Approach and Avoidance-Avoidance Conflicts.* CARL IVER HOVLAND, Yale Institute of Human Relations.

On theoretical grounds Lewin differentiates conflicts between two approach reactions from those between two avoidance reactions. Experimental differentiation of these types was attempted by analyzing the resolution of motor conflicts. Subjects were trained to draw a line from a central point between two light bulbs towards the one which was illuminated. After training, simultaneous flashing of both lights produced little conflict, most subjects making complete reactions toward one or the other light. In the case of comparable subjects trained to go away from the illuminated side, simultaneous presentation of the lights resulted in blocking or partial compromise movements.

Sharp differentiation of these two types of conflict was likewise obtained in an experiment done with the assistance of Seymour Klebanoff on rats, employing the Lashley jumping technique. The results of both experiments can be deduced from the goal-gradient hypothesis. [10 min., slides.]

*Resolution of Conflicts between Approach and Avoidance Responses.*

ROBERT R. SEARS, Yale Institute of Human Relations.

A Type 2 conflict (Lewin) results from initiation of approach and avoidance reactions to adjacent stimulus objects. By use of a

practiced manual reaction of drawing a line *toward* the flash of a green light and *away* from that of an adjacent red light, a Type 2 conflict was presented to naïve subjects. Resolution was largely on a verbal level, the manual reaction suffering frequent blockage. A bi-directional approach-avoidance conflict, which probably more nearly simulates real life conflicts, was produced by presenting 2 mutually incompatible Type 2 conflicts simultaneously (*i.e.* incompatible ambivalent responses). The manual reaction was almost completely blocked and resolution at the verbal level was accompanied by mild affective behavior. The experimental situation did not permit the subject to "go out of the field" at the manual level. The results are interpreted in stimulus-response terms. [10 min., slides.]

*Analysis of the Form of Conflict Reactions.* NEAL E. MILLER, Yale Institute of Human Relations.

Applying the goal-gradient and other stimulus-response principles to a theoretical analysis of the approach-avoidance conflict situation, certain deductions were made concerning the detailed form of the conflict reactions to be expected. After being trained to run down an alley for water, thirsty rats were given runs followed by shocks sufficiently strong to induce varying degrees of conflict. Graphic records of locomotion during this conflict indicated that reactions of the deduced form characteristically occurred. Incidence of other types of reactions suggested modification of the original hypothesis.

In additional experiments, suggested by Freudian generalizations, conflict responses of animal and human subjects were studied to discover the manner in which the form of the compromise reactions produced by conflict is determined by factors such as the existence of certain common (and hence not incompatible) elements in the two competing response patterns. [10 min., slides.]

*Reaction to Conflict as a Function of Past Experience.* O. H. MOWRER, Yale University.

One group of rats formed the habit of sitting quietly on their hind legs in a situation in which this was the most adaptive response possible to a continuous electric shock administered through a floor grill. Later a pedal was made available, slight pressure on which

terminated the shock, after which it would again automatically build up. This group of animals soon learned the pedal-habit, as did a new group of naïve animals.

When it was later arranged so that all rats received a shock whenever they touched the pedal (conflict situation), the animals in the original group immediately "regressed" to the earlier sitting-habit, whereas the other animals continued to push the pedal. Observations were made on the conditions under which this differentiation breaks down and upon what appears to be an experimental analogue of reaction-formation. [10 min., slides.]

*A Study of Perseverance and Frustration in Working Rats.* CALVIN P. STONE, Stanford University.

Adult rats were given a short training course on the sand-tube obstruction apparatus (Stone). During this training series they were required to remove from a three-inch tube a mass of fine sand which served as a barrier between them and a specific incentive (food, water, sex object). The task required approximately 1 minute for execution. Following the preliminary training, work-loads requiring from 1 to 3 hours of active digging were introduced. Time analyses denote the distribution of activities between active digging, rest, and work at other soluble but irrelevant tasks. The effects on behavior resulting from removal of the incentive will be reported. [15 min., slides.]

*Effect of Three Kinds of Frustration upon Behavior of Young and Adult Chimpanzees.* GEORGE M. HASLERUD, University of Tennessee.

These experiments on 8 chimpanzees (3 adults, 2 adolescents, and 3 children) at the Yale Laboratory of Primate Biology measure effort and time and describe behavior when expected reward does not follow performance of a simple motor task.

The standard act of both preliminary training and reinforcing trials during the experimental series was pulling on an endless belt with one hand until after 48 cm. a small food carriage attached to the belt at the proper time by the experimenter appeared from behind a cloth screen. Orange was used as incentive. When behavior in the simple reward situation was stabilized, 1, 2, 4, or 8 successive frustrations of the following kinds were given, only one kind a day, preceded and followed by two standard reinforcing trials: (a) After standard effort, empty food container appears, (b) After standard

effort, wooden screen lowered to interrupt pulling, (c) Unlimited pull with no reward.

The following results appear consistently in the group:

(1) Ability to withstand frustration increases with age. All the young failed on the easiest levels while two of the three adults had not apparently reached their limit at 8 successive frustrations.

(2) The interrupted pull is the most potent frustration for most animals; frustration (a) has least effect.

(3) After successive frustrations a single reinforcing trial brings time and behavior approximately to normal level. Twenty-four hour rest also restores animal.

(4) For trials with frustration (c), animals exceed greatly the standard effort and time before withdrawing from the task. [15 min., slides.]

*The Development of Attitudes Toward Success and Failure in Rhesus Monkeys.* VIRGIL E. HERRICK, Milwaukee Country Day School.

In an attempt to determine whether attitudes of success or failure are as specific as the experiences which give them birth, six rhesus monkeys were trained on five sets of puzzle boxes until each monkey was able to open all sets with some degree of skill. Then the monkeys were divided into two groups on the basis of control observations of their behavior in a new situation. The three most active monkeys were selected for training in developing a failure attitude and the other three were allowed to continue opening the puzzle boxes with their former success.

After failure to open the puzzle box sets had cut the activity of the three monkeys in respect to the puzzle boxes to approximately zero, all monkeys were tested in an observation room using three testing situations, namely; a completely strange object, a single large puzzle box, and the original puzzle boxes themselves. In this manner, the investigator attempted to present to the monkeys situations ranging from the completely strange to the completely familiar in a situation entirely removed from the one in which the attitudes had been developed. If the attitudes of success and failure are specific, activity or lack of it should be noted only on the original puzzle boxes; if these attitudes exert a general influence upon behavior, the activity or lack of it should also evidence itself in the testing situations in which training had not taken place.



The results of this investigation indicated that the success and failure attitudes developed in these monkeys were specific and exerted little, if any, influence over objects and situations not connected with their origin. [15 min., slides.]

*Experimental Neurosis in the Pig.* QUIN F. CURTIS, Cornell University.

Pigs were accustomed through a year's training by George F. Sutherland and G. B. Davis to restriction of their freedom in two controlled environments, alternated daily. One environment was characterized by a continuous tone of 600 cycles whose cessation for 10 seconds was the signal for the dropping of apple into a covered food box. The other environment was characterized by a tone of 750 cycles whose cessation for 10 seconds was the signal for a mild electric shock to the foreleg. The pigs learned to stand quietly in a Pavlov frame and to respond promptly and appropriately to these signals by opening the box on feeding day and by flexing the foreleg on shocking day.

After the performance was stabilized, motor outlets were further curtailed by us as follows. Random opening of the food box between tests on feeding day or at any time on shocking day was punished by shock. As a result, the pig soon refused to lift the lid until the apple dropped into the box. The experimenter then refused to deliver apple until the pig had opened the cover.

In consequence of this last procedure one pig soon developed a condition resembling the inhibitory type of experimental neurosis observed by Pavlov in the dog. The signs of this experimental neurosis as exhibited in the laboratory and outside for a period of six months will be described. [15 min., slides.]

## PROGRAM: RESEARCH AND INSTRUCTIONAL FILMS

WEDNESDAY, SEPTEMBER 1, 8:00 P.M.

NORTHROP AUDITORIUM

EDWARD CHACE TOLMAN, *Presiding*

*Note:* The showing of films will not be accompanied by verbal descriptions, since proper titles in the films will be adequate.

*Response of the Fetal Guinea-Pig to Pressure Stimulation.* LEONARD CARMICHAEL, University of Rochester. [6 min.]

*Vibratory Sensitivity in the White Rat.* THE PSYCHOLOGICAL LABORATORY, Princeton University. [6 min.]

*Reaction Formation in Rats: An Experimental Analog for a Freudian Phenomenon.* NEAL MILLER, Yale University. [6 min.]

*Cats in a Puzzle-box.* E. R. GUTHRIE and GEORGE P. HORTON, University of Washington. [10 min.]

*Morphine Addiction in Chimpanzee.* S. D. SHIRLEY SPRAGG, Yale Laboratories of Primate Biology, Orange Park, Florida. [12 min.]

*Perceptual Size-Constancy in Early Infancy.* R. CRUIKSHANK, Brown University, and E. BRUNSWIK, University of Vienna, with the help of J. KROES. [6 min.]

*Some Effects of Left Parietal Lobectomy in Man.* WARD C. HALSTEAD, University of Chicago. [15 min.]

*Hypnotic Behavior.* LESTER F. BECK, University of Oregon. [11 min.]

*Controlled Learning Situations in Reading and Arithmetic.* MAURICE E. TROYER, Syracuse University. [10 min.]

*Aptitude Tests for Industrial Employees.* CHARLES A. DRAKE, Eagle Pencil Company, New York. [16 min.]

## PHYSIOLOGICAL PSYCHOLOGY

THURSDAY, SEPTEMBER 2, 9:00 A.M.

BURTON AUDITORIUM

L. CARMICHAEL, *Chairman**The Effect of Male Hormone on the Sex Behavior of Female Rats.*

JOSEPHINE BALL, Henry Phipps Psychiatric Clinic and Carnegie Laboratory of Embryology, Johns Hopkins Medical School.

Male hormone, in the form of testosterone propionate, injected into 10 normal, adult female rats over periods of 2 to 3 months resulted in suppression of cyclic heat behavior and appearance of more male sex activity than normally occurs in untreated females. The female behavior pattern also persisted continuously throughout the experiment but at a very low degree of intensity, the female never taking the initiative, merely accepting copulation occasionally, usually fighting the male like a normal female just entering a heat period. No vaginal cornification accompanied this behavior, however.

Clitoris enlargement occurred concomitantly with the masculine behavior but was probably not a causal factor, since Root and Bard find no diminution of sexual aggressiveness in male cats after removal of the lumbo-sacral cord.

Recovery of normal vaginal cycles, normal female sex behavior and gradual disappearance of male behavior followed cessation of testosterone administration. This research was aided by a grant from the Committee for Research in Problems of Sex, National Research Council. [15 min.]

*The Adaptation of the Adrenal Cortex to Conditions of Stress which Increase the Requirement for Cortin.* D. J. INGLE and E. C. KENDALL, The Mayo Foundation, Rochester, Minnesota.

Muscular activity greatly increases the requirements of adrenalectomized rats for cortin. In partially adrenalectomized rats large amounts of adrenal cortex are required to maintain a normal capacity for work; whereas much smaller amounts are sufficient to maintain rats in a normal condition if they are inactive. When one adrenal is enucleated and the opposite adrenal is removed a rapid regeneration of adrenal cortex tissue takes place from the capsule of the enucleated gland. The regeneration of the enucleated adrenal can

be suppressed either by the presence of one intact adrenal or by the administration of cortin. Hypophysectomy produces atrophy of the adrenal cortex regardless of requirements of the organism for cortin. The resistance of the hypophysectomized animal to stress is increased by treatment with cortin.

Although studies on work will be emphasized in the paper it is clear that adaptation of the adrenal cortex is important in maintaining the resistance of the organism to any form of stress. The physiologic requirements for the hormones of other endocrine organs may also be changed during stress. [15 min.]

*The Nature of Morphine Addiction in Chimpanzee.* S. D. S. SPRAGG,  
Yale Laboratories of Primate Biology.

Studies of chronic morphinism in lower animals have frequently demonstrated physiological effects of the drug which correspond to some extent with the effects shown by human addicts, but in no case so far has a genuine picture of morphine addiction been exhibited in any organism other than man—*i.e.* with definite, convincing evidence of desire for the morphine injection, over and above the induction of a physiological dependence on the drug.

The project to be reported is an attempt to determine the nature of morphine addiction in chimpanzee, with special reference to the psychobiological effects of addiction and withdrawal.

Two adolescent male chimpanzees served as initial subjects; two others (one male and one female) were later added to the experimental group. Pre-addiction measurements of several behavioral and physiological functions were made, to establish norms for comparison with addiction and withdrawal effects. The regular administration of relatively small doses of morphine resulted in a marked dependence on the drug, as shown by the effects of short withdrawal periods. A number of effects of administration and deprivation of the drug will be discussed and compared with similar conditions in human morphine addicts. In addition to the dependence, a strong positive desire for the morphine injection was induced; clear evidences of this desire were observable in general behavior, and were demonstrated in a series of preference tests. Implications with regard to the essential nature of morphine addiction will be discussed. (This project has been carried out in association with Professor R. M. Yerkes.) [15 min., slides.]

*Cerebral Circulation Prevailing During Sleep and Hypnosis.* J. WALLACE NYGARD, State Division of Mental Hygiene, Chapel Hill, North Carolina.

Two university students, having recovered from accidents that necessitated removal of a portion of the skull, acted as subjects in the sleep experiments. For each, a tambour was constructed to rest comfortably inverted on the bone adjacent to the defect. To the rubber dam of the tambour was attached a piece of balsa wood cut to fit the defective region. A broad bandage held this tambour in position, in addition to a control tambour overlying a region of intact skull. Movements in the tambour from intracranial changes were transcribed by a piston recorder on a long paper kymograph drum (located in the neighboring room) synchronously with the scalp control, respiration, time line, and signal markers.

In one subject, a profound somnambulistic hypnotic trance was induced. From ten experiments upon induced hypnosis from this subject, and twenty-two records of sleep from both subjects, we summarize our results as follows:

Distinct changes occur in the cerebral circulation with the onset of sleep. The cerebral blood vessels relax and the volume increases during sleep. The rise is gradual and usually rhythmical until it reaches a maximum which is sustained at a fairly constant level during deep sleep. On being awakened, the volume curve descends to a normal level, although at times there may be a short rise before the volume fall occurs. Accompanying the circulation changes are the slower heart rate and slight decrease of blood pressure in sleep.

Cerebral circulation prevailing during hypnosis resembles that of the waking state rather than sleep.

The significance of the results to the so-called "cerebral anaemia" and "cerebral congestion" theories of sleep will be discussed.

This study was done at the University of Michigan. [15 min.]

*Action Current Leads in Bilaterally Paired Muscles.* NEIL WARREN, University of Southern California.

Action currents from three groups of bilaterally paired muscles, the right and left masseters, right and left orbicularis ocularis, and the right and left forearms, were recorded during voluntary contraction. The precedence of activity in right or left muscle of each pair was determined from photographic recordings made simultaneously from each muscle.

The priority of action currents in the forearms during contraction of the fingers was related to hand preference in other activities. Leads from the other pairs of muscles were ordinarily much shorter in time, less consistently to one side, and unrelated to hand preference or to action current leads in manual activity. These data suggest consideration of the relationship of bilateral motor or action current leads to functional asymmetry of the cerebrum. [10 min.]

*The Crossed Effects upon Voluntary Movement of a Unilaterally Induced Fatigue.* REX MADISON COLLIER, Northwestern University Medical School.

Experiments with spinal animals have demonstrated the irradiated effects of excitatory and inhibitory states. Ergographic experiments have shown that decrements in activity from prolonged voluntary movements are due, in part, to losses of excitatory capacity of higher centers of nervous control. If the centers essential to voluntary movement have, in general, similar excitation and conduction characteristics as spinal centers, then we may expect that after a prolonged series of voluntary movements, the partial refractory state of these higher centers will show irradiated effects.

That a unilaterally induced fatigue produces crossed effects on movement of the opposite side is shown by the following experiments. The apparatus permitted a direct transmission of rotary forearm movements (pronation-supination) to a kymograph. Initial records revealed that contralateral fatigue modified the ipsilateral movements by reducing rate and increasing amplitude of rotation.

For more critical experiments time values were obtained for each of the four components of reciprocal movement, *i.e.* the two progressions and the two reversals. Three series of records were taken of right forearm movements under the following conditions: I—no initial fatigue; II—initial fatigue of left forearm (contralateral fatigue) with record of right immediately following; III—initial fatigue of right forearm (ipsilateral fatigue).

Data so obtained indicate that (a) contralateral fatigue significantly increases the time of the reversal components of voluntary movement; (b) contralateral fatigue significantly reduces the progression or movement time itself; (c) irradiated effects of a contralateral fatigue tend to reduce the variability of the movement components while ipsilateral fatigue increases variability; (d) in both

series II and III, reversal times are more significantly affected than progression times. An irradiated condition of central inhibition is assumed to account for the obtained phenomena. [15 min., slides.]

*The Rôle of Oxygen in Recovery from Mental Fatigue.* ARTHUR G. BILLS, University of Cincinnati.

Preliminary experiments showed that a reduction in oxygen content of the inspired air causes a lowered performance level analogous to that caused by fatigue. When pure oxygen is breathed by unfatigued subjects, it has no effect on performance.

The present experiment, carried out with the assistance of Edward Geldreich, raises four questions: (1) Does an increase in the oxygen content of the inspired air above normal improve the mental performance of fatigued subjects? (2) At what stage of fatigue is the effect greatest? (3) What combination of oxygen, carbon dioxide, and air gives optimal effects? (4) How is respiration affected?

Three experiments were run. The mental work consisted of responding to colors presented serially. In Experiments I and II, a control condition in which normal air was breathed for a 45 minute work period was alternated with an experimental condition in which air was breathed for 30 minutes and pure oxygen for 15. In Experiment I, eight subjects responded vocally; in Experiment II, four responded manually. The breathing apparatus consisted of a special helmet, worn under all conditions, into which either air or oxygen was forced from pressure tanks.

Experiment III involved an extensive exploration of various combinations of oxygen, air, and carbon dioxide with three subjects. They worked under normal air for 45 minutes, then under the rich oxygen mixture for 15 minutes, then normal air again for 15 minutes. Pneumographic records were obtained.

*Results:* (1) The breathing of pure oxygen by subjects fatigued from continuous mental work causes some recovery in performance. (2) The optimal combination was 50% oxygen, 3% per cent carbon dioxide and 47% air. (3) Characteristic changes in the breathing curve occur under pure oxygen. [15 min., slides.]

## MEMORY

THURSDAY, SEPTEMBER 2, 9:00 A.M.

101 WESBROOK HALL

J. F. DASHIELL, *Chairman**A Further Evaluation and a Tentative Restatement of Jost's First Law.* ADELLA CLARK YOUTZ, Yale University.

The experimental data, provided by a study of retention of 12-unit nonsense-syllable lists, following three degrees of partial learning for 15 subjects, have previously been shown to confirm Jost's First Law as originally stated and as customarily expanded. When the series of associations are of different age but are overtly remembered to the same degree, as evidenced by comparable recall scores, the amount of profit on a new repetition tends to increase logarithmically according to time since learning.

An analysis of the errors in recall for the comparable associations exhibits a relative reduction in errors in the middle of the rote-series for the older. The differences in errors at the middle of the rote-series correlate .82 (Rho) with the reliability of the differences in increment on the second relearning trial for the older and younger associations. This result, along with other indications of the flattening of the error curve for the older associations, is in accord with a conditioned response interpretation of serial learning and justifies a tentative restatement of Jost's First Law according to conditioning principles. [15 min., slides.]

*Eye Movements in Memorizing and Recall.* H. E. WEAVER, Oberlin College.

In studying eye movements in relation to memorizing and recall of poetry, photographic records of ocular fixations and speech were made. For twenty subjects, the speed of memorizing and recall was regulated by a metronome. Ten subjects recalled the poetry while looking at a blank page and the remaining ten while attempting to fixate a dot on an otherwise blank page.

For twenty additional subjects, there was no limitation upon speed of memorizing or recall. Half of this group recalled while looking at a blank page and half while fixating a dot.

A high degree of variability in ocular behavior was characteristic of both memorizing and recall. Normal fixation of the eyes during



recall did not decrease accuracy of recall. Data concerning number, duration and spacing of fixations show considerable differences between ocular behavior in memorizing and recall with and without speed limitation. [10 min., slides.]

*The Temporal Interval as a Factor in the Recognition of Visually Perceived Figures.* MORTON A. SEIDENFELD, University of Pennsylvania.

Since 1922 when F. Wulf published his significant study on the changes which occur in the reproductions of visually perceived forms this problem has occupied the attention of numerous experimentalists both here and abroad. However, as Koffka pointed out the problem could not be appreciated in its complete aspect until a method had been developed, designed to supplement these results with evidence obtained by the method of recognition. Koffka further suggested that the method of recognition used should have the characteristics of (1) being designed to use long time intervals and (2) the opportunity for the subject of selecting the stimulus forms used from among numerous more or less different forms.

In light of this the writer developed a method of recognition based upon the characteristics indicated above. The results obtained by this method indicate that a tendency toward continual change is present similar to that described by Wulf and more recent workers. However, those who worked with the method of reproduction reported a further dynamic phenomenon, namely, a tendency for constancy in the direction of change in the forms reproduced. This tendency was not generally apparent in the judgments made by the method of recognition. In general, a tendency toward reversal of judgments with the passing of time was the most frequent occurrence.

In the light of these results a hypothesis designed to modify the "gradient" hypothesis of Koffka and other Gestaltists so as to adequately explain the tendency toward reversal of direction of change found by the writer as well as by many of the later students of this problem who used methods other than that of reproduction. [15 min.]

*The Form of the Curve of Memory in Rote Learning.* GEORGE C. SEECK, Milligan College.

The problem of this study made at the University of Michigan Psychological Laboratories sought for a more accurate description of the course of rote learning. Following the work of Kjerstad,

Mibai, Robinson and Heron, Peterson and others, the problem was narrowed to the form of the curves derived.

Fifteen university students were selected as subjects. The anticipation method was used. Complete records of successes and failures with introspections were obtained.

Glaze's list of nonsense syllables was used. Some lists were "calibrated" according to percentage values; some were "graded" in reference to character of the list as a whole. A "balanced" list was one in which the syllables were alternated to average one known association value. The curves were plotted according to a modification of the Vincent-Kjerstad method.

A series of experiments was designed to test for the form under varying length of lists, for serial and paired learning, and for learning under alterations of the character of the lists.

Chief results:

1. Serial learning: a relatively rapid rise in the curve, first negatively accelerated, later more positive. No particular difference exists with varied length of lists.

2. Paired learning: more positive form early, changing to more pronounced negative acceleration.

3. Stability of the curves: not materially altered by the control of sections within the lists. Lists essentially "easier" or "harder" do not change the form of the curve.

4. No appearance of the final spurt. Re-plotting evidences no superiority of the fourth quartile. The stability of place associations in terms of quartiles is, first, fourth, second, third.

5. A "serial" attitude is carried into the learning of paired lists. When subjects faced syllables used in random fashion, they became confused. [15 min., slides.]

*Re-learning After Twenty Years.* GARRY CLEVELAND MYERS, Cleveland College, Western Reserve University.

Learning curves of parents and two of their children, together with curves of re-learning by each after approximately 20 years, will be presented. For each performer, exactly the same materials were used for learning as for re-learning.

- I. The writer and Mrs. Myers began on March 21, 1916, to fit 36 cubes (each face of cube having its own distinct color), with blue face of cube up, into a box. Performers alternated, with 10 performances per sitting, once a day, for 104 days, and 5 performances

per sitting, for 93 more days. The learning was resumed September 1, 1936, at weekly intervals, for 79 days, 10 performances per sitting per day. Time was recorded by a stop watch. Total time of sittings about 138 hours.

Neither performer regained the record made twenty years earlier (probably indicating decline). Despite great effort of each performer to be accurate, and the total of 82,620 placements by each, neither had a single errorless sitting during the 79 re-learning days.

Wife was ahead of husband during early learning stage but fell behind and generally remained behind in the later learning stage. However, she was ahead for every sitting during the 79 re-learning days, after twenty years. There was marked parallelism throughout, each performer apparently affecting the other's best.

II. Also will be presented curves based on fitting together of simple jig-saw puzzle by child J, beginning February, 1916, at age of 2 years 8 months. Relearning, August, 1935.

III. Curves, furthermore, based on fitting of 16 cubes into a box by second child B, beginning October, 1917, at age of 1 year 9 months. Relearning, January, 1937. By each child the same materials were used for learning as for re-learning. There was tremendous gain by each child after twenty years, suggesting maturation as one big factor. [15 min.]

*The Relative Efficacy of Immediate and Delayed After-Effects in Learning.* ROBERT T. ROCK, JR., Fordham University.

Evidence concerning the relative efficacy of immediate and delayed after-effects in human learning is quite contradictory, Stephens showing immediate after-effects to be superior, Lorge and Thorndike demonstrating no difference, while Zaganczyk and Forlano show that after-effects delayed by mental work are more effective than immediate announcements. Careful analysis of these studies, however, reveals several defects in experimental design which may account for the apparently contradictory findings, and the present experiment was planned to eliminate the more serious sources of error in some of the earlier investigations.

Forty subjects participated in an individual line-drawing experiment where the task was to learn to draw, blindfolded, two specified lengths of lines. In one-hour sessions on five consecutive days each subject drew 100 lines of each length and between drawing successive lines performed a mental multiplication. The first and fifth days

were test days and no after-effects were given. The second, third and fourth days were practice days and at these sittings subjects were told "Right" if a line closely approached the specified length and "Wrong" if a line fell outside arbitrary limits. For one length of line announcements were delayed until the subject completed the multiplication, but for the other length announcements of "Right" or "Wrong" were made as soon as the line was drawn.

Data were analyzed in terms of mean length of line, number of "correct" responses, and variability of performance. The results indicate, on the whole, slightly superior learning where after-effects are supplied immediately following the performance and are hence contradictory to the findings of both Zaganczyk and Forlano.

Miss Margaret M. Elliott coöperated in conducting this study. [15 min., slides.]

## PSYCHOMETRICS

Program Arranged by the Program Committee of the  
Psychometric Society

THURSDAY, SEPTEMBER 2, 9:30 A.M.

MUSIC AUDITORIUM

E. L. THORNDIKE, *Chairman*

*Odevity: A Concept Useful in Detecting Certain Types of Errors.*

ALBERT K. KURTZ, Life Insurance Sales Research Bureau.

Odevity is "The state of being odd or even; the oddness or the evenness of an integer." The utilization, under appropriate circumstances, of this concept, will not obviate the necessity of checking results, but will enable the psychometrician to detect certain types of computational errors (if present) in a minimum time.

Using the usual notation, sample rules, of value in checking statistical computations, are:

(1) If  $i$  and  $j$  are positive non-zero integers,  $\Sigma(x')^i$  and  $\Sigma(x')^j$  are of the same odevity. *E.g.* the stated summations,  $\Sigma x' = 87$  and  $\Sigma(x')^2 = 214$ , are incompatible and one (or possibly both) is incorrect.

(2)  $\Sigma fx'$  is of the same odevity as the number of instances in which both  $f$  and  $x'$  are odd.

(3)  $\Sigma s$ ,  $\Sigma s^2$ ,  $\Sigma d$ , and  $\Sigma d^2$  must all be of the same odevity.  
[10 min., slides.]

*The Nomograph as a Psychometric Device.* HAROLD D. GRIFFIN,  
Nebraska State Teachers College.

This paper will consider the place of the nomograph in analyzing the effect of change in the value of a variable during preliminary and intermediate calculations, and its service in solving and checking those particular equations for which the psychometrician will have frequent use.

The illustrative material will describe the construction of both simple and complex nomographs and give aid in adjusting nomographic design in order best to express certain types of formulas commonly met in psychometry. [10 min.]

*Ability, Motivation, and Speed.* L. L. THURSTONE, The University of Chicago.

The purpose of this paper is to describe the analytical separation of three variables, ability, motivation, speed, and to present several hypotheses concerning their relation.

The ability of a subject in a given kind of task may be defined as that degree of difficulty for which the probability is one-half that he will do the task in infinite time. This is essentially Thorndike's concept of altitude. Sensory discrimination may be taken as the prototype for the analysis of difficulty. Consider a surface in three dimensions. Let the two independent variables be difficulty of a task and response time. Let the dependent variable be the proportion of correct responses for a given degree of difficulty and for a given allowed response time.

The following psychological hypotheses seem plausible: (1) that the absolute ability, or altitude, of the subject is defined by the limen of the psychometric curve which is the intersection of the surface with the plane difficulty-response when time is infinite; (2) that the speed characteristic of the subject is shown by the intersection of the surface with the plane time-response when difficulty is zero; (3) that an increment in motivation is described by moving the surface parallel to the time axis; (4) that learning is described by moving the surface parallel to the difficulty axis; (5) that the motivational increment of a performance decreases with an increase in the time

allowed for the task; (6) that the surface becomes cylindrical and parallel to the time axis for large values of time.

Experimentally the surface could be determined with finite values for difficulty and for time allowances. The absolute ability or altitude of a subject as well as his speed characteristics could be determined as asymptotic limits. [15 min., slides.]

*Correlation Profile Analysis.* ROBERT C. TRYON, University of California.

Profile analysis locates among intercorrelated variables those which "cluster." The "profile" of the  $(n-1)$  correlations of each variable is drawn on a graph with ordinate,  $r$ , abscissae, the  $n$  variables, and a cluster is defined as a selection of variables with congruent profiles. This visual organization illumines the psychological components determining the variables in a fashion not apparent from the correlation or the factor matrix. A statistics is provided giving quantitative statements of (1) the homogeneity (degree of congruence) of each cluster, (2) the relation between clusters, (3) the relation of each variable not in a cluster to observed clusters. On orthodox factor assumptions of multiple, independent, additive factors, the variables in a cluster have as common factors those occasioning their communalities. As their common factor loadings are equiproportional, these factors so configured are said to comprise a "unitary trait," a definition psychologically more meaningful than that given a dimension in orthodox factor analysis. Factor interpretations of variables showing incongruent profiles are given, though these are not unique. The communalities of all variables in clusters are determined by a method believed superior to that in centroid analysis. For each pair of variables, one may determine the relation between their respective "reliable factors," and also between the factors providing their communalities. Correlation profile analysis enables one to estimate for each variable, its reliability, error variance, specificity, and communality without employing cumbersome factor analysis techniques, and the allocation, where possible, of each variable to a cluster permits a psychologically more meaningful description of the components which it has in common with other variables than does a factor dimension. The methods are illustrated by an analysis of the ratings of 180 boys on twenty personality characteristics. [15 min., slides.]

*The Diagonal Elements in the Correlational Matrix.* PAUL HORST,  
Procter & Gamble Co.

The basic data used in current factor analysis techniques consist of the zero order correlation coefficients in a correlational matrix. There is, however, no uniform practice with respect to the diagonal elements of this matrix. Four distinct procedures have been presented. These are:

1. Each diagonal element of the matrix of raw correlations is given the value of unity.
2. Each diagonal element in the matrix of raw correlations is the reliability coefficient of the corresponding variable.
3. Each diagonal element in the matrix of coefficients corrected for attenuation is given the value of unity.
4. Each diagonal element in the matrix of raw correlations is taken as the communality of the corresponding variable.

Definite assumptions are implicit in each of these four procedures, but they have not been clearly set forth by the proponents of the various methods. Several of them are of basic importance to the theoretical foundations of factor analysis. These assumptions are discussed in the light of their theoretical and psychological implications. The logical and mathematical consequences of the four different procedures are set forth. [15 min.]

*Some Peculiarities of Affective Ratings.* J. P. GUILFORD, University  
of Nebraska.

Ratings of stimuli for affective value frequently tend toward a distinctly bimodal distribution, with a relatively small number of judgments in the category "indifferent." At the same time, distributions of similar ratings are unimodal for some judges, with the expected number of "indifferent" judgments. Three hypotheses are tenable. (1) Series of stimuli selected at random are in reality distributed unimodally on the continuum of affective value. Some individuals regard the indifference category as merely a division point while others regard it as an interval on the scale. (2) Such stimuli are distributed in a truly bimodal fashion, but some individuals force any type of distribution toward the normal form. (3) Each individual has a distribution of affective reactions that is more or less constant for him. Evidence bearing on these hypotheses, and suggestions for rectification of some scales will be presented. [10 min., slides.]

## SOCIAL FACILITATION IN MAN AND ANIMALS

THURSDAY, SEPTEMBER 2, 10:00 A.M.

201 WESBROOK HALL

H. E. BURTT, *Chairman**An Experimental Analysis of Social Factors Affecting Performance of White Rats Motivated by the Thirst Drive in a Field Situation.*

ROBERT HALL BRUCE, University of Wyoming.

Thirsty rats were run for 153 daily trials on a table seven feet long and three feet wide, marked in square feet. A record was kept of (1) the excess distance covered by each animal to the water, (2) time to the water, (3) time of first drink, and (4) the amount of water drunk by each rat. Rats were run singly and in pairs to discover the social effect of one rat upon another as measured by the four variables enumerated above.

When both rats were practiced in the situation and then were run together: time to water first increased, then decreased, compared to single performance; excess distance increased, then showed no significant difference; the amount of water consumed increased slightly; and the time of the first drink decreased greatly.

When a naïve rat was placed on the table with a practiced rat: after an initial decrement the naïve rats took less time to the eudiometer; they covered less excess distance; drank more; but had a shorter first drink, when compared to rats who were run singly in a similar situation.

An attempt was made to analyze the factor of "diminance," *i.e.* the ability to keep the other rat from drinking while one individual continues to drink. Sex, weight, and practice effects were varied. The drive was lessened by giving  $\frac{1}{4}$ ,  $\frac{1}{2}$ , and  $\frac{3}{4}$  of the normal water intake before the run. Until satiation, the factor of "dominance" continually lessened and the rats "coöperated" in drinking as practice continued in the social situation. [15 min., slides.]



*The Social Facilitation of Locomotor Behavior in the Albino Rat.*

WILLIAM M. LEPLEY, The Pennsylvania State College.

The experiment to be reported was designed to answer the question: Is the locomotor behavior of the albino rat susceptible to social facilitation?

Eighteen rats, eight males and ten females, were run in a straight, thirty foot alley to a food goal. Timing was semiautomatic. A counter-balanced experimental schedule was followed, according to which the animals ran in isolation and in pairs on alternate days. The experimental period covered twenty successive days. The animals were run after a starvation period of approximately twenty-three hours and were given two trials per day. They were fed to satiation immediately after each day's performance.

The results seem to show that, under these conditions, the locomotor behavior of the albino rat is not susceptible to social facilitation. [10 min.]

*Group and Individual Maze Learning by the Albino Rat.* R. H.

WATERS, University of Arkansas.

Will the albino rat learn a maze more rapidly if he travels alone or with a companion? Two experiments devoted to this problem have been completed. In Experiment I an elevated form, in Experiment II an alley form of a modified nine-compartment, Miles unidirectional maze was employed. In all other respects the two experiments were identical. Four groups of 20 animals each were used as subjects. In each experiment the animals of one group ran the maze individually and those of the other group ran the maze in pairs. Thirty trials at the rate of two per day were given each animal. Learning curves in terms of the median errors and time per run are shown in accompanying slides. The curves indicate a lack of any significant difference in the rates of learning under these conditions. [10 min., slides.]

*The Influence of Social Stimulation on Motor Performance at Different Intelligence Levels.* THEODORA M. ABEL, Trade Extension Classes, New York City.

The purpose of this investigation was (1) to measure the effect of working alone or in pairs on speed, accuracy and pressure in performing a simple paper and pencil maze (without culs-de-sac) and (2) to compare performance at different intelligence levels.

The Ss were 40 girls with I.Q. 50-59 and 40 girls with I.Q. 70-79. Both groups were equivalent on CA (15-17 yrs.) and on educational, economic and social backgrounds. In series 1, 3,200 trials were made alone and 3,200 in pairs, 20 trials for each S per experimental period. The groups were subdivided into 4 equal subgroups each: subgroup A worked alone 3 periods and in pairs on period 4, subgroup B did the reverse, and subgroups C and D worked alternately, alone or in pairs. In series 2, the same number of trials were made but the Ss were in different subgroups than in series 1. Scoring was made on time per trial with penalty for errors (touching lines). Pressure was measured by number of carbon impressions.

Results show, with differences statistically reliable:

1. All Ss do better in pairs than alone, high group (I.Q. 70-79) markedly so.
2. The greater the frequency of social stimulation, the better the performance.
3. High group does decidedly better than low group except when working individually before social stimulation has taken place.
4. More errors made working in pairs.
5. High group makes more errors.
6. Pressure increases inversely with speed and directly with accuracy.
7. High group increases pressure more when working individually after working in pairs.

The results are discussed in terms of relative degrees of socialized and egocentric modes of behavior. [15 min., slides.]

#### CONDITIONING IN ANIMALS

THURSDAY, SEPTEMBER 2, 1:30 P.M.

MUSIC AUDITORIUM

W. L. VALENTINE, *Chairman*

*The Diminution in the Resistance to Extinction of One Potential Trial-and-Error Response Following the Extinction of Another.*  
RICHARD E. P. YOUTZ, Barnard College, Columbia University.

While secondary extinction is now a recognized phenomenon in conditioning, several experimenters have expressed doubt as to its presence in other forms of learning.

Twenty male rats received training and extinction on two-response-tendencies of the type found in trial-and-error learning. With balanced orders for training and extinction among four sub-groups, all rats were given: (1) forty reinforced (rewarded) trials in depressing a horizontal bar; (2) forty reinforced trials in pushing a vertical bar sideways; (3) extinction by non-reinforcement on one bar; and five minutes later, (4) a similar extinction on the other bar. Rewarded and non-rewarded responses for both bars were automatically recorded on a polygraph.

Comparison of test- and control-groups during training indicates a probable positive generalization from the first-trained response to the one learned second. A combination of the data for all balanced sub-groups shows that the number of responses during the second extinction has been diminished by approximately 63%, as the result of the preceding extinction on the other bar. When the  $SE_m$  is used, the critical ratio for this difference is 4.23. While the secondary-extinction effect is clearly evident on the combined data, prediction of the size of this effect for a specific group of animals that have followed some particular training and extinction sequence would involve the evaluation of some eight variables. These are provisionally defined. [15 min., slides.]

*The Effects of Certain Drugs and Hormones on Conditioning and Extinction.* W. T. HERON and B. F. SKINNER, University of Minnesota.

If the pressing of a lever by a rat is reinforced periodically with food, the rat maintains a relatively constant rate of responding. The rate depends upon the hunger, the character of the reinforcement, and other factors. It is here examined in relation to certain drugs and hormones, together with their effect upon the process of extinction.

The animals were tested one hour daily. The reagents were administered subcutaneously in aqueous solution. Physiological salt solution was given for control records. The results, to be presented graphically, are summarized as follows: (1) *Sodium bromide*: doses of 18, 21.6, and 36 mgm. given immediately before testing on three successive days respectively, gave no consistent effect upon the rate of responding. (2) *Adrenalin*: .025 c.c. of the commercial solution immediately before testing produced a quick rise in rate followed by a sharp decline, decreasing the net rate 30%. (3) *Phenobarbital*:

11 mgm. immediately before testing had no effect; 22 mgm. completely suppressed the response within a few minutes. (4) *Insulin*: .02 of a unit administered one hour before testing increased the rate 31%. (5) *Benzedrine sulphate*: 0.5 mgm. given fifteen minutes before testing increased the rate 130%. (6) *Insulin and benzedrine together*: with above dosages and times the response was almost completely abolished in 3 out of 4 animals. (7) *Caffeine* increased the rate in optimal dosages. Beyond these it becomes depressant.

Both caffeine and benzedrine increase the rate of responding during extinction. Benzedrine has much the greater effect. During the eighth hour of extinction an appropriate dose may increase the rate beyond the value obtaining before extinction is begun.

Theoretical implications will be considered. The authors are indebted to Miss Elaine Wentink for her help. [15 min., slides.]

*Observations on the Spinal Dog.* ELMER CULLER, University of Illinois.

In a young dog the cord is completely transected near third cervical vertebra and both MM. semi-tendinosus are exposed, nerve- and blood-supply being kept intact and their distal ends cut free. When animal is suitably mounted, pressure or electric shock is applied to tip of tail three times at one-second intervals, the third application being combined with shock to one hindpaw; successive trials are spaced at 30 seconds. Representative results from one dog may be cited. At first no detectible contraction of either muscle appears when tail alone is stimulated (30 trials); upon being combined with shock to right paw (41 cases), the right muscle reacts to tail-pressure in 21 of the last 25 trials; upon omission of shock (45 cases), its response declines to 3/25; upon renewal of shock (65 cases), the ratio again rises to 22/25; finally without reinforcement (115 cases), it again sinks to 5/25. The other semi-tendinosus meanwhile remains inert throughout. The contraction, though slight, is readily visible in the exposed muscle; it resembles the semi-tendinosus reaction under curare as recently reported from this Laboratory.

Hunter and Prosser have reported extinction of certain spinal reflexes in the rat. Inasmuch as *intense* stimulation of the tail may evoke (sometimes but not always) feeble contraction of semi-tendinosus along with other movement, the question arises: does the above effect consist in depressing the (synaptic) threshold of an **existing reflex-mechanism** or in establishing a new reflex-pathway

{conditioning)? Available evidence on these alternatives and on their relation will be discussed. (With collaboration of P. S. Shurrager.) [15 min.]

*Bilateral Transfer of Conditioning in Dogs. Preliminary Study.*  
W. N. KELLOGG, Indiana University.

The right forepaw of dogs was conditioned using the buzz-shock technique. The buzz was sounded for 2 sec., and the shock overlapped the buzz for the last one-fifth sec. of the 2 sec. period. The response of the right forepaw, the left forepaw, breathing, buzz, shock and time were graphically recorded. When the right foot response to the buzz had become thoroughly mechanized, the following procedure was introduced: (1) The response was extinguished. (2) The response was reconditioned. (3) The shock was then transferred to the *left* foot. Under these conditions, the extinction of the right foot response and the original conditioning of the left foot went on simultaneously. Results permit comparison of the left foot conditioning with right foot conditioning and reconditioning; right foot extinction with right foot extinction while the left foot was being conditioned. [10 min., slides.]

*The Conditioning of Salivary and Striped Muscle Responses to Faradization of Cortical Sensory Elements, and the Action of Sleep upon Such Mechanisms.* ROGER BROWN LOUCKS, University of Washington.

A faradic stimulus applied to cortical sensory elements in an unanesthetized dog can be used as a signal for establishing conditional salivary responses or conditional limb movements. A cortical shock at a visual sensory area is commonly followed by a sharp orienting to a particular quadrant of the dog's field, suggesting that he projects the stimulus outside himself. (The dog can, of course, "see" the conditional signal equally well when his eyes are closed.) It was found possible to establish a differentiation between the cortical shock and two other conditional signals, viz., a bell, and a telegraph sounder. In this experiment the afferent limb of the neural mechanism involved in responding to the conditional signal is functionally eliminated or short-circuited. The present findings are to be contrasted with the results of a previous experiment of the writer in which a faradic shock applied to cortical motor cells was found to be

a strikingly inadequate unconditional stimulus for establishing a conditional limb movement to a signal buzzer.

A further aspect of the present study constitutes the first step in a series of investigations designed to explore the functional boundaries which, during sleep, isolate one region of the brain from another. One dog that had established a conditional salivary response, based upon acid, to a signal consisting of a shock applied to the visual cortex, was tested while asleep in the sound shielded experimental camera. The cortical shock was increased step by step to a terminal intensity sufficient to evoke an epileptoid attack, without eliciting a conditional response. (This work was begun while the writer was associated with the Phipps Clinic of The Johns Hopkins Hospital.) [15 min.]

*The Effect of Curare on the Learning Process.* H. F. HARLOW,  
University of Wisconsin.

The present study is a control for an earlier investigation on the effect of curare on the learning process.

Cats were subjected to different degrees of curare paralysis, respiration being maintained by a modified Drinker respirator. Training for conditioned responses was given at different stages of paralysis, the stages being controlled by observation of the loss of reflex responses during intravenous administration of curare. Bell sounds served as substitute stimuli, and electric shocks as original stimuli.

The following results were obtained: (1) Even when bodily movements were not entirely abolished, the capacity for formation of conditioned responses was lost. (2) At a less complete stage of paralysis, conditioned responses could be formed but not elicited until the effect of the curare had been dissipated. (3) Conditioned pupillary responses were occasionally obtained at a stage of paralysis where no bodily responses could be conditioned. [10 min.]

## CLINICAL PSYCHOLOGY I

Program Arranged by Program Committee of the Clinical Section

THURSDAY, SEPTEMBER 2, 1:30 P.M.

101 WESBROOK HALL

M. L. REYMERT, *Chairman*

*The Use of the Interview in College Advisory Work.* KIMBALL YOUNG, University of Wisconsin.

This paper deals but with one phase of a larger project dealing with the social and emotional adjustment of college freshmen at the University of Wisconsin. Our statistical analysis of the test data of this study (presented elsewhere) in which we used the Bell and Stagner inventories indicates a distinct limitation of these measures in predicting success or failure in scholastic work or in throwing light on problems of social and emotional adjustment in college.

However, a selected sample of 50 students was chosen from our larger group of 250 for further interviews during their sophomore year. From these data we hoped to secure insight and knowledge regarding various background factors of a social and emotional sort which inhibit or facilitate success in college. These students represented some who had exceeded their predicted grade point standings by .60 of a grade point, some who had fallen by like amount below expectation, and the balance who approximated their expected grade point averages. (See K. Young, N. Drought, and J. Bergstresser, "Social and Emotional Adjustments of Freshmen at the University of Wisconsin," *American Sociological Review*, April, 1937, Vol. 2, pp. 166-177.)

The analysis of these data has not been completed, but we have extensive interview notes and in addition material collected through the use of the Chassell, "Experience Variables Record." Our tentative analysis indicates, however, that such factors as home background including the student's relations with parents and siblings, religious and moral conflicts set up in college, methods of study, and the use of leisure must be taken into account in dealing with student advising.

Finally, attention will be paid to the dynamics of the interview as

a means of eliciting information and that coöperation which looks to improvement of scholastic performance and general social-emotional adjustment to college life. Some comparisons will be offered between our data and the work of the so-called "short-contact interview" recently developed in social service agencies and in personnel departments of business and industry. This in turn should throw into focus some important features needed in training interviewers dealing with clinical and advisory work in colleges. [15 min.]

*The Psychological Clinic's Use of Practical Rather than Ideal Recommendations.* GEO. A. KELLY, Psychological Clinic, Fort Hays Kansas State College.

The data consist of the follow-up records of eight hundred cases on which the Fort Hays Kansas State College Psychological Clinic has made recommendations to teachers and parents. Certain types of clinical recommendations, such as emotional catharsis, relaxation, removal of motivation, basing control upon a different assumed level of maturity, absorption of personality, use of impersonal methods, remedial teaching, increasing or decreasing social responsibility, supplementary examination, etc., are considered from the standpoint of (1) the client's ability to understand the principles involved in the recommendations, (2) his attitude of receptiveness to the recommendations, (3) his persistence in carrying out the recommendations, and (4) his reported success with the case. Certain recommendations protect the professional status of the clinic even though there is little chance of their being followed. [15 min.]

*Some Applications of Statistical Methods to Clinical Problems.* MAX L. HUTT, College of the City of New York.

An examination of the techniques for scaling psychological tests with reference to difficulty, reveals the significant fact that almost all scaling devices that are commonly employed were developed with reference to group data and for purposes of group research. It is surprising, therefore, that these same techniques were transported bodily to the scaling of individual tests intended primarily for individual diagnosis in clinical settings. The inapplicability of the assumptions upon which such scaling methods rest, and of the methods of scaling themselves, to the problems of individual diagnosis, has received scant attention in the literature. In this paper an analysis is made of these assumptions and of these methods for the



purpose of evaluating their validity in clinical practice. A similar evaluation is made of the techniques of norming individual tests.

First, a brief study is made of those methods that have actually been employed in recently constructed individual tests. The tests which are considered are: the Minnesota Preschool Test, the Arthur Point Scale, and the Cornell-Coxe Performance Ability Scale. For purposes of illustration, the New Stanford Achievement Test and the Metropolitan Achievement Tests are also examined. The theoretical considerations underlying the scaling methods are studied. Then, the applicability of the methods to clinical diagnosis is discussed. Illustration of the inapplicability of these techniques is given with actual case records. The meaning of the total scaled score, the significances of errors and of variability in relation to scaling, and the possibilities for detailed individual diagnosis are considered briefly.

A somewhat similar analysis of current norming methods is made for the Detroit Intelligence Tests, the California Mental Maturity Scale, the Cornell-Coxe Performance Ability Scale and the Pintner-Paterson Scale.

Conclusions are drawn with respect to the values and limitations of present methods of scaling and norming, and with respect to future lines of development. [15 min.]

*Abnormal Adjustments to Experimental Situations.* EDWARD B. GREENE, University of Michigan.

In order to discover and measure patterns of adjustment to experimental situations, three experiments were devised and applied to representative samples of college students, feeble-minded adults, average adults, and psychopathic subjects. Each experimental situation gave separate indications of the relative amounts of energy used in self-preservation and in general output or work. This was accomplished by comparing a person's output on two levels of complexity in the same sort of task.

The first experiment compared precision of visual discrimination of grays; the second compared precision of aiming at two sizes of small circles; the third compared precision of checking pairs of numbers, using two digits and four digits.

The results all show the same tendencies. The neurotics consistently show much greater precision and the hysterics much less precision than the normals of the same general output. The feeble-minded were found at the lower end of the normal distribution.

By using standard scores, an index of adjustment can be obtained. The correlation between these indices for the three situations were .96, .89, and .91. This indicates a highly reliable energy adjustment factor, which can be indicated quantitatively.

It is hoped that this work will clarify concepts of adjustment where energy is variously distributed. More research is needed to indicate individual variations with practice and growth, and the relations between particular drives and energy distribution. [15 min., slides.]

*Scale Calibration by the Thomson Method.* KATHERINE P. BRADWAY, The Training School at Vineland, New Jersey.

In 1926 Thomson suggested the method of accumulated frequencies for calculating mean age values and standard deviations of scale items. This method has seldom been used in the construction of year scales. Stated in the simplest terms, the method consists in summing the per cents of failures on a given item for each age level, and dividing by 100. This result represents the mean age value for that item. Corresponding standard deviations are computed by an easy additional step.

This method was used advantageously in the construction and validation of the Vineland Social Maturity Scale. The method has also been used effectively in making comparative item analyses in the performances of the sexes, the feeble-minded, the deaf, the blind. The method is particularly applicable in studying group differences, since it provides the data for calculating critical ratios for each scale item. [15 min.]

*Ohio Check List of Cultural and Fellowship Behaviors.* ESTHER ALLEN GAW, Ohio State University.

The Ohio Check List is a study of 162 specific items of cultural and fellowship behaviors. These items are essentially descriptions of mores of our civilization and contain ethical considerations only in so far as outward conventions do imply ethical attitudes. The check list uses a scale which indicates "Much Disapproval," "Disapproval," "Neutral," "Approval," or "Much Approval" of the cultural or fellowship behaviors when seen in friends or acquaintances of approximately the same age as those who do the checking.

Norms for 200 freshman women of 1927 and the same students when they were seniors in 1931 have been obtained for each individual item. These norms include means, standard deviations, the

sigma of the differences between the means, and the critical ratios of the differences between the means.

Norms have also been obtained for freshman women of 1935 with a study of their differences from the freshmen of 1927 including critical ratios of differences. In addition to that, there is a norm for 100 freshman men of 1937.

The main emphasis of this report will be given to the use of the check list in consultation with any student. The author will describe how this is done by finding the significant deviation of the individual on any items, and then proceeding to educational suggestions which grow out of the individual deviations. [15 min.]

#### SOCIAL PSYCHOLOGY

THURSDAY, SEPTEMBER 2, 1:30 P.M.

BURTON AUDITORIUM

GORDON W. ALLPORT, *Chairman*

*A Preliminary Report on Psychological Factors in Assortative Mating.* E. LOWELL KELLY, Connecticut State College.

In connection with a long-time study of factors underlying marital compatibility, engaged couples are being interviewed and administered an extensive battery of psychological tests. The course of each marriage is being studied by means of an annual follow-up for a period of seven years. Thus far, data have been obtained for 300 couples, over half of whom are already married. A preliminary analysis of the data with respect to assortative mating has been made for the first one hundred couples studied. The data include scores on the Otis SA, Bernreuter, Bell, Strong, and Allport-Vernon tests, several attitude scores, anthropometric measurements, blood groupings, and pertinent life history data. Correlations between mates on these measures range from zero to  $+.79$ ; none are significantly negative. Where assortative mating occurs, homogamy rather than heterogamy prevails. Financial support for this investigation is being provided by the National Research Council Committee for Research in Problems of Sex. [10 min.]

*Alterations in Judgment Induced by a Knowledge of Group Opinion.*

HERBERT BARRY, JR., Tufts College.

The experiment employed a modification of Moore's method of measuring suggestibility to group opinion. Subjects were not only asked to record their judgments in regard to controversial questions, but also to qualify their responses with a degree of certainty. A week later the procedure was repeated with the addition of the majority opinion.

Tabulation of all original answers opposed to the majority indicated 32.9% reversals, compared with 9.4% for answers conforming with the majority. While 22.6% of the negative answers were changed to affirmative, only 14.8% of the affirmative answers were reversed. Modifications in degree of certainty varied: when the original answer was opposed to the majority there was a marked tendency toward diminished certainty; when the original reply conformed with the majority, low degrees of certainty tended to increase, and high degrees to decrease. Final judgments thus tend to be affirmative rather than negative, to incline toward the majority, and when they do coincide with the majority to be of moderate certainty. Percentage changes for several categories indicate a striking parallel with the magnitude of psychogalvanometric deflections reported by Carl Smith in a related experiment. The autonomic approach thus furnishes a correlate by which changes on a cognitive or behavioral level may be validated.

Theoretical implications include a possible factor which might be termed *individuality* in addition to those previously reported. This quantitative approach also furnishes a preferred alternative to Lewin's postulation of "situation decision" for certain types of conflict. [15 min.]

*The Effect of Discussion upon the Correctness of Group Decisions, When the Factor of Majority Influence Is Allowed for.* ROBERT L. THORNDIKE, Columbia University.

Sets of questions were prepared, each question presenting two alternatives between which decisions were required. The materials judged included pictures, poems, newspaper headlines, and statements concerning politics, economics and geography. For each question used, some standard of the correct answer was available, either in the form of measurement or in the form of collective judgment. First each question was judged by individuals; then it was discussed in groups of four to six and a group decision was recorded. Groups were urged to strive for a unanimous verdict, but were permitted to

record split decisions. The individual judgments were accompanied by an estimate of degree of confidence. Eleven hundred fifty-five students from several colleges served for one class period each, and group verdicts were obtained for a total of 3400 problems.

For each proportion of individuals in the group originally right, the results were tabulated to show the per cent having each proportion right in the final group decision. For example, of those groups where half the individuals originally chose the right answer, 26% reached unanimous correct decisions, 9% reached correct majorities, 43% remained evenly divided, 8% reached incorrect majorities, and 14% reached unanimous incorrect decisions. These results show a tendency for the right answer to prevail in the group discussion, and this tendency is confirmed by comparing unevenly divided groups. The difference is statistically significant.

Analysis of the confidence estimates shows them to be a partial factor in determining the shift toward the right answer. [15 min.]

*The Measurement of Prestige and Prestige-Suggestibility: A Step Towards a Quantitative Rational Science of Social Behavior.*  
WALTER A. LURIE, Jewish Vocational Service, Chicago.

The development of social psychology as a quantitative rational science of human social behavior requires the isolation of significant variables, the devising of techniques for observing and measuring them, and the investigation of their dimensionality and structure. A theoretical system must be constructed, founded on the individual's demands, standards, and ability to discriminate and evaluate situations in the light of these demands and standards.

Much of the work on measurement of attitudes, nationality preferences, etc., can find place at once in such a theoretical system. These are some of the parameters in the description of the individual's ability to discriminate and evaluate.

One similar and obviously significant variable which has not as yet been quantified satisfactorily is the individual's suggestibility to the various prestige-influences operating in the situation. Conversely, the prestige-value of certain symbols in various situations must be known.

A technique is described by means of which a scale of prestige-values in any given situation can be established. Subjects are asked to compare statements as to convincingness, first without names attached, then with names attached. The statements are scaled by the method of paired comparisons, and the first scale is subtracted from the second. Thus a scale of prestige-values of the names for

the group is obtained; its unit is the rational mental unit of the paired comparison scales, and its origin is a rational one, representing zero prestige-effect. The technique has been applied to groups of students with respect to men in public life, and has shown its effectiveness; results are given. It can be applied to judgments by individuals with no essential modification. [15 min.]

*A Revised Method for the Measurement of Attitude.* RALPH H. OJEMANN, State University of Iowa.

Attitude scales of the type constructed by Thurstone evidence two major deficiencies: (1) Variations in the meaning of the "key-concept" are not recognized and (2) checking simple statements permits a maximum of verbalizing.

Data from one hundred adult subjects indicate that significant changes occur in the individual's attitude score when the meaning of the "key-concept" is varied. Data from learning studies indicate possibility of verbal transfer.

In the method of scale construction described, the subject is given tasks requiring more deeply integrated performances. Data on four scales from a total of one hundred twenty subjects indicate that in the new scales the opportunity for verbalizing is greatly reduced, the correlation with behavior under known conditions is reasonably high, and the ambiguity-value of individual responses is sufficiently low to permit a psychophysical gradation. Actual use in learning studies illustrated. [10 min., slides.]

*A Method of Breaking up Attitudes.* JAMES L. GRAHAM, Lehigh University.

The purpose of this study was to determine the workability of applying several attitude rating scales to each of a number of values such as militarism, evolution, prohibition, etc. Eight double rating scales were employed: conservation-or-alteration, validity-or-invalidity, stability-or-change (with reference to the status quo), advisability-or-inadvisability of experimentation, agreement-or-disagreement with others' attitude, faith-or-distrust in its administrators, authoritarian-or-scientific support, and intensity of pro-anti feeling tone.

Results from 200 students show: (a) low inter-correlations between scales for the same value and few identical ratings (*i.e.* little halo effect) and (b) for the different scales, characteristic differences in attitudinal shifts and strengths. Such facts indicate that systematic analysis of the component parts of an attitude yields more exact measurement than a single gross score or rating [10 min., slides.]

NOTE: In accordance with several requests, the Program Committee has scheduled all papers for the Friday morning sessions on a time basis allowing five minutes leeway for discussion of each paper. The success of such time scheduling will be dependent upon the promptness with which contributors begin their papers and the efficiency with which the several chairmen run off their programs. The Program Committee would appreciate comments from those attending these sessions to serve as a guide to future program scheduling.

## GENERAL II

FRIDAY, SEPTEMBER 3, 9:00 A.M.

101 WESBROOK HALL

D. FRYER, *Chairman*

9:00 A.M.

*A Critique of the 'Galvanic' Technique.* CHRISTIAN A. RUCKMICK, University of Iowa.

On the basis of research work covering more than a decade, certain fundamental principles can now be advanced. It is clear that (1) affective responses can generally be distinguished from responses of a non-affective type, (2) qualitative distinctions as to pleasantness and unpleasantness can not be made, (3) qualitative differentiations, with respect to what are tentatively regarded as more primitive feelings and emotions, on the one hand, and as less primitive, on the other, are possible, (4) quantitative degrees of excitement are directly revealed by the amount of the deflection as correlated with the reported algedonic tone, and (5) many other mental and bodily conditions, like those of movement, tension, relaxation, fatigue and attention are isolable factors which affect the recorded deflections.

The principles which operate to confuse the issue include (1) too great an emphasis by way of interpretation (a) upon the description of the physical stimulus or situation, (b) upon the underlying physiological mechanisms, or (c) upon the observed behavior patterns of the subject, (2) statistically manipulatory techniques which are meant to validate the experimental results, (3) unreliable and untested forms of apparatus, notably of the non-recording type and

electrodes which introduce fictitious and unknown electrical properties, (4) selection of inappropriate measures of the deflection, or series of deflections, in conjunction with the supposed affective experience, (5) inadequate or incomplete verbal comments from untrained observers, and (6) faulty and misleading terminology which is at variance with present psychological taxonomy.

If properly guarded in the manner indicated investigations ought to yield dependable results in a field that is overrun with enthusiastic workers and replete with factual material and in an area of the mental life which is as yet scarcely plumbed. [15 min.]

9:20 A.M.

*Experiments on Frustration and Regression in Children.* R. BARKER, T. DEMBO, and K. LEWIN, University of Iowa.

In this investigation the attempt has been made to describe and explain behavior occurring in psychological frustration. The behavior of children in a satisfying play situation has been compared with their behavior in the identical physical situation, when its psychological significance has been changed to that of a frustrating situation.

Thirty children, aged 2 to 5 years, were observed individually on two occasions: first, in a standardized play room; second, when the room had been enlarged and play materials greatly surpassing in attractiveness those available on the first occasion had been added. The play objects of the first play period were incorporated into the new materials as parts of more attractive wholes. After the child was thoroughly interested in the new toys, the situation was changed to a frustrating situation: the new toys were made unobtainable, though remaining visible, by placing a barrier of wire netting where the wall of the original play room had been.

The following effects of frustration appeared: (1) A mean regression in the constructiveness of play occurred equivalent to 22 months at the 4.5 year level and 5 months at the 2.5 year level. (2) In general the amount of regression was positively related to strength of frustration; however, (3) weak frustration sometimes led to a slight increase of the constructiveness of play. (4) Social and physical attempts to overcome the barrier, (5) restless actions, (6) attempts to escape from the frustrating situation and (7) substitute play occurred. (8) There occurred either a marked increase or a marked decrease in motor tension. (9) Changes in mood and in emotional expression were marked.



An attempt has been made to explain the observed behavior by interrelating the coexisting psychological environment and the structure and state of the person. [15 min., slides.]

9:40 A.M.

*Toward a Dynamic Theory of Feeling and Emotion.* J. P. SHEA, University of Kansas, and Consulting Psychologist, Kansas City, Missouri.

The purpose of this study was to investigate the relationship of *feeling* to *action* in a goal activity. Experiments covered a period of four years, 1932-36, at the University of Kansas. Twenty-one human subjects participated.

The method employed was the field theoretical approach utilizing the method of Kurt Lewin. Use was made of the hypothetico-deductive method, the language of constructs, certain concepts of topology for the ordering of the data to the field, and dynamical concepts for the dynamical description of the behavior observed. Apparatus used in the goal activity was a peg-board game with a clearly-defined goal difficult of attainment.

The chief results are: (1) In temporal relationship, feelings both of pleasantness (P) and unpleasantness (U) *followed* action in 99.37% of 786 cases. (2) *Unimpeded* action was followed by P in 99.75% of 783 cases. *Blocked* activity was followed by U in 100% of 452 cases. (3) Intensity of feeling varied directly with intensity of action. Stated mathematically, *feeling increases* when field conditions are set up that can be defined in terms of *vector increase*. *Feeling decreases* when field conditions are changed in accordance with *vector decrease*. (4) P and U are not elements of feeling in the sense of irreducible minima. (5) P and U are differentiations of a more fundamental feeling hitherto undescribed in dynamical terms. (6) The more fundamental feeling out of which P and U differentiate under dynamic conditions described in this study, is the *feeling of Tension*. It is described mathematically and dynamically and named *Tension-Feeling* (T F).

Starting with Tension Feeling and proceeding to a dynamical description of Pleasantness and Unpleasantness as differentiations of Tension-Feeling, a new dynamic theory of feeling is outlined. [15 min.]

10:00 A.M.

*Identification of Nationality in Music.* CHARLES LEONARD STONE,  
Dartmouth College.

The noted English composer, Vaughn Williams, declares that the work of a composer cannot avoid having a national character. To test the validity of student stereotypes concerning the nationality of compositions, phonograph records of French, Italian, German, and Russian orchestral works were played. The compositions selected were representative works of distinguished composers, but works which were not, however, the most familiar. Students in an elementary psychology class, musically unselected, were asked to name the composer, composition, and nationality of each composition. The data studied concerned only the compositions neither the composer nor the name of which the students knew. For each nationality the percentage of correct judgments was considerably better than chance. With groups selected on the basis of musical interest or musical competence, the ability to identify the nationality of unknown compositions would probably lend considerable support to the Vaughn Williams thesis. [10 min.]

10:15 A.M.

*What Features of a Musical Phrase Have Emotional Suggestiveness?*  
MELVIN RIGG, Kenyon College.

Twenty musical phrases were played to about 100 auditors, who recorded the emotions suggested, first without any check list, then with a list of possible answers. Sorantin's theories concerning the specific features suggesting joy and lamentation seem justified, the proportions being statistically significant. His theories involving sorrowful longing, hopeful longing, and love find support only when these terms appear in a check list. Six phrases written for the experiment produced clearer results than those taken from musical classics.

These experimental phrases were next rewritten in various ways so as to change only one feature at a time, and presented to another group of 105 observers. Fast tempo was found to weaken the effect of lamentation; slow tempo destroyed the joy effect. Other important features are staccato notes and mode (major or minor). [10 min.]

10:30 A.M.

*The Perception of Abstractions in Graphic Form.* NORMAN C. MEIER, University of Iowa.

The problem was to study the perceptual processes of high school age subjects in their response to graphic abstractions, utilizing a serial response procedure. Particularly, it aimed to discover (a) if different levels of ability to sense 'universals' in a complex abstract design exist; (b) what aids are required before the 'universals', 'expressive quality' or abstracted emotion is perceived; and (c) if special training (*e.g.* art, mathematics) facilitates perception. The material consisted of reproductions of paintings ranging in character from completely abstract through varying degrees of semi-abstractness. Group I required philosophical penetration. The procedure involved from four to eight steps, the response being recorded under instruction at each stage. The serial order included: (a) immediate reaction, (b) response following subject's identity of elements, (c) response following literal identity of elements supplied by investigator, (d) response following symbolic identity of elements, (e) reaction to proposed title and judgment on appropriateness. With Group II immediate perception was recorded involving either re-creative insight or the perceiving of artistic subtleties. The subjects were 500 high school students in Milwaukee, St. Louis, and Nashville.

Results will show relation of degree of perception to stages in the process and to general intelligence, success in art courses, environmental factors and interests. The factors of related experience and immediate information were given special attention. The findings suggest that abstract art (futurism, sur-realism, and some phases of expressionism) has too personal a reference to be intelligible to any considerable section of society, and that even artistically trained subjects are only slightly more successful in their perception of the meaning content. [15 min., slides.]

10:50 A.M.

*The Genetic Basis of Activity in the Albino Rat.* ELIZABETH GRAVES, University of Minnesota.

Although there have been numerous investigations pertaining to the inheritance of various aspects of behavior, there have been very few studies in which behavioral phenomena have been treated from

the standpoint of conformity with genetic laws. The following study has yielded information concerning those genes which differentiate among rats with respect to one aspect of their behavior.

An active and an inactive strain of rats were isolated by Rundquist several years ago. These two strains breed true; and since selection has resulted in no further separation for about ten generations, it must be concluded that they approximate a pure condition for this trait.

Activity is measured in terms of the total number of revolutions made in a revolving cage during a fifteen day period. This measure has been found to yield a reliable index of activity as measured over a much longer period of time.

To determine the genetic factors involved, it was necessary to make crosses between the two strains. The clear-cut segregation of the rats from these crosses into activity groupings identical with the parents indicates the relatively simple basis of the genetic differences between the active and inactive strains.

Activity is unquestionably dependent upon many physiological factors, but the results obtained may be ascribed to the fact that the genes for inactivity operate in such a way that the complex responsible for activity is inhibited. These results are similar to those found by Castle in his analysis of coat color in rabbits.

The number of genes and the relationships among them, particularly with regard to sex differences, are discussed. [15 min.]

11:10 A.M.

*Genetic Linkage Determination as a Method for Establishing the Basic Components of Human Traits.* BARBARA S. BURKS, Carnegie Institution of Washington.

Among the many empirical and a priori methods which psychologists have employed in their search for human traits, the techniques of geneticists have been largely overlooked. This is partly because it is difficult to identify genes in the absence of experimental breeding material, and perhaps partly because of resistance of workers in one discipline toward the techniques of another discipline.

In some "interdisciplinary" studies undertaken during the past year, I have approached the problem of traits by seeking genetic linkage relationships between certain gross, easily recognized syndromes or groups of syndromes. We should suppose that syndromes whose clinical signs are similar, but whose etiology is dissimilar, might be differentiated by determining which among other genetically

determined traits they are *linked with*. Conversely, certain syndromes which are clinically dissimilar may be shown by their genetic linkage relationships to emerge from the same genetic roots, even though environment or modifying factors have superficially obscured this fact.

In the course of this research, I have demonstrated for the first time some clear instances of autosomal linkage in man, specifically between congenital absence of lateral incisors and hair color, and between *some* myopia cases and eye color. The second instance is of greater interest to psychology, not only for its relevance to the field of sensory phenomena, but because the demonstrated diversity of myopia syndromes suggests an analogous method of investigation for the analysis of complex mental traits into their underlying biological substrata. [15 min., slides.]

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#### GROWTH AND DEVELOPMENT

FRIDAY, SEPTEMBER 3, 9:00 A.M.

MUSIC AUDITORIUM

J. E. ANDERSON, *Chairman*

9:00 A.M.

*A Study of the Reliability of the Goodenough Drawing Test of Intelligence.* DOROTHEA McCARTHY, Fordham University.

The Goodenough Drawing Test was administered to 386 third and fourth grade children on two occasions a week apart. All drawings were scored independently three times, twice by the same examiner and once by a different examiner. Three graduate stu-

dents who had just completed an intensive training period in Goodenough's method of scoring and who had attained the degree of proficiency prerequisite to independent scoring served as examiners. The data were analyzed both according to total score and by separate items.

When the identical drawings were scored by the same persons independently on two different occasions, the correlation between total scores was  $+ .94$ . Differences in point scores assigned to identical drawings by the same examiners on two occasions ranged from  $+9$  to  $-9$  with a mean difference of  $-.17$ , but when sign was disregarded this mean difference was 1.85 points or 5.6 months of mental age. The average inter-scorer correlation was  $+ .90$ .

When the same examiners scored two different drawings done by the same children a week apart, the correlation between total scores earned by the children on the two occasions was only  $+ .68$ . Differences ranged from  $+20$  to  $-20$  points and averaged  $+ .17$  when signs were regarded. These inter-drawing differences thus tend to cancel and are unimportant for group comparisons. The mean difference taken without regard to sign, however, is 3.74 points or 11.2 months of mental age, which is of considerable significance in individual diagnosis.

On the average, children were given or denied credit similarly on identical items for the two drawings 83% of the time with scorer constant. Scorers were much more consistent with themselves and with each other on certain items than on others. [15 min., slides.]

9:20 A.M.

*What the Goodenough Intelligence Test Measures.* FRANKLIN O. SMITH, Montana State University.

The purpose of the present study was to determine the reliability of the Goodenough Intelligence Test and to measure its validity against certain other criteria. In order to determine the reliability the test was given and repeated to 2600 pupils in all grades from the first to the eighth grade in one western city, in October, 1936. For the purpose of certain comparisons and intercorrelations, the test was also given to over 700 rural school children in the same community and to 125 University students in General Psychology.

To determine the reliability of the test the correlation between the first and second test scores was obtained from a sampling of 100 cases in each age group from the sixth to the fifteenth and sixteenth years of age, with the following results: 6-r .910, P.E. .0116; 7-r .913, P.E. .0112; 8-r .946, P.E. .007; 9-r .957, P.E. .006; 10-r .928,

P.E. .009; 11-r .949, P.E. .007; 12-r .918, P.E. .0106; 13-r .919, P.E. .1015; 14-r .941, P.E. .008; 15- and 16-r .844, P.E. .0194.

The validity of the test was measured against the following criteria: The California Mental Maturity Test, the Kuhlmann-Anderson Intelligence Test, the Metropolitan Achievement Test, the Every Pupil Scholarship Test, and the Otis Higher Examination.

The results of our study, in so far as comparison can be made, follow in the main those of Miss Goodenough. However, certain significant deviations from her I.Q.'s were revealed which indicate that the drawing test probably measures somewhat specialized abilities rather than general intelligence of the conventional linguistic type. Quite obviously space does not permit the inclusion of a sampling of all the results. One general conclusion must suffice, namely, that the test shows a higher correlation with mental maturity than with general intelligence. [15 min.]

9:40 A.M.

*Children's Information and Opinions.* ARTHUR T. JERSILD, Columbia University.

Children's information in selected fields (everyday events, natural history, etc.), their concepts and opinions in connection with selected topics (war, poverty and wealth, etc.), and the characteristics of their reasoning in expressing their concepts and defending their opinions have been studied by means of formal tests, private interviews and conversations. The available data include preliminary tests of 500 elementary school children in grades 1 to 6, and more intensive interviews with 50 children. The findings include evidence of: a more notable change with age in some areas of information and misconception than in others; decided differences between school groups; a large majority "vote" for war in response to minor provocations; inconsistencies between a child's defense of a general attitude and his specific prejudices; occurrence of "mature" and "juvenile" forms of reasoning in the same child, depending, apparently, on his information and experience in connection with specific topics. [10 min.]

9:55 A.M.

*Methodological Problems in a Growth Study of Adolescents,* HAROLD E. JONES, University of California.

Cumulative records, dating from 1932, have been obtained for 200 individuals in the study of adolescence conducted at the Institute of Child Welfare. The records include measurements of physical

development, motor abilities, learning, intelligence, achievement, interests, activities, and a series of observational, reputational and self report measures of personality characteristics. Related material is available from interviews with subjects and with parents. With one-half of the group utilized for more intensive study, experimental procedures provide records of metabolism; skin resistance and galvanic reactions; respiratory and circulatory functions.

A number of characteristic problems are encountered in the maintenance of such a program. Since it is not feasible to bring all aspects within the scope of a single hypothesis, we are dealing in effect with an aggregate of studies rather than a single investigation. Problems arise in determining the relative emphasis to be given to atomic vs. unified treatment of the data; descriptive vs. analytic treatment; growth portrayal vs. the treatment of successive cross-sections; studies of the group vs. the individual. The following special problems call for consideration: sampling problems, arising from restriction of the study to persons who will be available over a long term; the problem of maintaining comparable techniques of measurement; cooperation problems, in controlling motivation throughout a series of repeated measurements; the problem of the effect of the investigation upon the subjects of the study; statistical problems in (a) the choice and testing of methods for the transformation of scores, (b) the determination of trait clusters or composites, (c) the restriction or consolidation of variables for correlational study, (d) the selection of relatively homogeneous groups of subjects for special analyses, (e) the development of methods for describing individual growth curves, (f) the profile study of individuals. Results of the study are discussed briefly, in relation to the foregoing problems of method. [15 min., slides.]

10:15 A.M.

*An Illustrative Case in a Comprehensive Growth Study of Adolescents.* W. JAFFRAY CAMERON, University of California.

Profiles of standard scores were examined for one member of a group included in an eight-year growth study of adolescents. The interrelationships of the following panels of data are considered in appraising the growth history of this one individual; physiological determinations, anthropometric measures, observations of social behavior, a schedule of ratings delineating the development of heterosexual interests, adjustment inventory scores, measures of reputation among classmates, optometric records, reading ability and school.



achievement scores, home visit records, and vocational interest data.

Comparable scores for the various panels of measurement are presented for this individual as a means of illuminating problems of interpretation of data gathered in a comprehensive study of growth characteristics and personality development. [10 min., slides.]

10:30 A.M.

*Reported Interests and Activities of 3,000 Adolescents.* GEORGE K. BENNETT, The Psychological Corporation.

Results from the administration of Link's Inventory of Activities and Interests to several thousand pupils of approximately high school status are reported. Interests in sports, hobbies, movies, and school subjects are considered in relationship to four personality traits, age, grade, and number of siblings.

The data used have been collected by psychologists and educators throughout the United States. Each grade from junior high school through the second year of college has been sampled. For smaller samples, intelligence test and other personality test scores have also been obtained. Approximately half the group were rated as to leadership and scholarship by teachers. Correlations and critical ratios for the various relationships are presented.

The results indicate that scholarship and intelligence have little relationship to the personality traits measured. Teachers' preferences as to leadership among classmates distinguish only approximately between the more and less aggressive individuals. [10 min., slides.]

10:45 A.M.

*Mental Development from Preschool to College.* BETH L. WELLMAN, Iowa Child Welfare Research Station, Iowa City, Iowa.

The mental development of 79 children has been followed from the preschool and primary ages into college, with consideration of prediction and of factors producing changes in the course of mental growth. University entrance examination percentiles have been obtained for 21 children whose initial Binet I.Q. was secured at preschool entrance and 58 nonpreschool and primary children whose initial examination was made at a mean age of 73 months. American Council of Education Intelligence Test percentiles at senior high school were also obtained for 82 children, of whom 41 were preschool children and 41 were nonpreschool-primary children. Vary-

ing amounts of enrollment in the University Experimental Schools were represented within each group.

The study shows:

That intelligence at these early ages was significantly related to ability at college entrance and to intelligence at senior high school.

That the type of childhood school environment was a significant factor in later status. Length of enrollment in a school environment known to be stimulating to intellectual growth was significantly related to later ability. The multiple  $r$ , combining initial I.Q. and length of such enrollment, was .73 with the Council test and .60 with the college entrance percentile.

That the acceleration in I.Q. which was associated with preschool attendance appeared to leave a permanent effect upon intellectual ability, other childhood conditions being equal.

Individual curves of mental growth based on Binet tests showed in some instances steady acceleration from initial average I.Q. to "genius" levels at fourteen years, in some instances no essential change. These differences were in large measure accounted for by school environment and were verified by Council test and college entrance standing. [15 min., slides.]

11:05 A.M.

*Chronological Age and Several Kinds of Superior Performance.*

HARVEY C. LEHMAN, Ohio University.

In the most recent edition of his *All Sports Record Book* Frank G. Menke lists for approximately 90 kinds of sport the following information: (1) the names of the yearly champions, (2) the national and world recordholders, and (3) the years during which the various champions won or retained their honors. In order to determine the chronological ages of the champions at the time they exhibited their extraordinary abilities, it was necessary to know their birth dates. For several years the present writer has been attempting to obtain this latter information from the secretaries, or other executives, of organizations which control, or sponsor, the various sports.

For certain types of sport the birth dates of the outstanding performers are simply not available, for others it has been possible to obtain the desired information. For example, the executive vice-president of the National Rifle and Pistol Association assembled and forwarded the birth dates of 307 marksmen who, collectively, had won 614 local, state, regional, national and world championships. Similar, though less extensive, data have been secured for the most

outstanding billiardists, bowlers, golfers (both professional and amateur), tennis players, auto racing champions, and the like. These data have been assembled, separately for the various age groups, and analyzed. The findings can best be presented by graphs and tables which reveal the chronological ages at which the various types of performers have achieved their very best records. [15 min., slides.]

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#### CORTICAL FUNCTION AND CEREBRAL ELECTROPHYSIOLOGY

FRIDAY, SEPTEMBER 3, 9:00 A.M.

BURTON AUDITORIUM

C. E. SEASHORE, *Chairman*

9:00 A.M.

*The Effect of Occipital Lesions on Visually-guided Behavior in the Monkey.* PAUL H. SETTLAGE, University of Wisconsin.

The effect of occipital lesions on visually-guided behavior was studied in seven macaques. Unilateral lesions were first produced in all the animals (complete lobectomies in six cases). As a second part of the experiment, the effect of bilateral lesions of ascending order of magnitude was studied in five of the cases.

A standard battery of 20 items, including tests of delayed reaction and insight behavior, and discrimination of distance, pattern, brightness, and color was used. Additional tests and variations of the standard tests were used in those cases in which it seemed to be indicated.

Residual loss, as measured by the standard test battery, was found to be minimal, regardless of the amount of tissue which had been removed. Certain of the tests gave evidence of the existence of temporary disability, such disability being found both after the first and after the second operation. The loss was particularly prominent in the discrimination of "multiple string" patterns. Analysis of the data obtained indicated that restriction of the visual field rather than gnostic disorders accounted for the disturbance. The data also showed that recovery of ability to solve the tests was largely a matter of learning to readjust to the changed visual field.

The general conclusions supported by this study are: (1) Impairment of visually-guided responses, as a result of occipital lesions, is proportional to the extent that such responses depend upon the discrimination of spatial relationships. (2) The animals exhibit a marked capacity to readjust to visuo-sensory deprivation resulting from cortical destruction. (3) Capacity for adaptive behavior shows no decrement as a result of lesions of the character which were produced.

These experiments were carried out in coöperation with Dr. H. F. Harlow and Mr. W. F. Grether. [15 min., slides.]

9:20 A.M.

*Brain Function and Postoperative Learning in Audition.* L. A. PENNINGTON, Western Illinois State Teachers College, Macomb.

In two studies previously reported on the cortical mechanisms involved in the auditory localizing behavior of the rat evidence was presented which indicated definite disturbances in behavior following the extirpation of certain brain areas. This disturbance in behavior was found to be roughly proportional to the extent of symmetrical lesions within the auditory cortex of the two hemispheres. All forty-four operated animals of this group were able to re-acquire the auditory response with training.

These findings suggested the outline for the present problem, the purpose of which has been to determine the effect of cortical operation upon postoperative learning of the rat in the same localizing apparatus used earlier. Twenty-five rats were given cortical operation in and about the critical auditory field delimited from histological and behavioral data of previous studies. These animals were then trained to run in the direction of the sounding buzzer for food (positive response).

The chief results of the study follow. 1. No animal was retarded in postoperative learning of the auditory localizing behavior pattern. 2. The absence of retardation cannot be explained in terms of the preferences of the animals to run toward the sound stimulus. 3. The study of the degree of secondary degeneration within the medial geniculate nuclei substantiates to a close approximation the location of the auditory cortex.

These findings in the auditory modality relative to postoperative cortical function tend to parallel the results of Lashley and others in studies upon the visual mechanisms of the rat. [15 min., slides.]

9:40 A.M.

*Behavioral Changes Associated with Lesions of the Frontal Lobes in Monkeys.* C. F. JACOBSEN, Yale University and F. V. TAYLOR, Princeton University.

The influence of sub-total lesions of the frontal lobes in *Macaca mullata* was studied to determine: (1) the nature of deterioration as indicated by the delayed response technique, and (2) the more precise localization of the cortical areas essential to performance of delayed response.

Three series of preoperative tests, given at intervals of four weeks, served as a standard of comparison for similar tests following sub-total, bilaterally symmetrical lesions of the frontal lobes. Slight injuries resulted in transient disturbances with extensive recovery in the course of several months. Larger lesions resulted in a more lasting deficit which was manifested as reduction of the delay after which the subject responded correctly on the delayed response. There was little change, however, in the accuracy of performance at the shorter delay intervals.

The experiments indicate that the portion of the frontal lobe focally concerned with delayed response consists of the extreme frontal pole and the tissue lateral to the frontal sulcus. In collaboration with Dr. Earl Walker the relation of this region of the cortex to the thalamic nuclei has been studied. The anatomical findings and related physiological observations will be considered in relation to the behavioral studies. Dr. G. M. Haslerud of the University of Tennessee collaborated in this investigation. [15 min., slides.]

10:00 A.M.

*Brain Mechanisms and Umweg Behavior.* I. KRECHEVSKY, Swarthmore College.

This is the fourth of a series of experiments reported to this Association concerning the function of the cortex in some of the basic processes involved in learning. The questions investigated in the present experiment can be phrased as follows: Given a problem which can be solved by either an *umweg* or a direct solution, with the *umweg* solution being more efficient, will the normal rat finally adopt the *umweg* solution? Secondly, what part does the cortex play in such behavior? An *umweg* solution is defined as any solution which involves a sensory or motor detour in an initial "direction" opposed to the final "direction" of the goal.

Seventy-six normal and operated rats were run in an apparatus which first required the animal to choose the lighted of two alleys and then permitted him a choice, within the lighted alley, between two paths, one of which, the shorter, necessitated "leaving the field" of the visual stimulus, and the other, the longer, permitted the animal to keep the light in his field of vision until the goal was reached. The former solution was therefore the *umweg* solution; the latter, the "direct" solution.

On the basis of the data thus obtained the following conclusions are suggested: (1) A normal rat is capable of adopting an *umweg* solution in the situation here described; (2) An animal with a relatively minor cortical lesion shows a decided decrement in this *umweg* capacity, not only when presented with the problem initially, but also after extended experience with the requirements of the problem; (3) No correlation between the size or locus of the lesion and *umweg* capacity seem to exist.

Some theoretical considerations of the *umweg* phenomenon in the adaptive process are discussed. [15 min., slides.]

10:20 A.M.

*Electrical Activity of the Brain in Children and Adults.* DONALD B. LINDSLEY, Brush Foundation and Western Reserve University.

By means of appropriate amplifying and recording systems brain potentials were recorded in 75 adults and 250 children ranging in age from 1 month to 16 years. Records of the "spontaneous" electrical activity of the brain "at rest" (*i.e.*, in the absence of special stimulation) revealed four distinct types of waves. In addition to

the familiar alpha and beta rhythms there were slow waves of .8 to 1.5 seconds in duration and faster waves ranging in frequency from 12 to 25 per second, often appearing to be the approximate multiple of the alpha rhythm.

All types of waves increased in frequency with age in children but the alpha waves showed the most distinct change. Alpha waves, whose typical frequency in adults is about 10 per second, first appear in children in rhythmic form at approximately 3 months of age at a frequency of 3 to 4 per second. The frequency increased with age until the adult level was reached at 10 to 12 years of age. The development of the alpha rhythm as a function of age in children will be discussed in relationship to measures of physical and mental growth.

Modification of the spontaneous pattern of waves by sensory and emotional stimulation was observed in children only a few months of age, but the effect was frequently different than that observed in adults.

Simultaneous records from homologous areas of the two hemispheres in right or left handed subjects may vary slightly in form or pattern but tend to be in phase whereas those of ambidextrous subjects are frequently asynchronous and show spontaneous blockings in one hemisphere or the other. [15 min., slides.]

10:40 A.M.

*The Dependence of the Electro-Encephalogram upon Intelligence Level.* GEORGE KREEZER, The Training School at Vineland, New Jersey.

A number of reports have appeared upon changes which occur in the electro-encephalogram (E.E.G.) with increase in age of mentally normal children. Such results do not indicate whether the changes found are associated with the variation in mental age or that in chronological age. The use of mentally deficient subjects makes it possible to hold chronological age constant as mental age varies, and thus to determine the influence of the mental age variable. Different types of mental deficiency are considered in separate groups. The types examined include the hereditary type of mental deficiency, mongolism, phenylketonuria, hydrocephalus, microcephalus, and cretinism. Previous reports have been given of preliminary results obtained with "hereditary" and mongolian groups. On the basis of additional data, the present report will attempt a more comprehensive answer to the question raised above.

For records obtained over occiput of chronologically adult subjects, some of the chief results were as follows: A variation of the E.E.G. with Binet mental age was found in the hereditary type of deficiency and in mongolism. The variation is not continuous, but seems to occur in sudden steps at certain points of the mental age scale. Such steps are located at different points for the two types. Subjects of higher M.A. tend to differ from those of lower M.A. in (a) a greater prevalence of regular alpha rhythms, (b) a greater amplitude of waves, and (c) a greater frequency of waves in regular rhythms. Marked individual differences occur at any given mental age level. Marked differences are also found between different mentally deficient types of equivalent mental age level. Other results relate to influence of mental age and I.Q. in young subjects. The theoretical significance of these results will be considered. Mr. Franklin W. Smith assisted in this study. [15 min., slides.]

#### CONDITIONING IN MAN

FRIDAY, SEPTEMBER 3, 2:30 P.M.

BURTON AUDITORIUM

C. P. STONE, *Chairman*

*Transference of Excitatory and Inhibitory Conditioning to an Antagonistic Muscle Group.* DELOS D. WICKENS, The University of North Carolina.

After conditioning an extensor withdrawal movement of the middle finger to the sound of a buzzer, the hand was turned over so that a flexor movement must be made to remove the finger from the electrode. Ten out of the 18 subjects showed immediate transference of the conditioned response by responding with flexor movements when the buzzer was sounded, while the remaining eight subjects required very few reinforcements to establish this response. In one case an interesting exception occurred. A control group was given shocks alone in the extensor withdrawal position to a number in excess of the mean number used in conditioning the extensor response of the experimental group. The hand was then turned



over to the flexor withdrawal position and the buzzer alone sounded: as a group they did not show responses to the buzzer alone until a number of reinforcements were given.

In a second experiment with six subjects the extensor conditioned response was first established, and then the transferred flexor response was extinguished. The hand was then turned over and it was found that extinction of the flexor response had served to extinguish the extensor response also.

The experiment offers evidence that both conditioned excitation and conditioned inhibition can be transferred from one muscle group to its antagonist. [15 min., slides.]

*Some Comparisons Between Reflex Inhibition and Summation and the Time Error Function.* HELEN PEAK, Randolph-Macon Woman's College.

Paired (and single) tones were presented at 170 and 270 millisecond intervals, the first tone varying in intensity, the second remaining constant. Five subjects judged absolute intensities of all tones on a nine step scale. Lid responses to the same stimuli were recorded photographically. Results confirm the presence of a positive time error and reflex inhibition at these intervals and show that the loudness of the tone and the amplitude of the reflex to the second constant stimulus tend to decrease as the intensity of the first stimulus increases. For both reactions this effect is greater at 170 milliseconds, except when the first stimulus is very weak. Summation effects are evident in the greater loudness of paired as compared with single tones and in the reinforcing effect of sub-threshold stimuli (in one subject). [10 min., slides.]

*The Relative Permanence of Conditioned Excitation and Inhibition in Man.* ERNEST R. HILGARD, Stanford University.

Excitatory and inhibitory tendencies were produced under comparable circumstances by conditioning discriminatory eyelid reactions to visual stimuli. The positive stimulus was invariably reinforced by an air-puff to one cornea; the negative stimulus was never reinforced. Thirty-one subjects were retested following the establishment of the discrimination, 5 after intervals of 4 to 7 months, 15 after 8 to 10 months, and 11 between 12 and 18 months after original conditioning. Persistence of conditioning and of discrimination over periods of time up to a year and a half was evidenced

by the retests. The results show that conditioned inhibitory tendencies, often thought to be transitory, may under appropriate circumstances endure as long as excitatory tendencies. Mr. Lloyd G. Humphreys collaborated in the retention tests. [10 min., slides.]

*Differential Factors in Conditioned Voluntary and Conditioned Involuntary Responses.* DONALD G. MARQUIS, Yale University, and JAMES M. PORTER, Carnegie Institute of Technology.

If a stimulus (light) is repeatedly followed by a weak sound stimulus to which subjects have been instructed to wink, conditioned winking to the light may be established. This conditioned voluntary response may be directly compared with the response established by pairing the light with an air-puff stimulus which elicits involuntary reflex winking.

Significant differences between the two types of responses are found. Conditioned voluntary responses are brisk, complete lid closures whenever they occur; conditioned involuntary responses are small and show recruitment. Curves of acquisition and extinction of conditioned voluntary responses do not show the gradual and progressive changes characteristic of conditioned involuntary responses.

Under typical experimental conditions favorable for establishing conditioned involuntary winking; it was almost impossible to secure any conditioned voluntary responses. Analysis indicated that the adoption of a discrimination set by the subjects, evidenced by the long reaction time to the sound stimulus, was the effective factor preventing responses to the light. Reduction of the intensity of the light, elimination from the instructions of any mention of the light, and elimination from the experimental procedure of any isolated presentations of the light broke up the discrimination set, shortened the reaction time, and greatly increased the incidence of conditioned voluntary responses. The same changes, however, reduced the amount of conditioned involuntary winking.

These results indicate that conditioned voluntary responses are descriptively and functionally different from comparable conditioned involuntary responses, and demonstrate that discrimination set is an important variable in the former. [15 min.]

*A Comparison of Supra- and Subliminal Auditory Stimuli in the Conditioning of the Pupillary Response.* LYNN E. BAKER, University of Wisconsin.

An earlier study showed that the pupillary response can be conditioned to a subliminal auditory stimulus, and that such condition-

ing is accomplished in two stages. The limen is defined as that intensity below which the subject is not aware of the occurrence of the stimulus. The conditioned stimulus could be varied in intensity by means of an audiometer, and the course of conditioning was observed by use of the delayed conditioning procedure with an anticipatory response.

In the present study, data have been gathered on (1) a comparison between conditioning to sub- and to supraliminal intensities of the conditioning stimulus, (2) experimental extinction, and (3) retention of the conditioned response. The following conclusions seem to be justified:

1. The conditioned connection is more quickly and easily established when the conditioning stimulus is subliminal than when it is supraliminal.

2. Experimental extinction generally does not occur.

3. There is little or no forgetting of the conditioned response over a period of 13 to 20 months. [15 min., slides.]

#### ANIMAL LEARNING

FRIDAY, SEPTEMBER 3, 2:30 P.M.

#### MUSIC AUDITORIUM

JOHN A. MCGEOCH, *Chairman*

#### *The Influence of Trace-Aggregation in Problem-Solving in Rats.*

N. R. F. MAIER, University of Michigan.

It is the purpose of this investigation to determine whether or not the ability to keep experiences separate and unique plays a part when an animal is required to combine certain isolated past experiences in such a manner as to achieve a goal.

The simple three table reasoning test previously utilized was used, but instead of giving one test per day, five different test combinations were given in succession. If keeping separate experiences unique is a factor in problem-solving, such repetition of tests should result in a reduction in performance.

The results show that on the first two tests of the day, the scores were approximately the same, and on the last three tests of the day the scores also approximated each other, but were decidedly lower

than those made on the first two tests. The average score for the first two tests was 79.9% correct, and that for the last three was 59.4%, a reduction of 25.6%. For rats with cortical injuries, this reduction was 42.2%, indicating that the giving of several tests in succession increases the qualitative complexity of a problem.

Since the reduction in score occurred only after the second test of the day, it became necessary to analyze the cause of this lower score. The evidence shows that a specific kind of confusion enters the situation after the second test. By altering the situation, the reduction in score could be caused to fall after the third test. The Gestalt theory of memory traces is utilized to explain the nature of this confusion. Mr. Quin F. Curtis of Cornell University collaborated in this investigation. [15 min., slides.]

*A Study of the Cat in the Puzzle-Box.* E. R. GUTHRIE and GEORGE P. HORTON, University of Washington.

Observations of cats in the puzzle-box convinced the authors that successive escapes by individual cats involved stereotyped habit sequences to an extent beyond that recognized in such descriptions as those of Thorndike and D. Adams. A box of a new design was built. The release was effected by tilting in any direction a pole with a semi-spherical base. This allowed release by a variety of movements such as biting, clawing, stepping, rubbing, rolling, backing, etc. Since the pole always returned to the same initial position (which was not true of the Thorndike apparatus or that of Adams), successive escapes by repetition of the same movements were possible. By this design and by introducing the cats into the box in more uniform fashion, by recording the final act of escape with a camera operated electrically by the escape mechanism itself, and by following the behavior of the cat preceding escape with two observers and occasional motion pictures, it was observed that, although no two cats used the same method, the successive escapes of any individual cat showed an unexpected number of final movements substantially identical. This "substantial identity" included minor systematic changes.

In addition to this, many comparatively long series of preliminary movements were shown by observation and motion pictures to be repetitive.

Theoretical implications of these results will be considered. [15 min., slides.]

*An Experimental Study of the Effect of Punishment on Discrimination Learning.* C. H. HONZIK and E. C. TOLMAN, University of California.

A series of experiments by Muenzinger demonstrated a significant acceleration of discrimination learning in rats when the animals were electrically shocked or forced to jump a gap in correct responses or in both correct and wrong responses. The object of the present study was to determine how the jumping of a gap, i.e., the administration of a mild punishment, serves to accelerate learning. Groups of rats were trained to choose the white door in a pair of black and white doors, some groups being forced to jump an 8-inch gap placed just in front of the doors, and other groups with the gap further away from the doors. The groups with the gap close to the doors learned significantly more rapidly than those with the gap further away. The animals were then trained to the black door as correct and the groups with the gap previously near the doors were given a gap further away, while those with the gap previously at a distance were given the gap close to the doors. The same difference in speed of learning appeared between the groups, but the groups previously accelerated were now retarded. In other words, with the jump (mild punishment) removed some distance from the significant stimuli (black and white doors), there was no acceleration in learning. These results, with careful observation of the animals' behavior, clearly indicated that the effect of punishment, and perhaps of other auxiliary stimuli, is to produce a greater attentiveness to the significant stimuli of the learning situation, and account for the paradoxical finding that punishment for right responses accelerates discrimination learning. [15 min.]

*The Relationship Between the Amount of Intact Cerebral Cortical Tissue and the Critical Values of Thurstone's Theoretical Learning Curve.* L. E. WILEY, Ohio Wesleyan University.

The error function of the theoretical learning curve developed by L. L. Thurstone has been fitted to maze data from rats subjected to cerebral cortical insult. There are 125 cases with brain injury and 60 normal cases. They were divided into four groups. Each group was trained on a variable maze, which differed only in number of culs-de-sac. All were trained on a constant maze. There are 370 learning curves. The analysis has developed new ways to measure learning.

Thurstone's curve is

$$u = \frac{\sqrt{m}}{aK} - \frac{\sqrt{m}}{K} \cdot \frac{u}{R}, \quad (1)$$

where (u) is the accumulated errors, (R) the number of trials, (m) the difficulty of the problem, (K) the learning constant of the subject and (a) an arbitrary constant. Since we do not know when *learning begins* we used the form where (u) and (R) are measured from the point where *training begins*.

$$u = A + \frac{BR}{C + R}, \quad (2)$$

where (u) and (R) are the same as in (1), and (A), (B) and (C) are the constants of the curve. (2) can be readily derived from (1).

The relationship between the amount of intact cortical tissue and the critical values of the theoretical curve are demonstrated and in turn compared with the usual criteria of learning. The critical values of the theoretical curve are, (1) the horizontal asymptote, (2) the semi-major axis, (3) errors at the vertex and, (4) trials at the vertex. The vertex is the point where the animal is making errors at the rate of one error per trial.

We have solved for the difficulty of the problem, (m) and the learning constant, (K) of the subject and have shown the relationship between the learning constant and the amount of intact tissue. I wish to acknowledge the aid of A. M. Wiley. [15 min.]

## CLINICAL PSYCHOLOGY II

PROGRAM ARRANGED BY PROGRAM COMMITTEE OF THE  
CLINICAL SECTION

FRIDAY, SEPTEMBER 3, 2:30 P.M.

101 WESTBROOK HALL

F. N. MAXFIELD, *Chairman*

*Methods in Studying the Relationship between Sidedness and Dysphemia.* BRYNG BRYNGELSON, University of Minnesota.

From the studies made at the University of Minnesota during the last three and one-half years, three striking differences between stud-

terers and non-stutterers are indicated. There is about four times as much ambilaterality in the stutterers as compared to that in the controls. There is eight times as much shifting of handedness in the stutterers. The third factor of interest is that while 55% of non-stutterers are strictly one-sided in sighting and manual activities, only 12% of the stutterers are strictly one-sided. Stutterers seem to come, not only from a stuttering stock, but from a left-handed stock. Both of these factors show up to a high degree in most thorough-going studies of stutterers. There are about 50% more left-handed boys than there are left-handed girls. This may have some bearing on the fact that there are about 50% more male stutterers than female stutterers. The tampering with the native handedness or the inherent neurologic setup of a child may produce abnormal speech.

There have been many studies attempting to prove or disprove a relationship between the factors of handedness and speech difficulties. Those who disbelieve in this relationship have come to their conclusions from questionnaire studies, while those who are inclined to think there is a relationship have come to their conclusions as the result of more thorough-going clinical studies of handedness. The difference of opinion largely is due to the fact that the problem has been approached from different points of view. We have found at Minnesota that it is impossible to get the exact information as to the history of handedness, shifting, and stuttering from questionnaires.

The causes of dysphemia are not very well known as yet. This is probably because we haven't studied the problem scientifically long enough as yet. We do know more about its development and its dire consequences than about its etiology. [15 min., slides.]

*The Influence of Thyroid Treatment upon the Mental Growth of Cretins.* ANDREW W. BROWN, Institute for Juvenile Research.

The results reported in this study were secured from psychological tests given to a group of 32 children diagnosed as cretins in the Department of Pediatrics of the University of Illinois, College of Medicine. There were 12 boys and 20 girls ranging in age at the time of the last examination from 3 to 20 years. The children have been examined yearly over a period of time. During this time, active and persistent thyroid treatment has been carried on. Four cases have been carried for six years, four cases for five years, twelve cases for four years and twelve cases for at least two years. The Stanford-Binet was used for the older children and the Kuhlman-Binet or the Minnesota Pre-School Test was used for the very young children.

The Goodenough Drawing Test and Performance Tests were also given to a number of the children.

Siblings of a random selection of the cretins have also been examined. The average I.Q. of the cretins was 60 with a range of 35 to 77 and of the siblings 95 with a range of 78 to 136.

Results of the study indicate, (1) that early recognition and persistent treatment thereafter is the important factor in ultimate mental development; (2) that most of the children with treatment, will at maturity have a mental age between seven and nine years.

This study was carried out in coöperation with Dr. I. P. Bronstein of the Department of Pediatrics, University of Illinois, College of Medicine and Research and Education Hospital.

Acknowledgment is made to Mrs. Ruth Kraines and Mrs. Dorothy Ewers for assistance in this work. [15 min., slides.]

*Critical Factors in Educational Placement.* ROY F. STREET, Battle Creek Public Schools.

There are a few factors which seem to be important in the successful placement of children in educational groups: Success to be determined by the desire of the child to remain in a group when every opportunity is given for change. The data were collected in a school of nine hundred children, grades from Kindergarten through the eighth. The age grade factor was constant and the wide range of talent provided for by longitudinal grouping: Groups expanding from one in the Kindergarten to seven in the eighth grade. The curriculum varied to meet group needs. Out of a wide battery of measures, four were selected which seemed to be critical in relationship to the placement: Intelligence as measured by Binet-Simon test; Reading as measured by the Gray's Oral Reading test; Social maturity as measured by the 1936 revision of the Vineland scale, and a locally devised socio-economic scale.

Analysis of these factors seemed to indicate that if intelligence were used as the sole basis of placement, the group would be homogeneous in relation to this factor, reading and social maturity; but heterogeneous in relation to socio-economic status. If reading were used as the sole basis of placement, the group would be homogeneous in relation to this factor and intelligence, but heterogeneous in relation to social maturity and socio-economic status. If social maturity were used as the sole basis of placement, the group would be homogeneous in relation to this factor, intelligence and socio-economic



status, but heterogeneous in relation to reading. If the socioeconomic status were used as the sole basis of placement, the groups would be homogeneous in relation to this factor and social maturity, but heterogeneous in relation to intelligence and reading.

The most important conclusion seems to be that no grouping can give homogeneity in relation to all factors, and that whatever factor is used as the basis for placement, deviations in all other factors may occur and must be given due consideration. [15 min.]

*The Prediction of Delinquency from Early Behavior.* WILLARD C. OLSON, University of Michigan.

In the year 1925-26, personality measurements were secured for approximately 3,000 children. The majority of these were just entering school, although some were in the upper grades and one large group was in the junior high school. The records of conduct and personality that were obtained were believed to be important indicators of whether a child was well adjusted or not at that time. The court records of these children were followed for a period of ten years to see whether or not those children showing strong tendencies toward problem behavior actually became delinquent. The present report is based upon the analysis of the data of the first six years of the study, and suggests, in general, that those children who come into the juvenile court for delinquency are the ones for whom such a career would have been predicted in advance. It is rather exceptional for a child with a desirable score on the problem tendency scales to come into any contact with the court, and, if he does, it is likely to be for some minor offense such as an act of carelessness or mischief, traffic violation, or a similar problem. These children are usually promptly dismissed by the court without any action being taken or the case is held open with no further action contemplated. They seldom come in a second time. Children with high problem tendency scores, on the other hand, are more likely to come to court, to have serious problems, and to be repeated offenders. The actions of the court tend to be more rigorous in placing them on probation or committing them to county or state reform schools. [15 min.]

*A Comparative Study of Stability and Maturity of Non-Delinquent, Pre-Delinquent, and Delinquent Boys.* FRED BROWN, Pennsylvania State College.

The populations of three summer camps were used in this study. These consisted of (1) ninety-one non-delinquent boys of average

socio-economic status; (2) one hundred and twelve pre-delinquent boys of low socio-economic status; (3) seventy-one delinquent boys of low socio-economic status. Each group was under close supervision of trained counsellors for a period of two weeks. The degree of rapport established during this period made possible the administration of the Brown Personality Inventory and the Furfey Developmental Age Scale (Revised). The following results were obtained:

(1) Non-delinquents scored higher developmental ages (D.A.'s) and developmental quotients (D.Q.'s) than did the pre-delinquents. The non-delinquents were also more stable emotionally, exhibited fewer physical symptoms indicative of nervousness, and made better security, irritability and school adjustment scores.

(2) Non-delinquents and delinquents differed little in developmental age. A very significant difference in developmental quotient favored the non-delinquent group. The non-delinquents were more stable emotionally and superior in home adjustment, security, and physical health.

(3) Pre-delinquent boys had significantly superior developmental quotients when compared with the delinquents. No difference in gross stability score was found, although the pre-delinquents were better adjusted in the home while somewhat more irritable than the delinquents.

The factors of socio-economic status and supervision by a social agency are discussed in connection with the above findings. Two control studies are cited in support of the contentions made. [15 min.]

*A Study of Runaways from a Correctional School.* ZENA C. O'CONNOR, Board of Education, New York City.

The problem was to determine what characteristics differentiate the runaway from the non-runaway in a correctional school, using no artificial restraints; what constellation of environmental factors are associated with running away, and what treatment procedures can be developed as preventives.

All boys (numbering 119), who had run away one or more times from a large school for problem children, were selected for the experimental group. 125 boys who had never run away during a residence of one or more years formed the control group. Objective measures on seven counts were obtained and compared for the two groups. These included, Stanford-Binet I.Q., emotional stability, etc. Sup-

plementary data from the institution files were also tabulated for comparative purposes.

A questionnaire, devised to explore six areas of the boy's social adjustment, was given in personal interviews to twenty controls and twenty runaways.

The findings indicate that the causes for running away are not fully explained by a comparison of central tendencies of objective measures. The interview is needed to supplement the statistical investigation. The runaway is reliably older than the control, and has had greater experience in running away, truancy, etc., before commitment. A greater percentage fails on parole. (Latter fact was determined by a follow-up study made six years after selection of the two groups.) Questionnaire shows the runaway to be less flexible in making adjustments, to have fewer outlets for self-expression, and to be more interested in physical activity.

Preventive treatment programs in the institution will require further study of the following problems: Assignment and transfer of boys to cottage groups; Merit system whereby boys earn release from the school; Training of cottage personnel; and Methods of adapting routines to individual needs. [15 min.]

#### PERSONALITY

SATURDAY, SEPTEMBER 4, 9:00 A.M.

#### MUSIC AUDITORIUM

G. HILDRETH, *Chairman*

#### *Muscular Tension and Social Adjustment in Pre-Adolescent Children.*

F. H. LEWIS, Harvard University.

There is considerable experimental evidence relating muscular tension to various aspects of personality. It has been suggested occasionally that tension may be used as an "index to temperament." Using adequacy of social adjustment as a basis for selecting differing personality types, an adaptation of the Luria technique was employed to discover possible differences in muscular tension between well adjusted ten year old school children and those poorly adjusted. The study is the first of a series designed to reveal general features of

behavior characteristic of social adjustment. The method of selection of cases, procedure and experimental findings are reported. A theoretical formulation is offered. [10 min.]

*An Item Analysis of the Adjustment Questionnaire.* EMMA McCLOY LAYMAN, State University of Iowa.

This study consists of an analysis of 782 personality test items taken from 16 tests of the questionnaire type. On the basis of the analysis, items are evaluated with reference to their purity, validity, objectivity, and reliability.

Following a preliminary analysis of the 782 items, a questionnaire of 97 items of the yes-no-? type was administered anonymously to a group of 276 freshman men. A rough scoring system was devised by formulating "criterion groups" of items for each "trait" tested. These criterion groups were formed on the basis of ratings made by seven selected judges. Bi-serial correlations were computed between each test item and each criterion group. On the basis of these results, the list was reduced to 67 items. Tetrachoric correlation coefficients were computed between the 67 items, and these were submitted to a factor analysis, using Thurstone's technique. It was found that at least 12 factors are necessary to account for the intercorrelations between the items. These factors are tentatively identified.

An analysis was made of the items which individuals admitted they would answer differently if their names were on the papers. Most of the items which individuals checked as being those which might be answered differently were such that an honest answer might tend to belittle the individual in the eyes of the social group. The results on a smaller group of 40 graduate students indicate a possible relation between "?" responses and items checked as being answered differently under other circumstances.

Reliabilities were obtained from a group of 40 graduate students, the test being administered at the beginning and at the end of a three-week period. [15 min.]

*The Bell Adjustment Inventory Applied to Scottish Subjects.* HELEN PALLISTER and W. O'D. PIERCE, St. Andrew's University, Scotland.

The Adjustment Inventory (by Hugh M. Bell) was filled in by 210 subjects in a Scottish industrial city. The investigation included the following groups:—(1) the entire College of Art (29 males and 28 females) (2) the entire School of Economics (17 males and 9 females) (3) at the Technical College, (a) the entire Department

of Pharmacy (32 males and 8 females) (b) the Department of Engineering (87 male evening students—28 electrical engineers and 59 mechanical engineers).

The results will be shown in graphic and tabular form, with the sexes treated separately. The similarity of scores for the various groups of subjects will be discussed. For the total groups, the relationship of adjustment scores to age and intelligence will be shown, as well as the intercorrelations of the various adjustment scores.

For the total group of women, the average scores for the first four adjustment categories—namely, home adjustment, health adjustment, social adjustment and emotional adjustment, all fall within the range of scores classified as average for American college women by Bell. The total score is just below Bell's average limit. The men's average scores for the five adjustment categories all fall within Bell's classification of average for American college men. The significance of these results for the comparative social psychology of different national groups will be discussed. [15 min., slides.]

*An Analysis of "Self-Reliance".* LELAND H. STOTT, University of Nebraska.

The purpose of the study was (1) to determine the factors involved in a test of "self-reliance", and (2) to test the assumption that positive and negative forms of the same test item are equivalent.

A questionnaire composed of positive and negative forms of thirty short descriptions of self-reliant behavior in every-day situations was administered to 650 adolescents. A separate analysis of the matrix of item intercorrelations for each form of item was carried to five factors. Transformations of the two factorial matrices approximating simple structures were obtained. The magnitude of factor loadings of items corresponded fairly closely in two pairs of factors, and to some extent in a third pair. These three were tentatively named independence of decision in personal matters, social initiative, and resourcefulness in the use of spare time. One of the remaining four unpaired factors was interpreted as personal responsibility. [10 min.]

*Form of Statement in Personality Measurement at the Eighth Grade Level.* EDWARD A. RUNDQUIST, Psychological Laboratory, Cincinnati Public Schools.

Earlier studies have shown that form of statement in personality items is an influential factor in determining response at the high school, college, and other adult levels. The purpose of this study

was to determine the influence of this factor at the eighth grade level, controlling the ideational content of the items more carefully than has been done heretofore. A series of items dealing with family or home adjustment was presented along with items of other content to two groups of eighth grade children, each numbering about 350. The series of family items was divided into two sections, differing solely in the manner in which they were stated. The results will be presented in terms of the relationships of these two blocks of family adjustment items to the remaining sections of the personality scale. The marked and consistent differences found will be discussed from the standpoint of (1) universality of such differences; (2) interpretation of personality scale relationships; (3) implications for personality scale construction; and (4) the desirability of studying response characteristics to personality items in addition to the undertaking conventional studies of reliability and validity of personality scales. [15 min.]

*The Veridicality of Hypnotically Induced Regression.* PAUL CAMPBELL YOUNG, Louisiana State University.

By giving the Stanford-Binet test both in the normal waking state and in the hypnotic state to eleven college subjects previously proved to be somnambulistic, it was felt that some check on the veridicality of the hypnotically induced regression to childhood levels could be obtained. When the subjects were tested in hypnosis after it had been suggested to them "You are now three years of age: Do you understand? You are now three years of age."—no one of them even approximated the three year-old mental age level. Comparing the hypnotic I.Q.'s with their waking I.Q.'s, it is estimated that each subject approached his own six year level. There was marked consistency in the responses of each subject. Can this mean that the personality as the adult subject experiences it in himself takes form around six years of age? [10 min.]

*Liking and Disliking Persons.* PAUL THOMAS YOUNG, University of Illinois.

A group of 676 college students were requested to list and later rank the names of persons they liked and disliked. They were then instructed to enumerate the traits of personality which lead to liking or disliking of the persons listed. Results indicate that the ratio between the number of persons liked and disliked is greater than two

to one. More persons of the same than of the opposite sex are said to be liked, but the first choice for both men and women is usually a person of the opposite sex. The alleged personality traits which lead to liking and to disliking have been listed and studied by correlational techniques with regard to the frequency of listings and to sex differences. Among college students intelligence was by far the most frequently mentioned trait which determined a positive attitude, and conceit the most frequently listed trait determining a negative attitude. In general, the traits liked in others are those said to be extrovertive in nature, and the disliked traits are those said to be introvertive. [15 min.]

*The Relationship of Birth Order to Certain Aspects of Personality Adjustment.* SISTER M. CORALITA CULLINAN, O.P., St. Mary of the Springs College, Columbus, Ohio.

*Purpose of the Study:* To discover the relationship between family position and certain aspects of personality adjustment as measured by two complementary instruments: (1) a rating scale checked by the children's classroom teachers and stressing aggressive behavior; (2) a personality test answered by the children and emphasizing withdrawing tendencies.

*Procedure:* On the basis of information secured from the parents by means of Family Information Blanks, cases were selected from grades three to eight of twenty-seven academies and parochial schools located in five states. The subjects were further limited to three age levels of nine, eleven and thirteen years in order to check possible variations in adjustment associated with increasing maturity. The final set-up of the experimental groups was as follows: Oldest, 439; middle, 432; youngest, 434; and only, 166; totaling in all, 1,471 cases. In preliminary comparisons, the birth order groups were found to be quite similar in factors relating to the home background as reported by the Family Information Blanks, and also in intelligence and school achievement as measured by the Haggerty Intelligence Test and the New Standard Achievement Test.

*Results:* Mean scores on the two personality measures, i.e., the Haggerty-Olson-Wickman Behavior Rating Schedule and the Rogers Test of Personality Adjustment, indicate age and sex differences between the various sub-groups, but no significant birth order differences. Instances of greater maladjustment in some birth order groups follow no consistent trend and seem related to factors in the home and school situations rather than to family position. [15 min.]

## HUMAN LEARNING

SATURDAY, SEPTEMBER 4, 9:00 A.M.

BURTON AUDITORIUM

R. M. ELLIOTT, *Chairman*

*The Effect of Electric Shock for Right and Wrong Responses on Maze Learning in Human Subjects.* HERBERT GURNEE, Western Reserve University.

This experiment was an attempt to clear up some uncertainties respecting the comparative effect of electric shock for right and wrong responses in trial and error learning. A bolt-head maze was used. An irregular pathway of bolts was wired in series with a metal stylus and a white light; the subject's task was to learn this pathway. All other bolts were in series with the stylus and a red light, and contacting one of these constituted an error. Shock was given by a variable inductorium of which one secondary electrode was attached to the stylus, the other to a metal cylinder held in the subject's other hand. Time of each trial was taken. A control group learned the maze without shock. One experimental group received mild shock on the wrong contacts, another on the right contacts, beginning with the fifth trial. Two other experimental groups received heavy shock on the wrong and right contacts respectively. The results show, in general, no significant differences from group to group. A slight tendency appeared for the shocked groups to excel the control group, but the critical ratios were small, most of them under one. Among the shocked groups, those punished on the wrong had a slight advantage in errors over those punished on the right, whereas the reverse was true of time; however, the critical ratios were too small to have any statistical significance. The results will be discussed in connection with the law of effect and other relevant theories of learning. [15 min., slides.]

*Comparison of the Influence of Monetary Reward and Electric Shocks on Learning in Eye-Hand Coördination.* ROLAND C. TRAVIS, Western Reserve University.

In a previous study by the writer on the influence of electric shock on learning in eye-hand coördination certain discrepancies and disrupting effects were noted. Some subjects were fearful of and annoyed by the electric shock, others seemed to actually enjoy or



were indifferent to the shocks. These results suggested the necessity of redefining the whole concept of punishment and reward in learning.

This study concerns the relative influences of electric shock and monetary reward as motivating factors in motor learning in the human subject. The learning task was to hold a flexible stylus on a moving target which oscillated at the rate of one oscillation per second. The study constituted two different experimental situations using two different groups of college men. Nine consecutive trials were given each subject in each group. Each trial was *one minute* in duration with rest periods of *three minutes* between trials.

In the first experimental situation, each individual received no electric shocks during trials 1, 3, 5, 7 and 9, but received shocks during trials 2, 4, 6, and 8 whenever the stylus lost contact with the oscillating target.

In the second situation each subject received a monetary reward after trials 2, 4, 6, and 8 if a certain amount of gain in score were accomplished. The subject was in possession of this knowledge just before each rewarded trial.

Results of the experimental situation involving electric shock on alternating trials revealed differences in the amount of gain during the shocked-trials as compared to the trials during which no electric shocks were given in favor of shocked trials. Certain disrupting effects were also observed. These differences and disrupting effects will be analyzed and compared to the results of the rewarded trials. [15 min., slides.]

*Response Tendencies and Maze Patterns as Determiners of Choices in a Human Maze.* WARNER BROWN and JACK BUEL, University of California.

The growing body of evidence from human and animal maze studies showing that first trial response-patterns tend to persist throughout the learning process make it increasingly important to determine the factors causing the initial responses. This report indicates the relation between human maze reaction-patterns and maze blind-patterns in 16-unit self-indicating linear tracing mazes. A free choice maze (no errors) and a maze for each of the 16 possible blind patterns for the first four maze units were used. Units 5 and 6 were free choice in all mazes. Units, 7 to 16, were various chance patterns. Each of 450 subjects ran three trials on each of eight mazes having different blind-patterns and on two free-choice

mazes. Segregating 4,500 first trial results into the possible 256 categories of response-patterns and blind-patterns for the first four maze units it is found that some combinations of response-pattern and blind-pattern are very frequent. The distribution of these frequencies is skewed. Patterns of response which can be consistently analyzed into systematic behavior units are relatively frequent; those which do not show systematic units of behavior occur much less frequently. The free choice group is compared with the groups having errors to indicate the effect of blinds on response preferences. The determination of responses by preceding responses is given by an analysis of free choice units 5 and 6. The results indicate that a majority of the first trial reaction patterns are systematically determined with respect to errors, and that a "chance" pattern of responses in the first maze trial is the exception rather than the rule. [15 min.]

*An Experimental Analysis of Human Problem Solving.* ROBERT H. SEASHORE, Northwestern University.

The disc transfer (pyramid) puzzle has been systematically extended as a type problem for human learning experiments. Advantages are: (1) Simple illustrations, without apparatus, of principal concepts underlying trial and error vs. insight theories; (2) difficulty adjustable for children or adults; (3) time requirements adjustable from minutes to hours; (4) three important variables involve about fifty principles, discoverable as "insights" of varying difficulty; (5) solutions possible by trial and error, insights (partial-complete; unanalyzed, imaginal, or verbal) or inductive logic; (6) analyses verifiable by synthesis of all major principles into one master equation governing the problem.

Comparison of individual results with a systematic analysis indicates the nature, overlapping, and advantages of various solutions for problems of varying difficulty. The problem may be used for measuring individual differences. Directions, recording, and analysis of representative findings are outlined with further suggested applications. [10 min.]

*Individual Learning Curves Obtained from Long Learning Lists.* WILSON L. NEWMAN, The University of Chicago.

*Purpose:* To study the characteristics of individual learning curves obtained from learning lists long enough to reveal more of the nature of the learning process than is possible with short lists.

*Method:* Six university men students each learned three lists by tachistoscopic presentation. Each list contained fifty word-number paired associates. List A contained two-digit numbers; List B, three-digit numbers; List C, four-digit numbers. In recall the subject was to say the number when the word with which it was paired was presented.

*Results:* The learning curves obtained from all the lists tend to follow an S-shaped pattern. The top hook of the S is better defined than the lower hook. The lower hook is more decidedly positively accelerated for the most difficult list than for the easier lists. [10 min.]

*An Analysis of Ideational Maze Learning.* WILTON P. CHASE, Woman's College, University of North Carolina.

Three large groups of students learned a 14-unit T finger maze. They were then asked to identify this maze pattern from five mazes drawn on stimulus cards presented in an exposure apparatus. Group 1 learned the maze to one perfect trial and group 2 to ten perfect trials. In the mazes exposed to these groups the "confusions" were fairly obvious. Group 3 learned the maze to ten perfect trials but the mazes exposed to this group had "confusions" which were not so obvious. Increasing the number of perfect trials increased the accuracy of recognition and decreased the time of exposure needed for recognition. Increasing the "confusions" decreased the accuracy and increased the time. It was discovered that there is no instantaneous perception of the whole maze, rather the subjects ran through enough of the maze units to reestablish the original serial ideational learning. [10 min.]

*A Condition of Affective Judgments.* HENRY N. PETERS, University of Missouri.

This investigation was planned to test the hypothesis that positive and negative reactions to stimuli are determinants of affective judgments of the stimuli. The stimuli chosen were 10 Japanese words. The method of rank order was used to measure affective judgments. A learning situation produced positive reactions to 5 of the words. The subject was presented the words on a memory drum (in 3 different orders) and instructed to find which were to be pronounced and which were not. A loud bell, located 6 inches from the subject's ear, was rung after every mistake—pronouncing a word which was

not to be pronounced or failing to pronounce one which was to be pronounced.

A different group of 60 students served in each of the following conditions. Condition I consisted in: first ranking of words; 30 minutes rest; second ranking. Condition II: first ranking; learning to pronounce the 5 words judged least P by the subject; second ranking. Condition III: learning to pronounce the 5 words the mean rank orders of which were lowest (most U) in the first rankings of conditions I and II; ranking the words.

The hypothesis is amply verified by the data. Changes in rank order from first to second ranking in conditions I and II reveal, under the latter condition, a definite shifting of words pronounced toward the P end and of words not pronounced toward the U end of the affective scale. Comparison of the pooled first rank orders in conditions I and II with the pooled rank orders after learning in condition III shows increased P of all 5 words pronounced and decreased P of those not pronounced. Implications of the data for theoretical relationships between affection and learning will be discussed. [15 min.]

#### VISIION IN ANIMALS

SATURDAY, SEPTEMBER 4, 9:30 A.M.

101 WESBROOK HALL

W. B. PILLSBURY, *Chairman*

*The Mechanism of Accommodation in Pigeons.* RALPH H. GUNDLACH, University of Washington.

Accommodation in pigeons may involve changes in the curvature of the lens, changes in lens position, and changes in the curvature of the cornea.

Changes in corneal curvature were directly observed by means of a special ophthalmometer, and could be noted readily during the course of continuous observation of the bird's eye.

To get extreme and relatively permanent changes, the pigeon's eyes were treated by a variety of drugs applied either directly to the eye, or by intra-muscular injection. Nicotine on the cornea, for

example, changed the curvature from that of a sphere with 3.7 mm radius to that of a sphere with 5.2 mm radius.

The whole heads of the drugged birds were fixed and sectioned to determine the changes in the lens. Certain drugs such as atropin change the ratio of lens width to length from the normal of about .56 to a ratio of about .75.

The combined mechanisms provide for rapid and extensive accommodation. The data for this paper were collected in collaboration with Mr. Ray D. Chard. [15 min., slides.]

*The Visual Acuity of Cats in the Absence of the Optic Projection Areas of the Cerebral Cortex.* KARL U. SMITH, The University of Rochester.

Previous experiments by the writer have proven that cats lacking the striate areas of the cortex possess a visual acuity of at least eleven minutes of arc in response to rotating striated patterns. Further examination of the significance of the observations to a theory of cortical function in pattern vision has involved a comparison between normal animals and animals with complete bilateral removal of the occipital lobes in respect to their acuity of vision in responding to different kinds of striated patterns. This comparison has also been extended to the determination of the characteristics of the head and eye movements produced by rotation of the visual field.

Oscillographic records of eye movements at different speeds or rotation show that normal animals (8 cases) and operated animals (6 cases) show no marked differences in regard to the latency and amplitude of the reactions, the speeds at which they occur, and the presence of after-nystagmus upon termination of the rotation. Optomotor head orientations occurred in both groups of animals.

Using conditions somewhat different from those previously described, two of the six operated animals gave evidence of a visual acuity of at least 30" of arc. Four of these subjects responded to lines subtending a visual angle of at least 1' 25" of arc. Regular optokinetic responses failed to occur in normal animals below visual angles of 3' 20" of arc.

The factor producing the movements of the head and eyes in the operated animals is the number of contours in pattern passing over the retina, since the responses do not occur with single lines, no matter what their width. This observation also proves that the high degree of visual acuity present in these animals is dependent upon stimulation of several discrete retinal areas. [15 min., slides.]

*The Visibility Curve of the Cat at the Absolute Threshold.* CHARLES S. BRIDGMAN, University of Rochester.

At present visibility data is available for a number of species. The experiment here reported adds to this body of data the visibility curve of the cat determined at a minimum level of intensity. This experiment is part of a general investigation designed to describe completely the visibility function of this animal.

The visibility curve has been derived for the cat's eye by determining the absolute threshold (in terms of relative energy) for different regions of the visible spectrum. These thresholds were found by using the Wratten "monochromatic" series of filters in a previously described apparatus for measuring low brightness thresholds. This apparatus consists of two compartments. The experimental animal is trained to press a lever in one of these when a light stimulus is presented, in order to gain food located in the other. Thresholds are found by reducing the intensity of the stimulus until correct response is no longer possible. Since the liminal energies thus determined are physiologically equivalent, it is possible to calculate relative sensitivity values from them. This is done by finding their reciprocals, and converting them into per cent of maximum values.

The data thus treated yield a curve with the maximum lying near 5,000  $\text{\AA}$ , and with the characteristic rapid fall to low sensitivity at 4,000 and 6,000  $\text{\AA}$ . The relation of this low level curve of the cat to similar curves of other species and to the absorption curve of visual purple is discussed. [15 min., slides.]

*Red-Vision Deficiency in Cebus Monkeys.* W. F. GREYER, University of Wisconsin.

The purpose of this investigation was to measure accurately the color limens of several representative primates. Such data are of value for understanding the evolution of human color vision.

Rhesus, spider, and cebus monkeys, and men were used as subjects. Difference limens of the monkeys were determined by training them to discriminate between spectral colors projected upon two white-topped food boxes. Limens were obtained in the blue-green, yellow, and red regions of the spectrum.

No significant group differences were found, except in the red region, where the limens of the cebus monkeys were approximately triple those of the other subjects.

These data indicate that cebus monkeys have deficient red discrimination, and that their color vision may represent an intermediate developmental stage between that of lemur and of man. [10 min., slides.]

*The Visual Acuity of Some Vertebrates.* JOHN WARKENTIN, University of Rochester.

The visual acuity of a number of vertebrate species was determined by means of oculocephalogyric responses to a moving visual field in a newly developed apparatus. Animals were placed inside a rotating cylinder which contained vertical black and white striations. In a situation comparable to "minimum separable" acuity, visual angles varying in six steps from  $720'$  to  $11'$  of arc could be tested. In "minimum visible" acuity situations, animals could be tested for acuities ranging in six steps from  $7\frac{1}{2}'$  to  $30''$  of arc. Some visual acuity thresholds in terms of visual angles are: Small frogs and toads,  $43'$  of arc; King snake,  $85''$ ; various turtles,  $85''$  to  $100''$ ; chicken and pigeon,  $30''$ ; robin,  $85''$ ; opossum,  $11'$ ; gopher,  $85''$ ; domestic rabbit,  $85''$  to  $100''$ ; wild rabbit,  $30''$ ; guinea pig,  $30''$  to  $85''$  of arc. The significance of these results is indicated. [10 min., slides.]

AMERICAN ASSOCIATION OF APPLIED AND PROFESSIONAL  
PSYCHOLOGY ORGANIZATION PROGRAM

UNIVERSITY OF MINNESOTA

AUGUST 30-31, 1937

Monday, August 30

9:00 A.M., Registration, Headquarters, Minnesota Union.

10:30 A.M., Research Programs

I. CLINICAL PSYCHOLOGY, 101 Wesbrook Hall, J. B. MINER, *Chairman.*

*Psycho-physiological Reactions Following Painful Stimuli under Hypnotic Analgesia Contrasted with Gas Anaesthesia and Novovian Block.* RALPH R. BROWN and VICTOR H. VOGEL, United States Health Service. [15 min., slides.]

*A Study of Onset and Early Developmental Stages of Stuttering.* WENDELL JOHNSON, State University of Iowa. [10 min.]

*Consistency of Behavior of Mentally Defective Subjects in a Free Situation.* ELAINE F. KINDER, Letchworth Village. [15 min., slides.]

*The Significance of Compensatory Factors in the Diagnosis of Borderline Mentality.* ANNA SPIESMAN STARR, Rutgers University. [10 min.]

*Clinical Work with Children not Seen by Clinician.* GARRY C. MYERS, Cleveland College, Western Reserve University. [10 min.]

*An Analysis of Some Characteristics of the Speech Adjustments of Students of Speech.* FRANKLIN H. KNOWER, University of Minnesota. [15 min.]

*The Rorschach Method of Personality Diagnosis in Relation to Mental Testing, Free Association, and Analytical Interpretation.* BRUNO KLOPPER, Teachers College, Columbia University. [10 min., slides.]



II. CONSULTING PSYCHOLOGY, 201 Westbrook Hall,  
R. H. PAYNTER, *Chairman*.

*Adults Who Guide Adolescents.* GOODWIN WATSON, Teachers College, Columbia University. [10 min.]

*Psychological Service for the Professional School.* ALICE I. BRYAN, School of Fine and Applied Arts, Pratt Institute; and School of Library Service, Columbia University. [10 min.]

*The Psychologist as a Consultant in Education.* ROY F. STREET, Battle Creek Public Schools. [10 min.]

*Legal Status of Psychology and Psychologists.* MILTON A. SAFFIR, Bureau of Child Study, Board of Education, Chicago. [10 min.]

*Has the Consulting Psychologist a Legitimate Field?* MARNE L. GROFF, Kansas City, Mo. [10 min.]

*An Experimental Study of Counseling Problem Students.* FRED MCKINNEY, University of Missouri. [15 min.]

*A Study in the Effectiveness of Counseling.* E. G. WILLIAMSON, University of Minnesota. [15 min.]

III. EDUCATIONAL PSYCHOLOGY, Burton Auditorium,  
H. B. ENGLISH, *Chairman*.

*General and Individual Techniques for Personality Difficulties in Remedial Reading.* ADELIN WHITE SCOTT, Shreveport, La. [10 min.]

*An Evaluation of Techniques Used in the Selection of Superior Children.* MARGARET J. DRAKE, James Monroe High School, New York City. [15 min.]

*Psycho-Therapy as a Method of Treatment in Private Secondary Schools.* J. CURTIS NEWLIN, Oakwood School, Poughkeepsie, N. Y. [10 min.]

*The Content of Educational Psychology.* FRANK N. FREEMAN, University of Chicago. [10 min.]

*A Comparison of Four Techniques Used in Selecting School Problem Cases.* M. J. VAN WAGENEN, University of Minnesota. [10 min.]

*Visual Characteristics of Fast and Slow Readers Among College Students.* ELEROY L. STROMBERG, University of Minnesota. [10 min.]

IV. INDUSTRIAL AND BUSINESS PSYCHOLOGY, Music Auditorium, B. V. MOORE, *Chairman.*

*The Work of the Psychological Corporation: Industrial, Marketing, Clinical.* A. T. POFFENBERGER and HENRY C. LINK, The Psychological Corporation. [10 min.]

*The Future of the Industrial Psychologist.* S. M. SHELOW, Milwaukee Psychological Service Center. [15 min.]

*One Hundred Superior Men.* F. L. WELLS, Psychological Laboratory, Boston. [15 min., slides.]

*Sex Differences in Vocational Interests.* F. H. FINCH, Minnesota State Department of Education, and M. E. Odoroff, Minnesota State Board of Control. [15 min.]

*Standardized Trade Questions for 75 Occupations.* CARROLL L. SHARTLE, Occupational Research Program, United States Employment Service. [15 min.]

*Attitudes Toward Advertising.* FRANK N. STANTON, Columbia Broadcasting System. [10 min.]

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12:30 P.M. Luncheon—National Committee and Chairmen of all Boards and Committees of the American Association of Applied and Professional Psychology, Colonial Room, Minnesota Union, DOUGLAS FRYER, *Chairman.*

2:30 P.M. TECHNICAL ROUND TABLES

- I. *Technical Manuals*, H. A. TOOPS, *Chairman*, 101 Westbrook Hall. (Report of Committee on Publication of Technical Manuals.)
- II. *Technical Exhibits*, RICHARD PAYNTER, *Chairman*, 201 Westbrook Hall. (Report of Committee on Technical Exhibit at 1939 World's Fair.)
- III. *Training, Interneship and Selection of Applied Psychologists*, ROBERT HOPPOCK, *Chairman*, Music Auditorium. (Report of Committee on Professional Employment.)

IV. *Personality Measurement*, R. G. BERNREUTER, *Chairman*, Burton Auditorium.

V. *Problems of Attitude Measurement in Market Research, Labor Relations, and Opinion Surveys*, A. W. KORNHAUSER, *Chairman*, Chapel, Center for Continuation Study.

4:30 P.M. SECTION ORGANIZATION MEETINGS

I. *Consulting Section*, RICHARD PAYNTER, *Chairman*, 101 Wesbrook Hall.

II. *Educational Section*, P. M. SYMONDS, *Chairman*, 201 Wesbrook Hall.

8:00 P.M. SECTION ORGANIZATION MEETINGS

III. *Clinical Section*, FRANCIS MAXFIELD, *Chairman*, 101 Wesbrook Hall.

IV. *Industrial and Business Section*, H. E. BURTT, *Chairman*, 201 Wesbrook Hall.

Tuesday, August 31

10:00 A.M. Research Programs

V. TESTS AND MEASUREMENT TECHNIQUES, 101 Wesbrook Hall, E. B. GREENE, *Chairman*.

*The Value of Self-Diagnosis Induced by Guided Experiment.* REGINA WESTCOTT WIEMAN, Chicago. [15 min.]

*Revision of the Sims Score Card for Socio-Economic Status.* W. M. HALES, Minnesota State Board of Control. [10 min.]

*Weighting of Speed in a "Power" Test.* F. KUHLMANN, Minnesota State Department of Public Instruction. [15 min.]

*A Technique for the Quantitative Measurement of Social Insight.* J. E. JANNEY, Western College, and H. B. ENGLISH, Ohio State University. [15 min.]

*Relation of Porteus Maze Test Performance to Binet and Formboard Performance.* C. M. LOUITT, Indiana University. [15 min.]

*The Comparative Value of Reading Readiness Tests.* ROBERTA FOSTER, Chicago Board of Education. [10 min.]

VI. SOCIAL ATTITUDES AND ADJUSTMENT, 201 West-  
brook Hall, GERTRUDE HILDRETH, *Chairman*.

*Sources of Ethical Judgments Made by Children and Adolescents.* GORDON HENDRICKSON, University of Cincinnati. [15 min., slides.]

*The Relation of Child Behavior to Rejection by Parents.* PERCIVAL M. SYMONDS, Teachers College, Columbia University. [15 min.]

*The Influence of Nursery School Experience on Children's Social Adjustments.* ARTHUR T. JERSILD and MARY D. FITE, Columbia University. [15 min.]

*Experiments in Shifting Attitudes.* H. H. REMMERS, Purdue University. [15 min.]

*An Analysis of Some of the Hypothetical Determiners of Liberalism and Conservatism in Teachers' Social Attitudes.* GEORGE W. HARTMANN, Teachers College, Columbia University. [15 min.]

*Psychological Factors Contributing to the Delinquency of Girls.* AUGUSTA JAMESON, Institute for Juvenile Research. [15 min.]

*Behavior Educations in Family Situations.* H. MELTZER, Psychological Service Center, St. Louis, Mo. [15 min.]

VII. TESTS AND MEASUREMENTS IN INDUSTRIAL PSYCHOLOGY, Music Auditorium, HENRY C. LINK, *Chairman*.

*The Use of Finger and Tweezer Dexterity Tests in a Watch Factory.* BEATRICE CANDEE, New York State Employment Service, and MILTON BLUM, Vocational Service for Juniors. [10 min.]

*The Development of Psychological Techniques for Selecting House-to-House Salesmen.* R. N. McMURRY, The Psychological Corporation, and A. W. KORNHAUSER, University of Chicago. [10 min.]

*Test Pattern as a Measure of Occupational Aptitude.* ROY HAMLIN, Letchworth Village, N. Y., and THEODORA M. ABEL, Trade Extension Classes, New York City. [10 min., slides.]

*Reliability and Validity of the Psychological Brand Barometer.* JOHN G. JENKINS, Cornell University. [15 min., slides.]

*A Battery of Tests for the Selection of Mechanical Apprentices.* MILLICENT POND, Scovill Manufacturing Company. [15 min.]

*The Measurement of Attitudes of Industrial Apprentices.* H. H. REMMERS, H. E. GEIGER, and R. GREENLY, Purdue University. [15 min.]

VIII. INDUSTRIAL ADJUSTMENT PROBLEMS, Ball Room, Minnesota Union, MORRIS S. VITELES, *Chairman.*

*The Effect of Length of Day, Rest Periods and Noise Reduction on the Efficiency of Printers.* VERNON P. SCHEIDT, Waverly Press. [15 min., slides.]

*Testing for Accident Proneness.* CHARLES A. DRAKE, Eagle Pencil Company. [15 min.]

*Driver Tests and Accident Criterion in Two Cities.* T. W. FORBES, Harvard Bureau for Street Traffic Research. [15 min., slides.]

*The Effect of Nationality, Age, Experience and Practice on Driver Performance.* HARRY R. DESILVA, Harvard Bureau for Street Traffic Reserach. [15 min., slides.]

*Studies in the Reliability of Personnel Records.* HERMAN A. COPELAND, Cincinnati Employment Center. [10 min.]

IX. COLLEGE PERSONNEL PROBLEMS, Burton Auditorium, R. A. BROTEMARKLE, *Chairman.*

*Who Goes to College.* A. M. JORDAN, University of North Carolina. [15 min.]

*On Similarities and Differences among Honor Roll, Average and Probation Students at the College Level.* E. R. HENRY, New York University. [15 min.]

*Fluctuations in the Correlation between Psychological Test Scores and Freshman Grades.* DEWEY B. STUIT, University of Nebraska. [15 min.]

*University Freshman Intelligence over an Eighteen Year Period and Attempts to Control It.* W. P. REED, University of Wyoming. [15 min.]

*Prediction of College Freshman Scholarship by Tests of Listening and Learning Ability.* JAMES P. PORTER, Ohio University. [15 min., slides.]

*Aspects of Socio-Economic Status Which Differentiate University Students.* LILLIAN G. PORTENIER, University of Wyoming. [15 min., slides.]

*The Value of Selected Personality Test Items in the Prediction of Relative Scholastic Performance.* NEAL DROUGHT, University of Wisconsin. [10 min.]

*Attitude and Adjustment Tests in a College Personnel Program.* JOHN G. DARLEY, University of Minnesota. [15 min.]

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12:30 P.M. Luncheon—Organization Meeting of Board of Affiliates of State Associations of Professional Psychologists, Colonial Room, Minnesota Union, J. Q. HOLSOPPLE, *Chairman.*

2:00 P.M. PROFESSIONAL ROUND TABLES

I. *Constitution and By-Laws*, JOHN E. ANDERSON, *Chairman*, Ball Room, Minnesota Union. (Preliminary Report of Committee on Constitution and By-Laws.)

II. *Professional Affiliates*, A. T. POFFENBERGER, *Chairman*, 101 Westbrook Hall. (Preliminary Report of Committee on Professional Affiliations.)

III. *Applied Journals*, J. P. PORTER, *Chairman*, 201 Westbrook Hall. (Preliminary Report of Committee on Coördinated Publications.)

IV. *Quantitative Professional Standards*, L. J. O'ROURKE, *Chairman*, Music Auditorium. (Preliminary Report of Committee on Quantitative Professional Standards for Membership and Licensing.)

V. *The Promotion of Research in Industrial Psychology*, MORRIS S. VITELES, *Chairman*, Burton Auditorium.

4:30 P.M. BUSINESS MEETING, ASSOCIATION OF CONSULTING PSYCHOLOGISTS, R. A. BROTE-MARKLE, *President*, Burton Auditorium.

5:45 P.M. DINNER MEETING FOR REPRESENTATIVES OF THE PSYCHOLOGICAL CORPORATION, Dining Room, Center for Continuation Study.

7:30 P.M. ORGANIZATION MEETING, AMERICAN ASSOCIATION OF APPLIED AND PROFESSIONAL PSYCHOLOGY, DOUGLAS FRYER, *Chairman*, Burton Auditorium.