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CARL EMIL SEASHORE

1866—1949

A Biographical Memoir by

WALTER R. MILES

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Carl E. Sashon

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CARL EMIL SEASHORE, after receiving his professional education at Yale, went to Iowa as a well-recommended, wise young man from the East. He remained at Iowa for a half-century, during most of which he was known as "The Dean." Renowned for his work in psychology, musicology, the science of human development, and university administration, he played a leading role in the scientific and cultural program of his university, state, and nation. His influence in developing applied psychology in relation to higher education and the professions has been world-wide.

In 1908, while continuing as professor of psychology and chairman of his department, Dr. Seashore was made Dean of the Graduate College of the State University of Iowa. This position he occupied with distinction for twenty-eight years, until at the age of seventy he was retired. He was recalled as Dean pro tempore of the Graduate School in 1942, served throughout the war years, and was finally retired in 1946. The occasion of the second retirement of such a distinguished scholar and educational administrator was so noteworthy in the annals of the Iowa State Board of Education that an exception was made to the Board's rule against indulging in commendatory resolutions. "Of necessity," it is written, "the Board cannot take official notice of the retirement of all of the great men who have served in administrative or professional capacity. It makes this exception because of Dr. Seashore's great distinction and the marvel-

ous work he has done in his field, Psychology, and because of the fact that he was more than a Dean of a single department. He saw the University as a whole. He was interested in everything, and if it were possible for him to help, he wanted to help—and he did help. . . .” “He retires from active duty at fourscore years—alert in mind, active in body, interested in anything that promises better things for the human race—revered, beloved, and honored is this man of letters and achievement.” The longer resolution from which these quotations are taken clearly shows that the Board was aware of the significance of the occasion.¹

One other among the several commendatory resolutions concerning Dr. Seashore's life and work may be quoted. This is from the *Journal of Speech Disorders*. “For nearly a half-century Dean Carl Emil Seashore has exerted a determining influence on the development of speech correction in the United States. This he has done through pioneering research of permanent value on speech and hearing; through administrative action in establishing on a comprehensive inter-departmental basis the Psychological and Speech Clinic and the speech pathology program at the State University of Iowa; through training of men, notable among whom are Travis, Simon, Bunch, Bryngelson, and many other leaders in speech correction and hearing conservation; through the publication of over two hundred books, monographs, and articles; and through constant stimulation of scientific, educational, and humanitarian works by men and women throughout this and other countries, who have found in his progressive leadership, scientific shrewdness, broad sympathies, and personal encouragement an extraordinary source of vision and resolve.”²

A more detailed account of Dr. Seashore's application of scientific methodology and psychological principles in the field of speech dis-

¹ The resolution was drafted by Mr. William R. Boyd, Chairman of the Finance Committee of the Board; it was dated September 10, 1946.

² Taken from the minutes of the Council of the American Speech Correction Association, December 29, 1944, as published in the *Journal of Speech Disorders*, 10, (1): 1-2, March, 1945.

orders and in several other areas of educational and humanitarian import will be presented in later pages of this biographical sketch.

Carl Emil Seashore was born in Mörlunda, Sweden, January 28, 1866. The family name Sjöstrand was translated into its American equivalent by a schoolteacher. The Sjöstrand parents emigrated with their two little children when Carl was three years of age. The family settled on the Iowa prairie in a community of Swedish immigrants from their native district. Here Carl Gustav Seashore, the father, became a leader. As carpenter he built many of the houses and, when the need developed, also a school. As lay preacher he taught Sunday School and led the choir. Later he organized a congregation, built its church, and to the end of his life continued to be the religious guide and helpful friend of his flock. The young people especially looked to him always as their wise adviser and confidant. The Seashore home was a center of hospitality and sociability. Life on the farm was sociable and community-connected. The farm itself was maintained as a family enterprise, the children learning by sharing in its varied routine and occasional activities. "Life on the farm was the most vital part of my education in boyhood," Seashore wrote later. "I look with pity upon the modern effort to teach manual training and agriculture to children from the farm." The children shared the joy and the responsibility as well as the work. Father and mother exemplified healthy, cheerful, busy country-living. Reading the Bible, learning chapters by heart, speaking correct Swedish and later correct English, singing at home and in the community choir, these were among the happy memories of childhood. At thirteen Carl was sent to live in town with the Pastor, so that his manners and music might be bettered in more cultivated surroundings. At fourteen he was ready to become the church organist. For three or four years he carried the main burden of the family farm.³

³ These details and many others are readily accessible in Seashore's Autobiography, in *History of Psychology in Autobiography*, ed. C. Murchison (Clark Univ. Press, Worcester, Mass., 1930) 1, 225-297; Carl E. Seashore, *Pioneering*

At eighteen young Seashore gladly acquiesced in his father's suggestion that he enter the preparatory school of Gustavus Adolphus College in Saint Peter, Minnesota. He completed the preparatory course in two years at the head of his class and again held the highest place when he graduated from the college in 1891. This Lutheran college had given him acquaintance with two superior teachers and comradeship with a group of able young men outstanding then and later in character and initiative. Mathematics and Greek were the favorite subjects, and music played an important role. For Carl it was a delightful pastime, which also served in a practical way. Like his father, Carl became a successful choir leader and church organist.

From college Seashore went on to graduate study at Yale. Here as in his undergraduate years he followed as broad a course as the curriculum allowed. He entered with interest into the new branch of Experimental Psychology, which his major study, Philosophy, was sponsoring for the first time. Schopenhauer, Evolution, and Ladd's lectures in systematic psychology were eagerly followed. Seashore was prepared to read widely and he found the new materials fascinating, especially James's two volumes, which had so recently been published. The new Psychological Laboratory at Yale, which Dr. Scripture had just set up, seemed to Seashore at first rudimentary and the presentations too devoid of booklearning to suit him as a young philosopher. But when he proposed a study of inhibition and Scripture responded "try it," his eyes were opened to the direct experimental approach. He dated his scientific birth as a psychologist from that interview.⁴

in Psychology (Iowa City, Univ. of Iowa Press, 1942, vii + 232 pp.). For an excellent short sketch see Milton Metfessel, "Carl Emil Seashore, 1866-1949," *Science*, 111 (1950): 713-717. Dr. Seashore had been ill about three weeks when he suffered a stroke and died within a few hours in Lewiston, Idaho, at the home of his son Sigfried on October 16, 1949. A public memorial service, announced by The State University of Iowa, was held in the Iowa Memorial Union, Iowa City, Sunday, October 23, 1949, at three o'clock.

⁴ Edward W. Scripture received his Ph.D. in Psychology from the University of Leipzig in 1891 and was Instructor in Experimental Psychology at Yale University, 1892-1901. Scripture was born at Mason, N. H., May 21, 1864, and was therefore only a year and eight months older than his student Seashore.

Seashore continued his work with Ladd loyally and profitably for four years, meeting favor as Ladd sought to arrange that Seashore later revise his books for publication. But the method of experiment won Seashore's chief enthusiasm. An extracurricular pursuit on Sundays was relating the new knowledge to the older philosophical attitudes and experience. Seashore was unwilling to "preach" for the religious Swedish group in New Haven, the friends with whom he lived and their associates, but he consented to "lecture" to them. In these lectures he tried to translate philosophy and psychology into their meaning for everyday life and in so doing built himself an intellectual bridge passing from the narrow orthodox view of his college days into a "vigorous philosophical view of the world and of religion in particular." These Sunday exercises, he later believed, proved of greater training value than any course he was taking in the university. They were for him the final, meaningful stage of his learning.

Seashore completed his dissertation work under Scripture but submitted his thesis to Ladd. He was on good terms with both in a period of increasing departmental tension. His thesis accepted (Ph.D., 1895), he went off for a summer in Europe, visiting French and German laboratories and other centers of psychological work. He returned to Yale in the fall as Fellow in Psychology, which meant he was Scripture's assistant.

In his five years at Yale a threefold foundation for his career as psychologist was built. First, as Dr. Scripture's chosen research assistant, he shared with him the problems of developing the laboratory course for psychology. In the laboratory he experimented in classical, physiological psychology through studies of visual accommodation time, perception of pressure and weight, and the laws determining illusions and hallucinations. He worked with Scripture on a spark-chronoscope and an audiometer. His work was imaginative, accurate, and precise. Secondly, in Professor Ladd's seminar he played what seems to have been an important part; in one period he undertook to defend the point of view "that while evolution

holds sway in all organic life, it does not apply to mental life." His conclusions, however, turned out to be the opposite of his initial hypothesis. In another period of seminar work with Ladd he made an attempt to support the doctrine of immortality from scientific sources. This came similarly to negative results. Thus he developed a scholarly logic and a scientific Darwinian philosophy. Third, in his Sunday lectures he developed facility in using a form of presentation understandable to intelligent, untrained hearers. He had carried over from childhood the sense of accomplishment when material and ideas were adapted freshly for a practical use. It seems fortunate that in all three of these areas of interest that constituted his background of professional training he experienced this sense of accomplishment.

At thirty-one Seashore made an important and significant choice. He was in Education at Yale; he was also offered an opportunity to go to China as a missionary teacher. An opportunity to become Director of a Psychological Laboratory drew him from both of these congenial possibilities and he succeeded Assistant Professor of Psychology J. Allen Gilbert at the State University of Iowa. The title was "Assistant Professor of Philosophy," the position: Director of the Laboratory of Psychology.

The Iowa appointment began in 1897. The department at that time was under the guidance of Professor George T. W. Patrick, who had gone to Iowa as Professor of "Mental and Moral Sciences and Didactics" in 1887. The Psychology Laboratory at Yale had opened the same fall that Seashore entered as graduate student. Now coming to Iowa to take up his duties he found a laboratory already established for some seven years. Professor Patrick had been exposed to the new developments in psychology by studying under G. Stanley Hall at Johns Hopkins, where his fellow students included Sanford, Burnham, Hyslop, Jastrow, Dewey, Donaldson, and Cattell, all of whom became influential leaders in the development of the "new" psychology. Patrick had made several visits to Europe and had been especially interested in the psychology laboratories at Berlin and

Leipzig. Beginning in 1890 he had established a specific budget for the Psychology Laboratory at Iowa, therefore conditions were highly favorable for the new appointee.⁵

It is well-known to students of the history of psychology and to other scientists, especially of the older generation, that experimental psychology was sponsored by philosophers and departments of philosophy. On the other hand, the science was founded by young scholars who entered into their work with an enthusiasm that at times exceeded their discretion, with the result that clashes of interests arose in many departments of philosophy in America. In later years Seashore was able to say "I am glad to report that no such conflict arose for me in the University of Iowa. Patrick, especially through his contacts at Johns Hopkins, had become thoroughly imbued with and acclimated to the experimental approach and stepped into the laboratory to do significant, first-hand work himself, while I, as a newcomer, joined him with a philosophical background training. Together we have enjoyed a life-long community of interest in philosophy and psychology."⁶

Returning to Iowa after his five years at Yale, Seashore's domestic life developed most happily. In 1900 he married Mary R. Holmes of Springfield, Massachusetts, and so began a partnership of rare congeniality in a hospitable home, which became a center of intellectual interests and warm friendliness. As a beginning graduate student the writer and his wife lived directly across from the Seashores during the academic year 1909-1910. I have the happiest memories of these intimate contacts with Dr. and Mrs. Seashore and their four boys. At times we served as baby-sitters for them and were charmed to see them go off in full dress to concerts or receptions, or at other times with golf clubs, or with their skates dangling from straps around their necks and their hands warmed in bright red mittens.

⁵ The early history of the Iowa Psychology Laboratory has been recorded by Professor Patrick in the *Iowa Journal of History and Politics*, Historical Society of Iowa, July, 1932.

⁶ *Pioneering in Psychology*, University of Iowa Press, Iowa City, 1942, p. 13.

Needless to say we were definitely on the receiving end when our first child arrived in February, 1910. Their eldest son, Robert Holmes Seashore (1902-1951), followed his father's interests and became Professor of Psychology and Chairman of the Department of Psychology of Northwestern University. Carl Junior and Siegfried, the second and fourth sons, applied their interest in psychology to business and personnel work with outstanding success. Marion, the third son, was a very gifted boy; when he was a premedical student he was drowned in the hectic process of saving the lives of two friends.

During his first years at Iowa Seashore's chief scientific interest lay in the laboratory and the laboratory training course. At first he developed a good many pieces of apparatus on the basis of the experience he had had at Yale. He had no assistant. The workshop was also his office and study. The policy of economy, self-help, and ingenuity, naturally evolved. Out of the basic researches carried on during this period came significant contributions to instrumentation. These important laboratory pieces included the audiometer, the tonoscope, the spark chronoscope, a sound-perimeter, the Iowa psychergograph, and later tone generators and the phono photographic cameras. Dr. Seashore was creative and very practically effective in his designing and building of scientific instruments. He envisaged clearly what an instrument was to do, the means by which it could be kept in standard working order, and ways in which it could be arranged so as to economize the time of the user and simplify the reading-off of observational data. He also considered the possible or probable constituency of users both in laboratories and in the field of private use. It would be a pleasure to present in detail features of various pieces of his apparatus that illustrate his inventive and adaptive genius for instruments. Such a presentation would be hampered without illustrations, and the reader must be referred to the volumes of Iowa Studies and to Seashore's own papers and books.

The Departments of Psychology and Physics at Iowa for many years had shared the use of an excellent machine shop and the time

of good instrument mechanics. The pilot models of Seashore's instruments were made in this shop, always under very careful guidance from their designer. After a period of experimental use they were of course sometimes remodeled but in general the designs were well worked out at the beginning. Several of these apparatus units were manufactured and sold commercially by the C. H. Stoelting Company, Chicago, Illinois. It is pleasant to record that as one little part of Dr. Seashore's contribution to the advancement of psychology he characteristically refused to accept any royalty on the sale of his instruments.

One instance, and perhaps the most striking, of the long-range developments flowing from Seashore's interest in instrumentation, is our present-day scientific audiometry. His first audiometer built at Iowa presented a series of clicks of graded intensity in the telephone receiver which was held at the ear of the person being tested. This audiometer was placed on the market by Stoelting about 1900. By 1915 Seashore's laboratory models measured threshold sensitivity to tones at various cycle frequency levels throughout the auditory range. Some six or eight different models preceded what came to be known as the Iowa Pitch Range Audiometer.⁷ In the creation of this instrument Dr. Seashore had drawn into association with him Dr. C. F. Lorenz, a physicist, Dr. L. W. Dean and his research assistant Dr. Bunch, both otologists, and Professors A. H. Ford and G. W. Stewart. This new instrument was brought to the attention of the Bell Telephone Company and the possibility of its redesign as a vacuum tube instrument and its probable future usefulness were considered by Dr. Frank B. Jewett, at that time Vice-President of the Bell Telephone Company, later, 1939-1947, President of the National Academy of Sciences. Seashore now had a powerful ally in developing scientific audiometry. The Bell Laboratories spent perhaps over \$200,000 the first year in experimentation and in construction of their audiometer A-1. In the interest of keeping the road

⁷ "Measurement of Acuity of Hearing throughout the Tonal Range," University of Iowa Studies in Psychology, 8 (1922): 45-82.

ahead clear for scientific advance Dr. Seashore did not allow the Iowa Pitch Range Audiometer to go on the market. He had used his first and original instrument in a series of tests on school children in 1899. In 1933, with research funds, he purchased a Western Electric A-4 Audiometer with a view to loaning it to various organizations which might wish, or be encouraged, to introduce hearing tests in the public schools of Iowa. Furthermore he saw to it that thoroughly trained personnel demonstrated the audiometer and made its significance for education and human development clearly evident. Thus "he carried through"! This descriptive phrase for a scientific man and his work is peculiarly appropriate in reference to Carl Seashore.

For the graduate student who went to Iowa the distinctive, unique laboratory instruments for psychological experimentation and research which had been developed there constituted a challenge. A student being shown around the departmental laboratory for the first time experienced happy surprise, that is, if he had experimental interests and leanings. He thought to himself "Well, psychology here is not just a matter of book-learning, they really do things." He got the impression that quite a lot of psychology had been "produced" here, and that the production process was still going on. The presence of these scientific tools and the fact that they did their work nicely generated respect for the professor, his competence, and breadth of interest. There was one architectural feature at the Iowa Laboratory, then housed in the Liberal Arts building, which challenged the scientific imagination of students and visitors in the first two decades of this century. This was the sound-, light-, and jar-proof room, which stood on a special foundation and had its entry passages on the second floor. Here you could almost hear "consciousness" at work in your body. The appropriateness of the room for certain experiments was self-evident. It was not altogether pleasant to work there, but as a graduate student you thought that psychology was doing well by itself to have such provisions available.

The Dean was not one to cling through sentiment to the old or

obsolete because he had personally invested much physical and mental labor in creating it. He had, for example, spent an entire summer's vacation just in the phase of supervising the construction of the sound-, light-, and jar-proof room. It proved a center for a large amount of experimentation, but some years later he expressed pleasure in giving it up since he counted that the Psychological Laboratory had good fortune in joining with the departments of Education, Philosophy and Child Welfare in taking over the old University Hospital as a new location for offices, laboratory space and lecture rooms. This move with all the hubbub and inconvenience that it occasioned was made when he was sixty-three and was accomplished with great enthusiasm on his part. The new laboratory in East Hall was dedicated December 30, 1930. The following motto, for which he was probably chiefly responsible, was at that time unveiled.⁸

INSIGHT INTO THE NATURE OF MENTAL LIFE,
 APPRECIATION OF ITS BEAUTY, AND
 WISDOM IN ITS CONTROL
 DEVELOPMENT OF PERSONALITY, SCIENTIFIC INTEGRITY,
 AND THE ART OF DELIBERATE AND ADEQUATE
 STATEMENT OF FACT
 CENTER FOR FUNDAMENTAL SCIENCE AND
 SERVICE TO MANKIND
 MEMORIAL TO THE PIONEERS IN PSYCHOLOGY
 HEARTH FOR COMRADES IN RESEARCH
 TO THESE ENDS THIS LABORATORY IS SOLEMNLY
 DEDICATED FOR THE COMMONWEALTH OF IOWA

The first eight years at Iowa were spent effectively and congenially with Patrick as head of the department. Visual, auditory, kinesthetic, and other researches were conducted. These were reported in the

⁸ *Pioneering in Psychology*, p. 37.

University of Iowa Studies in Psychology.⁹ Four master's degrees and one Ph.D. were granted in Psychology by 1905, when due to Professor Patrick's frail health Seashore took over the departmental headship. Three more M. A.'s and one additional Ph. D. in Psychology had been granted by 1908, when Seashore was made Dean of the Graduate School. The University was beginning to get under way as an institution offering graduate training. Patrick and Seashore had stimulated this development in psychology and their research interest was generating university development. One of the very first projects that the new Dean carried out was to visit many of the small independent colleges of the state of Iowa for the purpose of becoming acquainted with their faculties and of encouraging the pursuance of graduate work. It seems probable that Seashore would have achieved a great reputation in psychology had he remained just professor and chairman of the department. On the other hand, the position of Dean of the Graduate School stimulated his development as scientist, educator, and creator of cultural assets to a degree beyond what otherwise might probably have been the case. The Deanship was for him not just a title. As a sacred trust and mission, his life was consecrated to its service. In him the insights and en-

⁹ University of Iowa Studies in Psychology, as a scientific publication was initiated by Professor Patrick. An introductory note to Volume I, dated June 1, 1897, states the plan and objective. "It is hoped to publish one volume of these Studies in a single number annually. They will contain reports of researches undertaken in the psychological laboratory of the University of Iowa, and contributions from the instructors in the department of philosophy and psychology. The present initial number contains also two reviews of some recent writings of special interest to students of child psychology." Patrick and Gilbert appear as joint editors of Volume I, which went to press in Iowa City in 1897 before Seashore arrived. Volume II, which appeared in 1899, was made up of articles by Seashore and two studies by Patrick; Volume III, 1902, consisted of five articles, one by Patrick on "The New Psychological Laboratory of the University of Iowa," two by Seashore, one by Mable C. Williams, and the fifth by Seashore and Williams. Patrick was editor of Volumes II and III, but Seashore became editor with Volume IV, which was published March 1905 as *Psychological Review*, Monograph Supplements, Whole No. 28, pp. 1-118 (Lancaster, Pa.). As editor of the Studies for many years Seashore continued to use the plan adopted for Vol. IV rather than publishing from Iowa City.

thusiasm of a worker in a new and developing science were coupled with renaissance-like attitudes and aims to advance the whole realm of scholarship through graduate education. He was an effective recruiter of graduate students. When they came to Iowa City they found him to be a true friend in advice and helpfulness with schedules of study, and also on such matters as housing, part-time work for earning, community contacts, avocations, and recreations. He set himself to turn out all-round, scholarly youngsters, imbued with professional attitudes and set to be effective, productive citizens. If they failed to turn out that way, it certainly was not his fault. The University gave him great scope and he used it with skill and good grace. In his relations with other faculty members Seashore as a scientist and educator was not a timid man. On the contrary, at times he must have seemed overbold to some of his colleagues. No doubt this leadership role, which he played for much of his life at Iowa, was accentuated by virtue of the good cards which he held. He was full professor at 36, chairman of the department beginning in 1905, and Dean of the Graduate College for nearly thirty years. When he spoke it was, and could not be otherwise than, "The Dean" who spoke. But the democratic process prevailed, backed by his uncommon good sense, human sympathy, and high ideals for scholarship.¹⁰

In 1908 Dr. Seashore brought out a laboratory text, "Elementary Experiments in Psychology," which became widely used because of the cleverly arranged experiments that could be made without elaborate apparatus. He was chairman of the committee of the American Psychological Association on the Teaching of Psychology, which besides himself included James R. Angell, Mary W. Calkins, Edmund C. Sanford, and Guy M. Whipple. The report of this committee, presented in December, 1909, represents a most interest-

¹⁰ In the first ten years of his deanship his department awarded seven more Ph.D.'s in Psychology, bringing the total number to nine. This does not seem large in terms of present-day outputs of graduate schools but for a mid-western university before 1920 it was a good record. It represents only a limited part of the research and graduate work of that department.

ing cross section of psychology at that date.¹¹ The viewpoint of the chairman and his committee is in part expressed in the following: "Be it said once for all that this committee regards it neither feasible nor desirable to recommend any one system of psychology, any fixed method of treatment, or any exclusive set of aids to instruction. The content, the method, and the means of instruction must vary with the preparation of the teacher, the type of student, the place of the course in the curriculum, etc.; and the growth of science, the invention of methods and instruments, the appearance of new textbooks, etc., make it necessary to change the course from year to year."¹²

Three members of Seashore's committee, Angell, Calkins, and Sanford, had each received the distinction of election to the presidency of the American Psychological Association, and Professor Seashore was president in 1911 and presided at the 20th meeting, which was held in Washington, D. C. His presidential address was entitled "The Measure of a Singer." He published this paper in *Science*.¹³ Quite regularly APA presidents had been sending the manuscripts of their annual addresses to the *Psychological Review*. Seashore's decision to publish elsewhere occasioned some stressful correspondence with Professor Howard C. Warren, chairman of the

¹¹ This report was published in *Psychological Monographs*, Vol. XII, No. 4 (Whole No. 51), April 1910, pp. 1-93. The work of the committee was divided among its members. Whipple surveyed the teaching of psychology in normal schools, pp. 2-40; Calkins covered the elementary course in "colleges supposed to have no laboratory," pp. 41-53; Seashore studied the content of the elementary course in institutions with laboratories, pp. 54-71; Angell did laboratory courses and equipment in psychology for colleges and universities, pp. 72-79; and Seashore wrote a general report with recommendation, pp. 80-91, which was largely in topical outline form. Two pages at the end of this publication record interesting notes by Helen D. Cook on the lively discussion which followed the presentation of the report at the Christmas meeting in Cambridge, 1909, under the presidency of C. H. Judd. This was the 18th annual meeting of the Association, which had been organized that fall when Seashore entered Yale as a graduate student, 1892.

¹² *Ibid.*, p. 80.

¹³ *Science*, 35 (1912): 201-212. His immediately preceding publication was "The Consulting Psychologist," *Pop. Sci. Mon.*, 78 (1911): 283-290.

Psychology Department at Princeton and editor of the *Psychological Review*. I recall Professor Seashore told me at the time that he felt psychology should seek a wider audience for some of its scientific findings and proposals. In Dr. Seashore's bibliography at the end of this sketch the reader will observe that he published in a large number of periodicals, representing different fields of scholarship and professional activity.

As Dean of the University of Iowa Graduate School Dr. Seashore was keenly interested in all graduate departments, institutes, and other units that existed when he became Dean or that grew up during the years he served in this capacity. Those taking advanced degrees in the Department of Psychology, of which he was Chairman, represented a particularly large investment of his interest, creative imagination, and leadership. During the first decade of his deanship, master's degrees in his department were granted at the rate of 1.8, doctor's degrees at 0.7 per year. In the second decade master's degrees numbered 4.7 per year, doctor's degrees 4.1. For the next nine years the average for master's degrees was 10.6 and for Ph. D.'s 9.6. This rapid acceleration in the number of graduate students seeking and achieving graduate degrees in psychology was in part due to the effect of World War I on psychology.

"It has been said," Dr. Robert Yerkes reports, "that the application of psychology to advertising rendered it respectable, and that its application to war advertised it widely and favorably and created an unprecedented demand for its services."¹⁴ Most psychology departments in the United States showed evidence of this progressive increase from 1918 until 1939. The statement that Dr. Yerkes quoted above characterizes the background between World Wars I and II against which leaders in psychology were able to establish new connections between psychology and other disciplines and by increasing the avenues for applied psychology sometimes make them into new and favorably recognized professions. Leaders such as Seashore de-

¹⁴ R. M. Yerkes, *The Role of Psychology in the War*, New World of Science, Century Co., New York, 1920, pp. 351-389.

serve great credit for their efforts, wisdom, and foresight in surveying and laying out areas which have become parts of the complex map of psychology of today.

The early relations of clinical psychology and psychiatry proved hazardous. Viewed from the standpoint of the mentally ill and their relatives, psychologists and psychiatrists ought to be friends and collaborators in the promotion of mental health and hygiene. In this area Seashore sought devotedly to bring about good working relations and understanding, but progress was slow and uncertain. Among the medical doctors in the State of Iowa only the Superintendent of the Hospital for the Insane and the directors of one or two sanatoria would, at that time, lay claim to being psychiatrists. In general, as Seashore has pointed out, the terms *psychiatry* and *psychopathology* to most doctors then represented a new-fangled fad with which they would have nothing to do, although they were dealing frequently with psychopathic patients. The training of physicians in the state did not then include instruction concerning mental diseases, their diagnosis, and treatment. This condition of affairs was, however, typical for other specialties in medicine. The educational plan at the time was that the young doctor, having completed his medical course, would work up his specialty by himself and according to his own interest and opportunity. And as for psychology, the course in abnormal psychology which Dr. Seashore offered in his department, gave major attention to the more curious examples of mental behavior: dreams, hallucinations, automatic writing, hypnotism, alternating personalities, and other phenomena, classified under psychical research. However, in another sector of this area between normal and pathological psychology, that is, childhood development, the way seemed to Dr. Seashore more open to advance. A psychological clinic for children was set up about 1910. In general it was designed on the model of the one established at the University of Pennsylvania by Lightner Witmer, Professor of Psychology, who had been operating it for a few years. This Iowa development was the second such clinic in an American university.

It dealt primarily with the problems of feeble-mindedness and retarded development. Both Professors Patrick and Seashore had strong interest in this clinic and took a definite step beyond it by promoting the idea that an introductory course in general psychology should be a requirement for premedical students. The subject of mental diseases was introduced into the courses in the Department of Psychology, and the treatment of this subject at first definitely followed the line largely set out by Dr. E. Kraepelin, then a leading psychiatrist in Germany. Seashore was one of the guests in attendance at Clark University in 1909 when, under President G. Stanley Hall's planning, leading American psychologists met Sigmund Freud, Carl Jung, Ernest Jones, and others, listened to their addresses, and engaged in psychological and psychiatric conferences for several days. The Dean now began to envisage (a) the possibility of setting up an experimental hospital in the Medical School at the University "as a clearing-house for mental patients," and, (b), integrating the Psychological Clinic with the Out-Patient Clinic for Children in the University Hospital. He found a good supporter of this program in President George Edwin MacLean of the University. It is a long and interesting story from the conception of this plan to its realization, which required that a bill be passed by both Houses of the State Legislature, enabling the setting-up of the Psychopathic Hospital at Iowa City. Under the Dean's inspiration and leadership many prominent people, both in the University and outside it in the state, joined in bringing about this accomplishment. Mr. W. R. Boyd, Chairman of the Finance Committee of the State Board of Education, was among them. Drs. Samuel T. Orton and Andrew H. Woods were successively the two first directors of the institution, which has had a very creditable history.

When Seashore was considering the opportunity and need for a psychological clinic at Iowa, he made an extensive visit to the Institution for the Feeble-Minded at Vineland, New Jersey. In formulating the observations made at Vineland he hit upon an idealistic definition of an educational institution. Two decades later, in review-

ing his experiences, he says that this summary or definition which he worked out earlier, "has since then been the nuclear idea in my educational philosophy: namely, that it is the function of the institution to keep each person busy at his highest natural level of successful achievement, in order that he may be happy, useful, and good." This idea permeates his writings on personnel, institutions, and educational organizations.

Not only at Iowa did Dr. Seashore endeavor to bring about an enlightened understanding and cooperative attitude between clinical psychology and psychiatry. He tried to promote this development on a national scale. He succeeded in making it the subject of a three-day conference, which began April 30, 1920, in Washington, D.C., under the auspices of the National Research Council, of which he was then Vice-Chairman of the Division of Anthropology and Psychology. Dr. Clark Wissler, Chairman of this Division, served as chairman of the "Conference on the Relations of Psychology to Psychiatry." There were fifteen members, including Drs. Wissler and Seashore. Some of the country's leading psychiatrists, neurologists, students of feeble-mindedness, psychologists, and clinical psychologists, were present, and a stenographic report was made of the entire proceedings. This conference brought out wide differences in points of view. Its members were not able to agree on any constructive set of resolutions, although there were representatives both for psychiatry and psychology who grasped the significance of the situation and tried hard to find guiding principles that would be acceptable. It was certainly wholesome that in this rather stalemated discussion Dean Seashore could report the recent developments which he had been able to initiate and carry forward in the state of Iowa. He was able to say that at Iowa they had reached a full and frank recognition of the existence of an uncertain borderline between psychiatry and psychology, but had united on a sympathetic and cooperative program of research and service. This was centered, he said, in the new experimental Psychopathic Hospital with sixty beds and an out-patient service. The Psychological Clinic, formerly asso-

ciated with the Department of Psychology, had been transferred to the University Hospital and made a part of the out-patient service. The Dean continued his keen interest in this interprofessional problem throughout the remainder of his life, and his guidance and leadership in this area, which is still a perplexing one, was more important than has been generally realized.

Scientific child study and institutes organized for the purpose of promoting such studies are now fairly numerous; they represent a development that has taken place in the last four decades. Seashore had much to do in bringing about the establishment of the Iowa Child Welfare Research Station, although he would himself say that this station owed its existence to a leading Iowa woman. Mrs. Isaac Lea Hillis, before meeting Dr. Seashore, had pressed the logic of having a station or institute in Iowa to study the normal child. She probably invented the slogan "child culture versus corn culture." Finding no special enthusiasm for the idea of scientific research directed toward the betterment of the normal child at the Agricultural College, Ames, Iowa, she went to the State University, Iowa City, and had a conference with the President, Dr. T. H. Macbride. He suggested that this matter be talked over with the Dean of the Graduate College, who, President Macbride said, is our psychologist. The Dean was not slow in grasping this opportunity. With Mrs. Hillis in the field as a generator of popular interest and Dr. Seashore, conferring with his colleagues, developing and working out principles and plans for such an institute, the project was certainly in good hands. In 1916 one of the University of Iowa Bulletins bore the title "A Child Welfare Research Station."¹⁵ The plans and possibilities for a research station that would aim at the conservation and development of the normal child were set forth therein by Dr. Seashore. In this pamphlet there were sections dealing with heredity, parental care, nutrition, preventive medicine, social surveys, education, morals, and the services of the University Extension Division.

¹⁵ This bulletin was one in a series designated "Aims and Progress of Research," a new series, No. 107, 1916, p. 18.

It was a comprehensive document and did much to give "Child Welfare" a scientific research connotation. It was envisaged that the station should feature scientific research concerning the normal child. The institute was to be organized largely through the integration of all the divisions of the University that could center research upon the project. Furthermore, the station that was planned was to serve as a central organizing force for child welfare in the state. Logical and attractive as this plan seemed, and now seems in retrospect, it did not win general approval promptly and found hard going even in the University as well as in the State Legislature. It was the hope of the instigators that the station could come into being as a part of the University and that the State Board of Education would consider it a natural part of its field of responsibility. We can now see that the whole idea of having such a station was so novel as to represent an educational gamble. In their requested budget from the Legislature the President of the University and the Board refused to include an item of \$50,000, asked to establish the Institute. There came a stage when the University administration was also afraid to have the station established on an independent basis by the Legislature, fearful that the proposed institute would divert funds which might otherwise come to the University. Dr. Seashore had faith that the station would be an asset to the University in the long run, as it would be also to the state. The Legislature finally did follow the course of establishing the institute independently and granted the request that it be located in Iowa City in the environs of the University. As it turned out, independence in organization for the Iowa Child Welfare Research Station has probably proven valuable. As an independent unit it was in a better position to seek funds for its expanding scientific programs. Almost forty years of activity in this station have proven its large humanitarian value. It became one of the most outstanding centers in America for the training of research workers. A total of 110 doctorates and 250 master's degrees have been

awarded through the Station up to and including June, 1954.¹⁶ It is noteworthy that the successive directors of this Iowa Station have been among Dr. Seashore's warmest and most loyal friends. This is evidence of his ability to initiate, organize an institution, pick its director, and then keep hands off. He had the rare capacity of being able to contribute suggestions, ideas, and enthusiasm while leaving his fellow scientists free to deal with the situation. He successfully avoided being regarded as a stuffed shirt.

One of the most controversial departments or colleges in an American university is that of education. This division, set up to teach the history, principles, and art of instruction to prospective teachers professes the competence to teach how to teach all other subjects. This departmental claim of teacher-training competence often becomes a bone of contention in college circles and in faculty meetings. What did Dr. Seashore, a modern psychologist in the position of Dean of the Graduate School, do about this matter? Could he work out any scheme that was more acceptable and perhaps equally or more efficient in training prospective teachers for their work as professional educators? Beginning fairly early in his Deanship, Seashore had adopted a general policy of carrying psychology into allied fields where this seemed practicable and prospectively useful. This policy was rooted in the laboratory and in his laboratory procedures. Even as an assistant in psychology at Yale he had been alert to applications which could be developed from the outcome of laboratory research work. And as a college teacher and Dean he had seen laboratory experimentation produce new life and development in psychology and make something of a science of it. This experience had developed his faith in advance by means of technical laboratory measures. He therefore stressed laboratory procedure and method as a major characteristic for the psychology that was to be known as the Division of Educational Psychology. The Iowa plan for the

¹⁶ This information was kindly supplied by the present Director, Dr. Boyd R. McCandless.

School of Education was not like the currently widespread teachers college pattern, where psychology and some other disciplines, as needed, are largely taken over by the department of education and taught within its faculty. Seashore used the scheme of joint appointment and by so doing reduced conflicts between departments. Elementary psychology became a prerequisite to educational psychology and was taught in the Department of Psychology rather than the School of Education. Training teachers at Iowa became more a cooperation between departments than the responsibility or prerogative of one department. The courses on how to teach various subjects at high school or college level were conducted by successful college teachers, qualified from the educational point of view and drawn from members of their respective departments. Sharing teacher training as an interdepartmental problem, to which each department contributed instruction, made this teaching much more vital and interesting to the graduate, and also provided a foundation for graduate work. This scheme, furthermore, had the fortunate result of silencing most of the criticism about a "School of Education."¹⁷

Seashore as dean frequently played the role of educational psychologist himself. He was a master salesman for collegiate and graduate education, but by no means an indiscriminate salesman. Individual difference was a cardinal principle with him. His "An Open Letter to a College Freshman" very handily summarized questions in the thoughts of the man or woman entering college and presented common-sense and rather inspiring answers.¹⁸ Curiously, the publication "Learning and Living in College" has no publication date, there is no signed and dated preface. Perhaps this is a plot to make the reader understand that this volume is actually "undated" and that its chapters are as applicable to educational

¹⁷ *Bulletin of the School of Education, 1909-1910* (Bull. State Univ. Iowa, n.s., No. 192, April, 1909, 38 pp.)

¹⁸ "Learning and Living in College." University of Iowa Studies, Series on Aims and Progress of Research, Vol. 2, No. 1, 1927, 124 pp. The University, Iowa City.

problems now as when written in the early 1920s. The Freshman Letter considers such questions as "What shall I be?"; "Is this a good institution for me?"; "How shall I show my loyalty?"; "How hard shall I work?"; "How far shall I go?"; "How shall I choose a job?"; "Will my education pay?" Let us see what Dr. Seashore says to the freshman, sampling a few spots. These samples may broaden our understanding of Seashore's educational influence. On sports: "Chances are small that you will be a member of an intercollegiate team," he writes, "but if you are, train scientifically as a good sportsman, and play to win—without sacrifice of health or study. Maintain yourself in one athletic sport, as a rule, all the time you are in college. See a good game once in a while and 'root' for your college, but don't hesitate to stay away from the bleachers to play in your own sport. This will take you into all sorts of inter-group competitions and associations which will train you in the ability to handle yourself and will furnish some of the most cherished friendships and affections of your life." Personal religion: "Do not try to keep your religion in one pocket and your science and business in the other. Do not make religion a thing in itself, but in the course of your college day, know, love, and live truth; know, love, and live goodness; know, love, and live beauty, and not only will the world regard you as a deeply religious man, but you will really be just that." How hard to work: "Now the slogan upon which the modern college faculty works is that it is the teacher's business to keep each student busy at his highest natural level of successful achievement. The faculty finds a good deal of opposition to this theory in terms of what might be called the student labor union spirit, which takes the form of reducing the output to the passable minimum, and which expects the same output of all. This keeps the good student from doing justice to himself. Say to yourself 'For each day I should put in an honest day's labor, so that the output may be proportional to my ability.' This habit, when carried into future life, will give you the recognition you deserve."

As one of the early psychologists who gave strong emphasis to the

importance of individual differences in intellectual traits and abilities for academic and artistic training, Seashore will have historical mention. He was repeatedly calling attention to this matter by such statements as "the law of distribution of capacity for academic work operates automatically, but mainly in the negative way: it punishes those who defy it." He continually emphasized the importance of "deliberate procedure, which shall not only avert the calamity of waste, punishment, and sacrifices which come from violation of this law, but shall bring higher education to larger and larger numbers of those who are qualified and willing to profit by it personally and become a most valuable asset to our country." He was aware that this sorting according to ability took place in a manner that was wasteful, for example the 5-50 per cent of students that used to be eliminated from college in the freshman and sophomore years. The state of Iowa under Seashore's general guidance was one of the first to experiment with qualifying examinations. For five or more years the University gave examinations to 1,500-2,000 high school seniors annually for the purpose of working out probabilities of success in college courses, "on the assumption that the student had the will to work." It was quite clear to Seashore that in spite of his good argument in favor of "positive measures of seeking out students, rather than with means of elimination," there would be stubborn objections on the part of many. His colleague and later successor as Dean of the Graduate School, Dr. George D. Stoddard, pointed to some of these objectors perhaps to stimulate the Dean in the direction of answering them. There were first the socially and financially outstanding families who determine that willy-nilly their children are to graduate from college. There were the relatively incapable youths, who because of fraternities and other attractions would themselves determine to go to college despite any counsel to the contrary. There were some college administrators who, under stress to increase enrollments, would let down the bars, and there were the objectors who, in the name of democracy, would press the point that any and all should have their chance.

In line with the positive measures proposed by him concerning college entrance Seashore implemented similar principles in the teaching of his large elementary psychology class, for which he was responsible as chairman of his department. This development was called "sectioning on the basis of ability." While not the inventor of this general idea, which had been here and there employed up to the time when the elective system was adopted, Seashore revived and improved it. He was one of the chief exponents of sectioning beginning in the 1920s and continuing throughout his life as professor and administrator. His position and program in this matter were founded squarely on his work as a psychologist in the study of individual differences in ability. To the instructor who would say "It is good for the poor students to hear the good students recite," Seashore would reply in a flat negative. He dramatically emphasized the need for sectioning by claiming that of a hundred freshmen chosen at random without qualifying entrance examinations, the five at the high end of the group would be able to "do more than five times as much as five at the other end," in terms of quality and rate of output. Continuing, he said the next five at one end could do more than four times as much as the next five at the other end, and so on. While claiming that sectioning of large classes was of much importance for increasing the efficiency of instruction, he did not claim that it could be applied the same way in all institutions. He sought to find general principles and pilot examples of procedures that would favor its generalized use and efficiency. In the matter of teaching psychology at the elementary level his formula included (1) sectioning on the basis of ability; (2) individualization of laboratory work; (3) the project method with supervised reading. It is probably fair to say that most of Seashore's graduate students, while at first perhaps feeling that this method of teaching elementary psychology was administratively pretty complicated, after watching it in operation came to agree that it was efficient and a psychologically sound procedure. Various educational organizations, such as the Association of American University Professors,

the Association of Land Grant Colleges, the Board of Investigation of Engineering Education, partly as a result of Dean Seashore's fostering interest came to favor the principle of sectioning. In the academic year 1924-1925 half or more of the colleges and universities of the United States were employing this general method of instruction in one or more departments.¹⁹

Sectioning in the public school—a two-level or three-level organization of each grade—Seashore characterized as psychologically unsound and out of line with good mental hygiene; “a flat rating of this kind carries an unnecessary opprobrium.” In higher education he urged sectioning so far as possible in each instructional subject and the opportunity, according to performance, to shift from one section to another. The influence of this type of set-up on morale and work performance Seashore would illustrate by such examples as the following. He had seven sections in his large elementary class, graded from poorest to best at the beginning of the sophomore year. A student in the poorest section complained about his placement and was told it was based on his general achievement record for his freshman year. The student said “That is not fair, because I did not work in the freshman year.” He was told that he could be promoted twice a month in this class if he deserved it. At the end of the school year this student held a conspicuous place in the highest section. A laboratory man himself, Seashore had learned most from his own individually espoused projects and as graduate dean he appears to have been somewhat impatient with teachers in the humanities who had not found in their own materials many topics for individualized student projects. He felt keenly that there was too much lecturing, that this produced too many professors with spurious ego-satisfaction and that in the name of help to the students this made them actually helpless. What he preached he practiced. Through a number of years his three-hour elementary

¹⁹ “Sectioning on the Basis of Ability.” Bull. of the Am. Assn. of University Professors, (February-March, 1926): 9-24, summarizes this educational development.

psychology course for a class of about 600 students was one lecture and two project-periods per week. For the lecture there were divisions at 9, 11, and 1 o'clock. This resulted in favorable size for the lecture groups and also helped the students by avoiding schedule conflicts.

In his "A Preview to College and Life" Seashore presents a group of open letters.²⁰ By open letters he spread his ideas on policy and promulgated his educational psychology not only to freshmen entering college but also to the other classes of university students. There was also one to the Professor, another to the College Dean, one to the Junior College Dean, and one (I understand unpublished) to the University President. In all this he was not trying to nail down a theory of education but rather to plead for the actual practice of what seemed to him sound fragments for the construction of a good theory. In "An Open Letter to a College Senior" he is just as creative and challenging as is characteristic of his other open letters. On the one hand he says "If you have a chance to travel, to go on an expedition, to take part in a venture that will widen your horizon by knowledge or experience, or to serve as an apprentice in some enterprise involving learned achievement, take such opportunity and it will count for your graduate study." On the other hand, under the caption "The Disadvantage of Maturity in Graduate Study" he points out that graduate study stands not so much for the acquisition of learning but rather for "the grafting of new interests, new attitudes, and new abilities upon a sound and hardy root stock at the most effective stage of growth."

Seashore's life and work as a dean of graduate studies may be thought of as a monument with its foundation in elementary and secondary education, its superstructure extending from the freshman year upward to the graduate and professional levels and terminating in a particularly fine cap-stone, bearing the words "The Gifted Student Project." It was mentioned earlier that at the time of the noteworthy conference on the relations of psychology and psychiatry Sea-

²⁰ Aims and Progress of Research, University of Iowa, 1938, No. 55, 78 pp.

shore was Vice-Chairman of the Division of Anthropology and Psychology of the National Research Council. He became Chairman the following year (1920-1921). His chairmanship is noteworthy, especially because of the large importance of the Gifted Student Project, a program which he formulated and for which he secured the approval of the Council. With George W. Stewart, Professor of Physics at Iowa, a very close friend and long-time collaborator, Seashore that year went among the colleges and universities of the United States, proposing that "faculties should give as much attention to gifted students as to poor students. This should take the form of individual encouragement rather than teaching. Emphasis should be laid on quality rather than quantity of work." Various means, such as honors courses, attention at the beginning of research, and companionship with scholars were proposed for the gifted as Seashore analyzed the project and presented it. During World War I he had served as chairman of a committee for the selection of college seniors who could be trained most effectively in a short time for technical services. This had resulted in a plan cooperated in by many colleges whose faculties selected the upper ten percent of the senior class for consideration of this training placement committee. Now in peacetime it was out of this committee work that the Gifted Student Project evolved in Seashore's mind. Foundation support was forthcoming. Seashore and Stewart, the former as Chairman, carried on for five years, during the first of which Seashore was Chairman of the Division. The matter of visiting the many colleges and universities was arranged through the office of the Chairman of the Division of Educational Relations of the National Research Council, at that time Dr. Vernon Kellogg. In introducing the subject, a letter would be addressed to the president of a university inquiring if he wished to receive a visitor from the Council to lead a conference on the subject of the gifted student. These invitations were usually accepted and an itinerary made up for a period of several weeks. This was a subject in which all departments and for that matter professional schools could be and were interested. At

certain institutions the discussion was particularly à propos since the college or university was in the process of curriculum revision. As proponents for the gifted student's educational needs these experienced trainers seem at times to have made very challenging statements about the way in which the gifted student was often ignored on the assumption that he could take care of himself. Reports indicate that very vigorous discussions took place, with the result that college deans and departmental chairmen gave more attention to this subject per semester during this five-year program than had probably taken place in any previous twenty-year period. The aftermath of the war was undoubtedly influential in this result.

There were also noteworthy by-products which stimulated graduate education. Dr. Seashore's "Open Letter to a College Senior" was used by the National Research Council for several years as an annual message to every senior graduating from a liberal arts college in the United States. Some institutions printed their own edition. Perhaps no other single pamphlet having to do with higher education has had a wider circulation in this country. Through the Council there was also issued, as a result of this project, a series of bulletins presenting each department of science from the standpoint of a profession. These were issued for several years. Dr. Seashore prepared the one "Psychology as a Career."²¹

A state university, its professors and clinics, must stand ready to deliver if a citizen of that state calls for help. The reputation of the university either increases or declines as a result of the manner in which these human needs are met; furthermore, a group of self-respecting specialists as a rule is desirous of meeting these challenges. Seashore was not the man to say "I am sorry, we cannot help you," and it would be completely against his nature to indicate no interest in the presence of human need. Therefore one striking case of human malady might start a whole train of events and developments. Such an instance was the bringing to the Psychological Clinic of a

²¹ *Science*, 55 (1924, April 14, 1922): 381-384. For the National Research Council, Washington, D. C.

child who had serious reading and speech disability. Dr. Samuel T. Orton, analyzing this problem as a neuropsychiatrist, and Dr. Seashore as a psychologist concluded that psychology and psychiatry should jointly undertake the training of one or more people in speech pathology. An exploratory program of this character was begun. We must recall that until the time when Seashore and his associates in psychiatry pooled the techniques and skills of the two disciplines for the purpose of dealing with stammering, this malady was not commonly treated by the medical profession but usually by quacks. Men like Dr. Lee E. Travis and Dr. Wendell Johnson, the latter having come to the clinic originally as a stutterer himself, were trained by Drs. Seashore, Orton, and their associates and became leaders in speech pathology. The reputation of the Iowa clinic spread throughout the country. The early policy, however, was to select cases which were considered particularly valuable from the standpoint of progress in the research in this field. Dr. Seashore urged the University to set apart or provide a building capable of housing 200 speech patients, who would be under professional treatment, some of them taking class work at the University at the same time. He felt he could guarantee that this accommodation would be filled, and chiefly by paying patients. The University, however, did not see its way clear to rise to this opportunity. The Speech Clinic was housed in quarters at East Hall along with the Psychological Laboratory, the Psychological Clinic, and other divisions of services that moved to this building in 1930. For several years the Iowa Speech Clinic was noteworthy, also as a place possessing unusual facilities, developed by Dr. Travis, for work in electrophysiology.

The Reading Clinic was another contribution from applied psychology developed from suggestions of Dean Seashore. Its first objective was "conduct of research in reading disabilities as a technical unit in the Personnel Service for Freshmen." Of course it also undertook remedial training at college level and offered cooperation with such activities in the School of Education as concerned the clinical treatment of children with reading disability.

Many college generations saw freshmen "initiated" chiefly by sophomores using paddles and other vigorous rewards and punishments. The 1920s witnessed a new development symbolized by the phrase "Personnel Service for Freshmen." Yale University set up the office, Dean of Freshmen, in 1920, and the first dean appointed was a psychologist, chairman of his department, Roswell P. Angier (Dean of Freshmen 1920-1925). While freshmen had, we may suppose, ordinarily received a good deal of advice and supervision by college faculty members, it was no doubt rather haphazard. There were not a few who thought a freshman should be on his own and the hard knocks would bring him into line most rapidly. Parents, characteristically, had a different point of view. Dr. Seashore was not a Dean of Freshmen by title. But as a psychologist and the father of four boys he was this in spirit, and furthermore, he stood on the front of the educational line of advance in a rich state. Speech disorders, reading disabilities, excessive shyness, such things in adolescents are not adjusted or removed by a good strong paddle or, in general, by other sorts of "hard knocks." Devotedly and as vigorously as any other person of his generation Dr. Seashore worked to bring applied psychology to bear upon this area. He played a leading role in organizing public opinion and in instituting clinics equipped to be effective in retraining and corrective procedures. He saw the critical value of doing as much as possible, as early as possible, for the college student, so that his developing personality would be relieved from blemishes and handicaps. Iowa's lead in creating personnel services for college students was followed by other institutions, especially the tax-supported ones in the middle and western parts of the United States. A good many of the colleges and universities on the Atlantic seaboard were slow in recognizing the need and providing such services for their students.

When the United States entered World War I, psychologists, along with other scientific groups, offered their services. Professor Robert M. Yerkes, then President of the American Psychological Association, called the ex-presidents of the Association then living to meet

at Columbia University for conference. Seashore was, of course, a member of this group and participated in the resolution to devise the Army Mental Tests; he believed in their probable usefulness and later saw this faith fully justified. A logical next step after the war was to apply such tests to freshmen entering college. In the summer of 1923 the President of the University of Iowa, Dr. Walter A. Jessup, in an executive order recommended the introduction of testing for the purpose of analyzing the freshman class and asked Professor Seashore to take charge of this exploratory study. It seems probable that, had this matter been left to the decision of a faculty meeting, it would have met obstruction and been put off for some time. As an order from the President it was carried through shortly after the opening of the University in the fall of 1923. The freshman class was assembled in the Armory and the test was administered in the manner that had been adopted for Army recruits. Dean Seashore was away from the University at the time of the first faculty meeting following the administration of these tests and therefore heard at second hand the bitter complaints of some faculty members about what they regarded as almost an insulting experience to which the members of the freshman class had been subjected. The Dean of the Liberal Arts Faculty met the situation by proposing that no action should be taken until one semester later, when a report could be expected from Professor Seashore. The report was made early in 1924 and was rather startling. In the first place, it was presented on a chart which is said to have been about 30 feet long. In the second place, the chart displayed comparative performance in courses in the University, in the first semester, for the lowest 10 percent and the highest 10 percent, in terms of scores on the test. The results indicated conclusively that the test could serve as a predictive instrument. This event in applied psychology at Iowa not only started the University under Seashore's guidance on a large program in the application of differential psychology but was probably also one of the earliest instances of such a test report being presented to a large academic faculty. Use of intelligence tests on the Iowa freshmen,

which began in 1923, supplemented developments that had already taken place in the Psychology Department in connection with devising and improving objective achievement tests.

The Society for Promoting Engineering Education became interested in the general topic of qualifying examinations, and Dean Seashore was asked to take the responsibility for organizing the preparation of such an examination with the aid of a grant from the Carnegie Foundation for the Advancement of Teaching. At the request of the Deans of the Engineering Colleges in July, 1924, Dr. Seashore, with the cooperation of Drs. E. Murrel Ruch, George D. Stoddard, and a group of associates familiar with this type of work, was able to shape up two forms of what was called "The Iowa College Qualifying Examinations." In the fall of 1924 many engineering schools tried out this examination. Seashore says of it "the launching of this service became a successful pioneering venture along a new frontier and now holds an important place in the selection and administration of student personnel."²²

A psychology rooted and grounded in the laboratory not only lent itself to numerous worthwhile applications; psychology was also, in the imagination and experience of Dr. Seashore, capable of serving as the representative science for art. He pointed out that it could assume the function of integrating and interpreting the contributions related to art which come from other sciences, such as physiology, anatomy, physics, and acoustics, while at the same time emphasizing that due credit must be given to these other sciences. This idea was implemented and realized at Iowa in more than one department having to do with art. The Department of Speech, for instance, through the development of these ideas, was built into an outstandingly strong division and gained a national reputation. The usual specialties in a speech department had been debate, dramatic writing, production, sometimes oratory. The graduate students in the Speech Department at Iowa were required to take a course in anatomy under an anatomist, one in physiology under the instruction

²² *Pioneering in Psychology*, p. 168.

of a physiologist, and in psychology, in dramatics, and so on. They were exposed to the Psychology Laboratory, where acoustics was strongly represented in equipment and research problems, and where substantial work in phonetics was also in progress. An experimental theatre and a radio laboratory were available.

Whether artists in general—painters, sculptors, designers—liked it or not, for a number of years the Dean steered their students into projects and studies in which scientific principles characteristic of laboratory investigations would be brought into association with art creation, criticism, and the science and philosophy of art. He was successful in finding and attracting to the University a few art teachers who saw possibilities in this merger of the scientific and the artistic attitudes. Norman C. Meier came to Iowa from the University of Chicago in 1922. He developed a comparative method like the paired comparison technique of psychology and applied it to art judgments. His method was to select an artistic picture, draw two copies of it, one an exact reproduction, the other with only one altered feature in it. The two copies were made the same size and both in black and white. Students were asked which one of a pair of pictures was the more pleasing and attention was drawn to the feature which had been changed. This provided a method that was capable of use with subjects representing all degrees of artistic training. This judgment testing method and other parts of the program, developed for graphic and plastic arts under Dr. Meier as Director and with Seashore as cooperating administrator won financial support from the Carnegie Corporation of New York. Dr. Frederick P. Keppel, who became President of the Corporation in 1923, had initiated a program in the Fine Arts and the development at Iowa became a part of it. An instrument known as the “Meier-Seashore Art Judgment Test,” formulated on the basis of extensive research, became widely adopted for use in art schools and other institutions.²³

²³ N. C. Meier, “A Device for the Measurement of Talent in ‘Graphic’ Arts,” *Proc. Iowa Acad. Sci.*, 32 (1925) 397: *Manual for the Meier-Seashore Art Judgment Test*, Iowa City, Iowa: Bur. Educ. Res. & Serv., Univ. Iowa, 1930, 24 pp.

Three volumes in the University of Iowa Studies in the Psychology of Art are available for those who wish to familiarize themselves with these developments. What happened in reference to the influence of psychology on the graphic and plastic arts at Iowa was substantially duplicated there with respect to psychology and poetry, under the direction of Professor Wilbur L. Schramm of the Department of English.²⁴

The names of Iowa and Seashore were in the popular mind joined in connection with yet another subject, psychology of music. This university and this creative scholar probably did more than all who had preceded in defining, advancing through research, and implementing through testing instruments, music records, scientific articles and books, the study and dissemination of the psychology of music as an aid to this great art. Seashore's accomplishment in this field was no accident; this interest was a leading characteristic of his genius. From early life music was very important to him. It was a source of rich pleasure, an avenue for the exercise of skill and the enjoyment of friendly associations, an opportunity to earn and make his way through school and college. As a graduate student in psychology, study of tone and hearing, of speech and singing, by means of newly conceived scientific instruments was just naturally his meat. He had experience as a performer which supplemented these laboratory explorations. Professor Scripture, with whom he studied, was greatly interested in the physics and psychology of sound and speech. In later years Scripture was known as a speech specialist. Earlier in this sketch some attention has been given to apparatus design and construction. Perhaps half of these developments were directly applicable to some phase of study of the psychology of music. It was not misleading to speak of the Iowa Laboratory for the Psychology of Music. Through Dr. Seashore's publications, which included descriptions of many of these instruments, together with outlines and summaries of studies of music, the scientific world became

²⁴ W. L. Schramm, *Approaches to a Science of English Verse*, The University of Iowa Studies, Aims and Progress of Research, Series No. 46, 1935.

familiar with these advances. Musicians on concert tours through Iowa not infrequently visited Dr. Seashore and his laboratory. These visits often provided quite unique opportunities for graduate students to show noted musicians about the Laboratory and to demonstrate some of the equipment. The attitudes of these artists toward the instruments and their varied reactions to the idea that psychology was important were interesting themes for discussion among the students and sometimes with the Dean. But he was not turned from his faith that psychology would prove its value for music and musician.

The Seashore Music Tests recorded on high-grade phonograph records and marketed through a leading company provided a means by which surveys of musical talent could be made in schools, even including schools of music. Seashore had taken the position that musical tone may be considered as pitch, loudness, time, and timbre, and that there is a psychological sense or sensitivity for hearing each of these aspects of tone. Judgments of tones in pairs, each tone heard successively, can be made in reference to pitch or loudness or duration or timbre. He made a further assumption that, if a person is poor in making these comparison judgments, then he probably is not capable of becoming a first-class musician as a performer, nor is he likely to find music as great a source of pleasure as many others find it. These music tests were first used in Des Moines, Iowa, as a demonstration before a women's club in 1912. Soon after they were used in examining fifth and eighth grade children in the Charles City schools. Seashore worked hard to improve these tests and to perfect his own performance as a musician to record them at the Columbia Phonograph Laboratories, New York City, in 1919. This new testing set he demonstrated before the National Music Supervisors Association at St. Louis in 1919. With the establishment of the School of Music by Mr. George Eastman in Rochester a unique opportunity became available for an extensive application of the tests as predictive measures for entering freshmen in that school. This program was carried through by Hazel M. Stanton over a

period of three years. The results proved to be so useful to the administration and faculty that the examination was made a regular part of the entrance requirements for the school.²⁵

The surveying of musical talent in a school and predicting relative success or failure of its students were only beginning steps on the path that Dr. Seashore wished to travel. Mr. Eastman had asked him how psychological skills could be improved by psychological methods. Seashore was characteristically several jumps ahead and had suitable instruments all ready. The intonation of pitch in singing could be seen with the aid of the tonoscope. The student could be made conscious of the factor of loudness in tone by watching the index of an output-meter, the scale of which was calibrated in terms of decibels. The Dean's eldest son, Robert H. Seashore, had devised a rhythm meter by which the subject student could hear a rhythm and with a key endeavor to match it synchronously. Different rhythms could be used for practice. The disparity between the rhythm beat and the moments of pressure on the key were measurable. Other instruments were available or were evolved in the Iowa Laboratory so that the student subject could see his own performance and more surely learn to improve it. One of the most complicated and at the same time artistically effective elements in music is the vibrato; this also was brought within the compass of laboratory instrumentation and research. With the assistance of such outstanding men as Drs. Milton Metfessel, Joseph Tiffin, Arnold Wagner, and others, remarkable scientific advances in this sector of the field of music were made.²⁶

²⁵ Hazel M. Stanton, "Seashore Measures of Musical Talent," Seashore Commemorative Number, Psychol. Monog., 39 (1928): 135-144; see also Esther A. Gaw, "Five Studies of the Music Tests," *ibid.*, pp. 145-156; and *Measurement of Musical Talent*, C. E. Seashore, ed., Univ. of Iowa Studies in the Psychol. of Music, Vol. II (1935), 140 pp.

²⁶ Milton Metfessel, *Phonography in Folk Music: American Negro Songs in New Notation*, Chapel Hill, Univ. of North Carolina Press, 1928, x + 181 pp.; *The Vibrato*, Seashore, ed., Univ. of Iowa Studies in the Psychol. of Music, Vol. I, published by the Univ., Iowa City, Iowa, 1932, 382 pp.; *Psychology of the Vibrato in Voice and Instrument*, Seashore, ed., *ibid.*, Vol. III,

Shortly after the middle of the nineteenth century the development of experimental physics and physiology, plus the genius that was Helmholtz, produced the remarkable volume "Sensations of Tone," which became a source book of erudite information not only for those in the physical sciences but also for teachers of music and musicians.²⁷ In the early part of the twentieth century, stimulated by the growth of experimental psychology and industrial development that made possible new types of instrumentation, the genius that was Seashore produced outstanding accomplishments in scientific analysis of musical talent and of musical training and artistic performance. His work was solid and dependable, his programs of investigation were long sustained, well integrated, and highly fruitful. He was an inspiring leader and an imaginative guide and friend to a multitude of graduate students. In both science and art he recognized the supreme importance of creativity and constantly held this before his colleagues and students as the goal of achievement. Due in large part to his comprehensive understanding of psychology and its implications he became one of America's leading scientists and educators in the field of graduate and professional training. Dean Seashore was successful in assembling and creating constellations of interests, skills, and training facilities, which in the field of higher education and professional science took the shape of things to come. As a psychologist-educator he worked by a technique somewhat similar to that of the metallurgist and produced new, strong, elastic, and useful professional compounds capable of serving humanity

1936, 158 pp.; *Objective Analysis of Musical Performance*, Seashore, ed., *ibid.*, Vol. IV, 1937, 379 pp. In Seashore's introduction to Vol. IV of *Studies in the Psychology of Music* he pays special tribute to Professor Joseph Tiffin for his direction of part of the research and to his students and associates Doctors Don Lewis, Harold Seashore, Arnold Small, and Claude Buxton for sharing in the direction of experiments and the coordination of the results for publication.

²⁷ Herman L. F. Helmholtz, *On the Sensations of Tone as a Psychological Basis for the Theory of Music*, transl. by Alexander J. Ellis, 3d ed., Longmans, Green & Co., 1895, xix + 576 pp.

and its developing needs in a fast-moving age. It seems most appropriate that in early 1949, upon the recommendation of President Virgil M. Hanscher of the University, the Iowa State Board of Education conferred on Dean-Emeritus Seashore the title "Distinguished Service Professor."

KEY TO ABBREVIATIONS

- Acta Psychol. = Acta Psychologica
 Am. J. Psychol. = American Journal of Psychology
 Am. J. Theol. = American Journal of Theology
 Am. Psychol. = American Psychologist
 Ann. Am. Acad. Polit. Soc. Sci. = Annals, American Academy of Political and Social Science
 Brit. J. Psychol. = British Journal of Psychology
 Bull. Am. Assoc. Univ. Prof. = Bulletin, American Association of University Professors
 Bull. Eng. Educ. = Bulletin of English Education
 Bull. Univ. Iowa = Bulletin of the University of Iowa
 Chicago Music J. = Chicago Music Journal
 Educ. Dept. R.C.A. Mfg. Co. = Educational Department, Radio Corporation of America Manufacturing Company
 Educ. Music Mag. = Educational Music Magazine
 Educ. Rev. = The Educational Review
 Gamma Alpha Rec. = Gamma Alpha Record
 J. Abnorm. Soc. Psychol. = Journal of Abnormal and Social Psychology
 J. Appl. Psychol. = Journal of Applied Psychology
 J. Educ. Psychol. = Journal of Educational Psychology
 J. Higher Educ. = Journal of Higher Education
 J. Iowa State Med. Soc. = Journal of the Iowa State Medical Society
 J. Proc. Assoc. Am. Univ. = Journal of Proceedings, Association of American Universities
 J. Speech Disorders = Journal of Speech Disorders
 Junior Coll. J. = Junior College Journal
 Ment. Hyg. = Mental Hygiene
 Music Educ. J. = Music Educators' Journal
 Musical Q. = Musical Quarterly
 Music Superv. J. = The Music Supervisors' Journal
 Nat. Soc. Stud. Educ. Yearb. = National Society for the Study of Education Yearbook
 Parents' Mag. = Parents' Magazine
 Pop. Sci. Mo. = Popular Science Monthly
 Proc. Iowa Acad. Sci. = Proceedings, Iowa Academy of Sciences
 Proc. Music Teachers' Nat. Assoc. = Proceedings, Music Teachers' National Association
 Proc. Nat. Acad. Sci. = Proceedings, National Academy of Sciences

- Psychol. Bull. = Psychological Bulletin
 Psychol. Monog. = Psychological Monographs
 Psychol. Rev. = Psychological Review
 School Rev. = School Review
 School Soc. = School and Society
 Sci. Am. = Scientific American
 Sci. Mo. = Scientific Monthly
 Stud. Yale Psychol. Lab. = Studies from the Yale Psychological Laboratory
 Univ. Iowa Bur. Ed. Res. Serv. = University of Iowa Bureau of Educational Research and Services
 Univ. Iowa Exten. Div. Bull. = University of Iowa Extension Division Bulletin
 Univ. Iowa Monog. = Univ. of Iowa Monographs
 Univ. Iowa Stud. Child Welfare = University of Iowa Studies in Child Welfare
 Univ. Iowa Stud. Psychol. = University of Iowa Studies in Psychology
 Yearb. Nat. Soc. Stud. Educ. = Yearbook of the National Society for the Study of Education
 Zeits. f. Psychol. u. Physiol. d. Sinn. = Zeitschrift für Psychologie und Physiologie der Sinnesorgane

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