science in general rather than of any one science, an editor rather than an experimenter, an organizer and manager rather than a student.

It is interesting to speculate on what would have happened if he had stuck as closely to psychology as his teacher Wundt did in Germany or his friend and contemporary, Jastrow, did in America. I think that the methods of experimental psychology, educational psychology and social psychology would have been sounder and that their progress would have been along somewhat more desirable lines than has been the case. At the turn of the century Cattell was by far the most likely candidate for active leadership in American psychology. If he had been such an active leader for thirty years or more, certain schools of psychology might well have been less bigoted and many individuals saved from one or another pedantry or folly.

He chose to become both a leader and a servant, and of American science as a whole rather than of only psychology. And nobody should regret his decision. Take only one aspect of his work—the provision of an impartial journal in which for a half century any reputable man of science could set forth any honest opinion about any matter of importance to science, from the most specialized and technical to the most general or controversial—and ask what services as a psychologist could have equalled that.

During the last half of his life Professor Cattell's investigations in psychology consisted chiefly of certain measurements taken of himself, and not yet published and of statistical studies of the data gathered for successive editions of "American Men of Science." He resigned from co-editorship of the *Psychological Review* in 1904. He did not cease to be a psychologist, even after he was the editor and publisher of four important periodicals, two of them weeklies, but his leadership was in psychological affairs rather than in psychological thought and experimentation.

He was made president of the International Congress of Psychology held in this country in 1929. In 1921 he founded the Psychological Corporation, a unique organization to promote applied psychology, and was its president for many years and later the chairman of its board of directors.[1]

Cattell believed in the possibility of a science of education and was on the lookout for educational implications in his experiments on perception, association and individual differences. He had theories about the educative process, notably the theory that a home with many children of different ages was in certain respects superior to a classroom filled with children as nearly alike as possible. He had pronounced views about the management of universities, as shown in his volume of 1913 on "University Control." His most valued work for education was as organizer and editor. He induced the American Association for the Advancement of Science to establish the Section on Education, and worked to make it a success. He devoted much time and thought to the better education of the public in matters of science through the newspapers, in connection with the administration of the Scripps bequest, and was the president of Science Service from 1928 to 1937. In 1915 he founded *School and Society* as a dignified weekly journal for education in all its aspects, was its owner and editor until a few years ago, and arranged for its continuance under suitable auspices.

AS I KNEW HIM IN THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

By Dr. BURTON E. LIVINGSTON

THE devoted interest of J. McKeen Cattell in the organization of men and women of science in this country and Canada entered upon a new phase through the reorganization of the American Association at the end of the year 1919, when the present constitution of the association was ratified at the third St. Louis meeting. That constitution had been prepared by J. McKeen Cattell, E. L. Nichols, H. L. Fairchild and D. T. MacDougal. Among other innovations then introduced, the Executive Committee of the Council was established, virtually replacing the earlier Committee on Policy and the General Committee. To the Executive Committee was allocated a large degree of influence and power. In the years since its organization it has executed commitments from the Association Council, has made recommendations to the Council and has acted legally for the Council in making many important decisions in the interims between association meetings, when the prime body could not take action. Cattell was an influential member of the new committee from its beginning in the spring of 1920 and he became its permanent chairman in 1925, continuing in that office till his resignation in 1941.

[1] A more adequate account of Cattell's work as a psychologist will be found (a) in an article by R. S. Woodworth which will appear soon in the *Psychological Review*, and (b) in a number of the *Archives of Psychology* (No. 30, April, 1914) entitled, "The Psychological Researches of James McKeen Cattell," prepared by his pupils to celebrate his completion of twenty-five years of service as professor of psychology.

At the committee's meeting in the spring of 1925 Cattell was elected to be its permanent chairman and he continued in that office till his resignation in 1941. Reelected from term to term by the Council, he served on the committee for twenty-four years, being its chairman throughout all but the first five and the last three of those years. My own membership in the committee has been continuous since that St. Louis meeting, first as Permanent Secretary, then as General Secretary and afterwards as an elected member. It was indeed a great and pleasant privilege to work with Cattell during such a long period, in a field of service that always lay close to his heart. I think I came to know him well as our friendship developed and the association grew and prospered.

My intimate acquaintance with Cattell and with the reaction patterns of his mind really began with an hours-long conversation on a railway train as we were returning east after the close of the third St. Louis meeting. That conversation was occasioned mainly by my recent agreement to undertake the permanent secretaryship, to be effective about a month later. At a breakfast conference on January 2, 1920, I had been officially notified of my election to that office, by a special committee consisting of Simon Flexner, A. A. Noyes and J. McKeen Cattell. I was to succeed Dr. L. O. Howard, who had been Permanent Secretary for twenty-seven very successful and eventful years of the association's continued growth and who had been elected president for 1920. Cattell was already an elder statesman of great influence in our organization and I was the merest of tyros in association affairs.

Knowing quite well my need for information and advice, I asked many questions, both of fact and of judgment, to which he responded with helpful and enlightening replies. A pleasant degree of intimacy was implied by his prompt request that his title of "Dr." be omitted in our talks and correspondence; "Livingston, I wish you'd call me just Cattell." He dwelt on the great present importance of the methods of science in human thought and their still greater promise for future national culture. He insisted that this new job of mine would present an invaluable opportunity to aid in furthering the advance and spread of science by means of such a broad organization as the association was coming to be. Then and in later conversations, as well as in many remarks and comments that he made at sessions of the Executive Committee in after years, Cattell's ever-present wish was for human progress through science in its broadest sense; the association was to be a powerful means toward that end, but its activities should never be allowed to hinder the efforts of individuals and other societies that were working in that same general direction. To scientific societies and institutions the association was to offer help and cooperation without competition.

As chairman of the Executive Committee, year after year, Cattell showed several remarkable characteristics of mind and method. Early in each session he would bring up a question concerning the prospective hour of adjournment, so that we might complete the program of agenda without undue haste at any point. He generally took active part in the discussions, but frequently allowed the comments of others to precede any definite statement of his own attitude on a debated question. He was usually able to integrate the several positions indicated in a discussion, when there was some degree of disagreement, in such scholarly and convincing manner that the final vote had to be announced as unanimous, without any dissent. As the years went by, I think he became increasingly pleased with the long series of unanimous actions taken by the committee.

Another memorable personal characteristic of Cattell's was his natural inclination to enliven committee sessions as well as conversations with *obiter dicta* of interesting or amusing comments, anecdotes or scholarly jokes, which always seemed well chosen for the current discussions that they momentarily interrupted. He always encouraged and invited others to take part in such digressions. One usually came away from those sessions with pleasant lighter recollections as well as with the feeling that the serious business in hand had been very satisfactorily transacted without too laborious insistence on always holding to the point. On the other hand, in less convivial or more intense moods one sometimes had the impression that some portion of the time devoted to a session seemed to have been "wasted." Possible grounds for such a thought were not unappreciated by our chairman, who would call us back to serious business after each short diversion.

Consistent leadership by some one who had the association and its broad objects constantly in mind at all times was clearly needed, and Cattell supplied that need to the best of his very great capacity and opportunity. As publisher and editor of the two association journals, SCIENCE and *The Scientific Monthly*, and of his other journals, as a leader in the organization and development of Science Service, as a member of the National Academy of Sciences and many other scientific organizations, as an almost regular attendant at many of the principal scientific meetings in this country, and as originator, editor and publisher of the very useful biographical volumes of "American Men of Science"—through these various relations he became well acquainted with a very large number of American scientists. In many instances he perhaps

knew their attributes and accomplishments even better than they knew themselves. When an important science position was to be filled by appointment or election, Cattell was often called upon for suggestions and appraisals. On the basis of his judgment, at least in great part, were selected all four of the permanent secretaries of the association who have taken office through Council election since the present constitution was ratified in 1919. In some ways he became a sort of benevolent patriarch, as it were, of American science clans.

As every one knows, the longer any person occupies a position of great trust and responsibility in a democratically organized group or society, the more numerous and audible are criticisms of his performance likely to become. Rarely within the Executive Committee, but perhaps less rarely and sometimes more audibly among the other members of the association Council, complaints began to be occasionally heard that Cattell seemed to be "running the Association." Such complaints were generally no more than reflections of the obverse of his devoted personal interest and uniformly well-thought-out judgments for the welfare and growth of the organization. With regard to association aims and policies and the general conduct of its affairs he often had strong convictions, but whenever uncertainties or disagreements were frankly brought out by his colleagues he was always ready to help us reach a satisfactory compromise before discussion ended. Despite his own clear views, we found him always open-minded and democratic over all and in the long run. It is significant that he was repeatedly returned by Council election to membership in the Executive Committee. Excepting for the single year (1924) when, as president, he was an *ex officio* member of the committee, he was always one of its eight elected members.

With rapid development of the special sciences and the organization of more and more special science societies, the original strength of the association and its sections seems to have been somewhat threatened, whether generally realized or not, in a period just before the ratification of the new constitution. I think we may recognize the ingenuity of Cattell in the new provisions for the present official affiliation of independent societies, instead of the looser affiliation of earlier years. Since 1920, each affiliated society or affiliated academy of science is a part of the association, partaking in its control through elected representation in the association Council but without any loss of its own independence. That arrangement has proved highly satisfactory; it surely tended to stem any threat of disintegration that may have existed.

Cattell's activities in editing and publishing the weekly journal SCIENCE, *The Scientific Monthly*, "American Men of Science" and his other publications, constituted a very great and lasting general contribution toward the advancement of science in this country and toward the spread of scientific knowledge among the people. Those very successful private business enterprises have long been closely related to the American Association, since the Council made SCIENCE the association's official journal in 1900 and gave similar status to the *Monthly* in 1909. The growing lists of "American Men of Science," so laboriously compiled and so finely edited under Cattell's direction, have been most valuable to our organization in the selection of names for nomination to association fellowship, and in the naming of association committees.

Business relations between the association and Cattell concerning the editing and publishing of the two journals just mentioned were not wholly free from discordant notes, for the association had agreed to his retention of ownership and managing editorship without any arrangements for effective association control or any formal democratic influence in the conduct of the journals. The association could purchase subscriptions for its members at a wholesale rate, but it was constrained to accept whatever editorial and management policies seemed best to the owner. It was fortunate that Cattell's policies were generally so nearly in line with the aims of the association, and the arrangement resulted in obviously very great benefit to science workers and the association as well as to the publisher. They constituted an excellent bargain for both sides; for at that time the association found itself in no position to undertake the complex responsibilities of publishing a journal of its own, the journals offered were already successfully going concerns of the sort needed, and, in turn, they were greatly benefited by this form of association support.

Those were friendly agreements, adhered to for many years; but some difficulties arose, especially in connection with the official journal, which could of course be truly official only in a limited and special sense under the conditions agreed upon. For example, when the Washington office submitted notes and reports for publication in SCIENCE, final decisions as to their acceptance were in the hands of a single person, in whom were vested all the prerogatives of editor, publisher and owner. There was no possible recourse to any democratically constituted editorial board or other authoritative publication committee of the association. Other difficulties arose, but compromises were usually reached.

It is not hard to appreciate Cattell's dilemma, which was natural enough, with regard to the future of SCIENCE and the *Monthly*. He wished devotedly to aid science and the association, but at the same time he was driven to seek protection for his successful

publication business and his personal financial estate. When he offered to sell the journals to the association on his retirement, he hoped to accomplish both desires at once. His proposals seemed fair to the Executive Committee and the association Council, which accepted them with expressions of appreciation and ordered them signed and duly sealed. Further study and clarification of those proposals led to a revised and more detailed agreement, which was also accepted and duly signed by both parties. Questions persisted, however, not only in the minds of many association members but also in Cattell's mind, as to whether the final signed agreement really embodied all that was desirable on both sides. In conversation he once said to me that he would be willing to consider cancelling the agreement if the association should propose that solution. But no action was taken. The second agreement was in part fulfilled when *The Scientific Monthly* was purchased by the association, and the remaining part still stands, providing for the ultimate purchase of SCIENCE.

I am convinced that Cattell's original intention, in proposing that these journals should ultimately become solely the responsibility of the association, was to make a very fine gift to the organization and to American science workers. He regarded the specified terms of sale as a not too burdensome condition for such a gift. However that may be, those terms were definitely accepted by the association and they were adhered to in the recent purchase of *The Scientific Monthly,* which is now edited, published and managed, with evident success and great promise, by the staff of the association's Washington office. There can be no doubt that both association journals will be carried forward into the approaching new era of science advancement and that they will forever constitute a remarkable monument to one far-reaching aspect of Cattell's many achievements.

HIS SERVICE TO SCIENCE

By Dr. ANTON J. CARLSON
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BY the *diversity, duration* and *character* of Dr. Cattell's services to science our departed colleague has earned an enduring place in our hearts and in the history of American science. His services as president of our association are the least significant. Others more competent will speak of his many years and his great influence in the council and in the executive committee of the association. Dr. Cattell became the editor and publisher of SCIENCE fifty years ago. The character of that journal and its service to research and to education in science, we owe largely to that one man. That he had sufficient business acumen, foresight and energy to make SCIENCE, *The Scientific Monthly, School and Society* and his other publication projects carry on without subsidies, and succeed financially through their own merit, is additional evidence of Dr. Cattell's capacity and his faith in his fellow men. In these days of increasing specialization, our weekly journal, SCIENCE, has served and should increasingly serve to keep all of us somewhat in touch with progress and failure in all fields, and thus, discourage the development of the delusion that "what I am doing is the only work worth while."

The Scientific Monthly endeavors to present, in lay language, the significant problems and findings in special fields of science. Perhaps we should now take stock and inquire whether to-morrow we should, both in SCIENCE and *The Scientific Monthly,* present more regularly and clearly the method or methods yielding our new facts and our larger generalizations. In "American Men of Science," Dr. Cattell initiated an inquiring look at the human variant called the scientist.

The passing of a colleague who rendered conspicuous service to science and society for sixty years compels those still in harness to pause and ponder. From the point of view of physics and chemistry the individual man is an insignificant clod in the common world-stuff. We in biology find this clod a challenging problem. What makes this clod click? What makes one man perform better than some of his fellows? The answer is still largely out yonder, in the unknown processes of living matter. We salute heredity and scan the environment, and yet we do not know. In his maturing youth our departed colleague was a student at the Johns Hopkins University, at Leipzig, at Göttingen, at Paris and at Geneva. In those days the Johns Hopkins University was up and coming, science in Germany lighted the entire civilized world, and the German university was the mecca for the budding American scholar. Cattell's brief sojourn at Bryn Mawr College and at the University of Pennsylvania should probably also be counted in as part of his Wanderjahre and of some significance in the making of the man—James McKeen Cattell.

I knew, though not intimately, our departed colleague for some forty years. Three elements in his character stood out, according to my observation: First, his broad interest, sound judgment, and wisdom; second, his extraordinary energy and capacity to