work in the entire faculty will be encouraged and made prominent.

All this is eminently worth while if we agree with President Angell, of Yale, who urges that "Individual initiative, resourcefulness, ingenuity, imagination, vision, must be kept at a high pitch all along the line."

HARRY N. HOLMES

OBERLIN COLLEGE

EARLY PSYCHOLOGICAL LABORATORIES[1]

LABORATORIES for research and teaching in the sciences are of comparatively recent origin. They may be regarded as part of the industrial revolution, for there is a close parallel in causes and effects between the development of the factory system and of scientific laboratories. The industrial revolution began with the exploitation by machinery of coal and iron in England; it may perhaps be dated from the use of the steam engine of Watts in the coal mines of Cornwall about a hundred and fifty years ago.

The laboratory had its origin fifty years later in Germany as part of the scientific renaissance following the Napoleonic wars. The University of Berlin was founded by Wilhelm von Humboldt and Frederick William III in 1810. The first laboratory of chemistry was opened by Justus von Liebig at Giessen in 1824. This was followed by similar laboratories at Göttingen under Wöhler in 1836, at Marburg under Bunsen in 1840, and at Leipzig under Erdmann in 1843. The first English laboratory was the College of Chemistry, now part of the Imperial College of Science and Technology of the University of London, which was opened in 1845 by von Hoffmann, brought from Germany by Prince Albert. Benjamin Silliman founded at Yale University the first American laboratory for the teaching of chemistry.

Prior to the industrial revolution the artisan worked at home, sometimes with 'prentices, who were often his children. The factories, the mines and the systems of transportation, with their machinery, their skilled overseers and division of labor, their owners and entrepreneurs, their exchange of commodities and ideas, created a remarkable economy in production, so that now each individual may perhaps work half as long and consume twice as much wealth as formerly. But there are serious drawbacks in the lack of freedom and initiative of the workman, in the loss of joy in creative work. The situation in the laboratory is similar. A professor may have many associates, assistants and students; expensive apparatus and extensive libraries may be installed; division of labor in each laboratory and among laboratories can be planned; there may be exchange of ideas and of information on the progress of research; students are taught in large groups. Production is greatly increased, perhaps quadrupled, as in the industrial system. But the scientific man is subject to administrative controls; he is no longer free; he must compromise with others and teach all sorts of students. The system is useful for the production of a large mass of routine work; it may not be favorable to creative genius.

Anatomy has been called the mother of the sciences; dissecting rooms go back to the medieval universities of Italy. Observatories, museums, botanical gardens, academies of science and university schools, where research was undertaken and in which students and assistants were taught and trained, preceded organized laboratories. Chemistry is the gold transmuted through alchemy; we have all seen on the stage the laboratory of Faust. Christian fathers say that when "the sons of God saw the daughters of men, that they were fair and they took them wives," as told in the sixth chapter of Genesis, these fallen angels taught the fair daughters of men the arts of astrology and alchemy. Scientific men who do not care for special creations may assume that there has been a gradual development from the time of the first experiment by an anthropoid ape, or it may be by a paramecium or an electron. If, however, we want an official beginning for the first scientific laboratory, it will be the laboratory of chemistry at Giessen, the hundredth anniversary of whose foundation was celebrated three years ago.

Chemical laboratories were followed by laboratories of physics and biology. I worked in the first American biological laboratory in its early days. It was established at the Johns Hopkins University by Newell Martin, a student of Huxley, who at the Royal College of Science had founded the first laboratory of biology. From the laboratories of Martin and Brooks at the Johns Hopkins have proceeded many of our most eminent biological workers. The Johns Hopkins also led in the establishment under Welch, Mall, Abel and Howell of laboratories in the medical sciences. But there is obviously no sharp line of demarcation between the modern laboratory and earlier groups of workers, such as the great school of zoology conducted by Agassiz at Harvard.

The first laboratory of psychology was established by Wilhelm Wundt. In an article on the Leipzig laboratory, published in *Mind* in 1888 and submitted to Professor Wundt, I give the date as 1879. The fiftieth anniversary of the founding of the labora-

[1] Address on the occasion of the inauguration of the Psychological Laboratory of Wittenberg College, Springfield, Ohio, October 21, 1927.

tory was, however, celebrated at Leipzig in 1926. Wundt published his "Grundzüge der physiologischen Psychologie" in 1874 and was called from Zürich to a chair of philosophy at Leipzig in 1875. The *Psychologische Institut* there was a gradual development. Wundt writes in his autobiography "Erlebtes und Erkanntes," published in 1920, that Kraepelin, Lehmann and I were his three earliest "Arbeitsgenossen" who remained faithful to psychology and that we worked with him at a time when the institute was his private undertaking and lacked official recognition on the part of the university. The first research published from the Leipzig laboratory was apparently a doctor's dissertation by Dr. Max Friedrich carried out during the winter semester of 1879–80.

Wundt writes in the preface to the "Physiologische Psychologie" that it undertakes "ein neues Gebiet der Wissenschaft abzugrenzen," but he was partly anticipated by Hermann Lotze, whose "Medizinische Psychologie" was published in 1852. Both Lotze and Wundt had a medical education and were professors of philosophy. Their books are landmarks in the history of our science. It was my privilege to hear the last course of lectures on psychology by Lotze given at Göttingen in the winter semester of 1880–81. In accordance with the custom of that university Lotze dictated summaries which could be written down verbatim even by one who had small psychology and less German. The "Dictata" of that year were published and have been translated into English. In the spring of 1881 Lotze, then 74 years of age, migrated to Berlin and died, according to Göttingen opinion, of homesickness.

Herbart, whom Lotze succeeded at Göttingen, had tried to give a mathematical formulation to psychology as Spinoza had to philosophy. He published the first edition of his "Einleitung in die Philosophie" in 1813. There followed Drobitsch, Lindner, Benecke, Volkmar and other German psychologists. In England we have the notable development of association and analytic psychology from Locke through Berkeley, Hume, the Mills and Bain to Ward. The first edition of Carpenter's "Mental Physiology," to-day a useful and readable book, was published in 1874, the same year as Wundt's "Grundzüge." In England and in France there were numerous workers in the fields of physiological and pathological psychology.

The most important developments for laboratory psychology were through the great German physiologists and physicists, most of all Helmholtz, who passed from physiology to physics. His "Physiologische Optik," recently translated under the editorship of Professor Southall and published as an act of piety by the Optical Society, and his "Tonempfindingen," of which there is an earlier translation, are classics in the history of science. E. H. Weber became professor of anatomy at Leipzig in 1818 at the age of twenty-three, being later transferred to physiology. The law that bears his name was stated in his "Annotationes," published from 1834 to 1851. Fechner was appointed professor of physics at the same university in 1834; his "Zendavesta" was published in 1851, his "Elemente der Psychophysik" in 1860. When I was a student at Leipzig he was over eighty-five years old and blind from experiments on vision, a charming man, intensely interested in his psychophysical experiments, though chiefly in philosophical interpretations.

The middle fifty years of the last century were the golden age of the German university and of science, its *Wunderkind*. It is marvelous what was accomplished then and there. Thus in the little corner of the field of science concerned with the psychology of the sense of vision there worked, in addition to Helmholtz and Fechner, a notable company, including Aubert, Brücke, du Bois-Reymond, Donders (in Holland), Exner, Fraunhofer, Fick, von Graefe (who examined my eyes when I was a child of eight), Hering, Hermann, von Kries, Listing, Johann Mueller, Nagel, Purkinje, Vierordt, the Webers and many more. There is no such group in the world to-day working on vision or in any other part of experimental psychology. At that time the investigation of the other senses, of movement, of the time of reaction and much else was pursued probably to greater effect than in all the innumerable laboratories of to-day.

The fields so fertile in the nineteenth century were of course cleared at an earlier time. Experiments on vision go back to Kepler, Huygens and Newton. Weber's law was anticipated by Bouguer and Lambert; Fechner's law by Bernouilli and Laplace; the personal equation by the astronomers. Observations on after-images were made not only by Goethe, the elder Darwin, Buffon and Newton among others, but also by Augustine and Aristotle. Very curiously the problems of psychological measurement were clearly stated by the poet Shelley, who more than a hundred years ago wrote: "A scale might be formed, graduated according to the degrees of a combined scale of intensity, duration, connexion, periods of recurrence, and utility, which would be the standard, according to which all ideas might be measured."

When I came across this passage in Shelley it seemed almost incredible that he of all men should have written it, as indeed it is that the most unearthly of poets should have been the son of a country squire. But England has always given birth to great men in families and as sports. It has been said that Graham Bell—he too was British—could not have invented the telephone if he had been a physicist, for he would have known that it was impossible; so it may be said

that Francis Galton could not have accomplished his great work toward founding modern psychology if he had been a psychologist, for he would have known that it was not psychology. Galton, like Darwin, his cousin, had no university position and no laboratory. He published his "Hereditary Genius" in 1869, his "Inquiries into Human Faculty" in 1883.

With intermissions I was a student at Leipzig under Wundt from 1881 to 1886, serving during the last year as laboratory assistant in psychology, the first to be appointed there or anywhere. Wundt had a higher opinion, doubtless with good reason, of American enterprise than of American scholarship. In his reminiscences he writes that with "bekannter Amerikanischer Entschlossenheit" I approached him and declared: "Herr Professor, you need an assistant and I shall be your assistant." He was the most kindly of men and was much worried lest I should not pass my doctorate examination in physics under Hankel and in zoology under Leuckhart, but these distinguished professors also fortunately made due allowance for a child of the wilderness. Wundt's combined courtesy and remoteness from the modern world may be illustrated by an incident. At that time women were seldom admitted to university lectures, but at my request he gave permission to an American of fine intelligence to attend his course on psychology, which was frequented by two or three hundred students, among them the most stupid in the university, for all theological students were required to attend. One day he said: "I am sorry that I let Miss X attend my lectures; it embarrasses me; I feel that I ought to speak in a way that a woman can understand."

When I showed Wundt an outline of the work that I proposed for a doctor's thesis on the reaction-time, including complicated responses and a study of individual differences his comment was: "ganz Amerikanisch." As a matter of fact I did the work in my own rooms and with my own apparatus. At that time students were expected to work in the laboratory on a subject assigned by the professor, during certain definite hours in the afternoon and with the apparatus supplied, which had to be put away neatly in the cases after a two-hour period. We used two batteries of Daniel cells and when these were set up and got into running order it was nearly time to take them apart, wash the zincs and coppers and put the fluids into bottles. As in this process we were likely to splash sulphuric acid on our clothes we kept handy a bottle of ammonia, which was very promptly applied to the stains. At that time I anticipated Dr. Watson in an observation on the conditioned reflex, for when the German student who worked with me drew a mouthful of dilute sulphuric acid through the syphon that we used, he immediately reached for the ammonia bottle and took a mouthful of that.

In the early eighties Wundt's laboratory was housed on the top floor of the *Convict* building, where indigent students had their meals. He used to walk through the laboratory after his lecture, always courteous and ready to answer questions, but, as I remember it, usually limiting his visit to five or ten minutes. He was interested in the laboratory as a system and as a method of introspection, but he was not himself a laboratory worker. His interests were very broad. His "Logik," published from 1880 to 1883, contains in the second edition 1,995 pages; his "Ethik," also published while I was at Leipzig, contains in its third edition 933 pages. The "System der Philosophie," published in 1889, contains in its third edition 738 pages. The last edition of the "Physiologische Psychologie" contains 2,317 pages, the "Völkerpsychologie," 3,161 pages. And they are very large pages.

These books and others Wundt composed on a typewriter that I gave him, one of the first in Germany. Avenarius once remarked that I had by this gift done a serious disservice to philosophy, for it had enabled Wundt to write twice as many books as would otherwise have been possible. At that time the relations of German professors were curious from an American point of view. Wundt was not in friendly relations with Helmholtz, Stumpf, Müller and others. Stumpf, next to Wundt the most distinguished of German psychologists, was professor at Halle, only three quarters of an hour by train from Leipzig, and Wundt was asked for an introduction. He said that he was sorry that he could not give it, as he did not know Professor Stumpf personally; it was better so, for they could then write more freely when there was a difference of opinion—and they did a couple of years later.

At the beginning of the semester students who wanted to undertake experimental work stood before Wundt in a row and from a slip of paper that he held in his hand he assigned topics in order. The year that I appeared there were six or seven of us, representing nearly as many nationalities. I was given the problem of reacting to colored lights; first when the light was seen, and second when the color was distinguished, and by subtracting one time from the other of obtaining what Wundt called the "Apperceptionszeit." This I could not do, but the problem was most useful to me, for it led me to realize the limitations of introspection and to base my work on objective measurements of behavior. Wundt's refusal to admit any subject to the laboratory except a psychologist who could use the results introspectively was

also useful, for it led me to transfer the work to my rooms and make there the first psychological measurements of individual differences and to attempt to develop the useful applications of psychology—with both of which efforts Wundt had no sympathy.

Wundt rejected as a doctorate dissertation Münsterberg's very able monograph on "Die Willenshandlungen" because it did not coincide with his own theories. He calls Stanley Hall's excellent sketch of his life and work an "erdichtete Biographie die von Anfang bis zu Ende erfunden ist." But such things were only the righteous indignation of the Hebrew prophet denouncing the enemies of the Lord. The academic life in Germany in those days was exalted. The nation, the university, the professor, were sacrosanct. It was a fine experience to be admitted to the outer court of the temple before the money changers had entered. Wundt himself was the ideal German professor, with boundless learning shading toward the pedantic, fully conscious of his plenary inspiration, yet withal most modest, shy and kindly; a seer before his students, a child at home, a truly great man.

Wundt's laboratory of psychology was international in its reputation and influence, attracting students from all parts of the world, Americans and Russians predominating. In 1892 it received larger quarters and in 1897 was removed to one of the buildings vacated by the Medical School, where fourteen rooms were remodeled for its purposes. In the late eighties there were beginnings of laboratories under Ebbinghaus at Berlin, under Müller at Göttingen, and under students of Wundt who were my contemporaries and friends, Münsterberg at Freiburg, Martius at Bonn, and Lehmann at Copenhagen.

The second laboratory of psychology was organized by G. Stanley Hall at the Johns Hopkins University early in the year 1883. I was there before Hall, holding a fellowship in philosophy, this award for a thesis on Lotze having been made by the professor of Latin, who knew even less about philosophy than I did, or the fellowship would have been given to John Dewey. He was there as a student, as were also Joseph Jastrow and H. H. Donaldson. We helped Hall set up a modest laboratory in a private house adjacent to the center of ugly little brick buildings and great men that formed the university. The small group of professors working there included Remsen, Rowland, Sylvester, Gildersleeve, Haupt, Adams, Brooks and Martin.

It is a curious fact that neither of the founders of our first two psychological laboratories was a laboratory worker. Hall's chair, like Wundt's, was not limited to psychology; he lectured on philosophy and he also conducted courses in pedagogy. The range of his interests was large, but it was the human aspects of life that he cared for rather than abstract quantitative measurements. Like James he was a man of literary genius swayed by the emotions, which are such a large part of life and as yet such a small part of our science. Minot, the distinguished Harvard embryologist, once said that he envied my occupation with a science concerned with human interests. My reply was that my experiments had as little to do with such things as his had with love and children. Hall wrote about children, adolescence and senescence, religion and sex, the drama of life. He and James were giants in the land, overtowering their descendants of a work-a-day world.

As Wundt established the *Philosophische Studien* to publish the work from his laboratory and his own articles on psychology and philosophy, so Hall established the *American Journal of Psychology*. The early volumes give a survey of the work done in Baltimore, which was largely physiological and psychiatrical. Hall was much interested in insanity and other pathological aspects of psychology and we used to go regularly to the Bayview Hospital for the Insane. These interests were maintained and in the last conversation that I had with him in his lonely house at Worcester he wanted especially to know why orthodox American psychologists cared so little for Freud and psychoanalysis. He showed me a mass of publications and notes that he had collected on the subject.

Hall was called upon to organize Clark University in 1888 and gathered there a group of outstanding scientific men, including Michelson, Webster, Bolza, Neff, Whitman, Mall, Donaldson, Lombard, McMurrich and Boas. The financial support of the university by Mr. Clark was less liberal than had been anticipated and Dr. Harper took over in a body a large part of these men for the faculty of the new University of Chicago. In his "Life and Confessions" Hall remarks: "I felt his act comparable to that of a housekeeper who would steal in at the back door to engage servants at a higher price." Sanford went with Hall from the Johns Hopkins to Clark and became director of the laboratory of psychology which was opened in 1889. The Johns Hopkins laboratory was closed and the apparatus dispersed until it was reestablished by Professor Baldwin and Professor Stratton. Hall and Clark University long maintained a dominant position in psychology and the psychological side of education. In his death there ends the romantic and heroic era of our science.

The laboratory of psychology at the University of Pennsylvania was founded by me in 1887, though it was only in January, 1889, that a special laboratory with adequate equipment of apparatus was opened. The laboratories at Leipzig and the Johns Hopkins were for research, and psychology was only part of the field covered by the professor. At the University

of Pennsylvania a professorship of psychology was for the first time established and laboratory courses for students were for the first time given. It might consequently be argued by a partial advocate that this was the first laboratory of psychology in the sense that Liebig's chemical laboratory at Giessen was the first scientific laboratory. More significant is the circumstance that in this laboratory the research work and the courses for students were based on objective measurements of responses to the environment with special reference to individual and group differences and to the useful applications of psychology, thus leading to the development of modern educational, clinical and industrial psychology.

In 1888 I was also lecturer at Bryn Mawr College and at the University of Cambridge, conducting in both institutions laboratory courses for students. At Cambridge the work was in conjunction with the lectures of Professor James Ward and in the Cavendish laboratory of which the present Sir Joseph Thomson was the director, having just before, at the age of twenty-six, succeeded Maxwell and Rayleigh in the professorship of physics. In the Cavendish laboratory was also set up apparatus for research and this was the beginning of the first British laboratory of psychology. At that time I had the privilege of assisting Galton in the arrangement of the Anthropometric Laboratory in the South Kensington Museum and we began in cooperation the preparation of a book of instructions for a laboratory course in psychology.

The five-year period from 1887 to 1892 is distinguished for the development of laboratories of psychology in the United States. For earlier work tribute should in passing be paid to James McCosh, Presbyterian clergyman from Scotland and president of a Presbyterian college, who at Princeton promoted the study of organic evolution and physiological psychology. George Trumbull Ladd, also a clergyman, was called to Yale as professor of philosophy in 1881 and developed there courses in physiological psychology, leading to the publication in 1887 of his "Outlines of Physiological Psychology." With James and Hall he shares the honor of leading in the development of psychology in America. The laboratory at Yale was organized by Professor Ladd in 1892 with Dr. E. W. Scripture as instructor.

Work in experimental psychology leading to the establishment of a laboratory was begun by Professor Joseph Jastrow at Wisconsin in 1888. His service as professor of psychology is the longest in the history of our science. A year or two later laboratories were established at Indiana University by President W. L. Bryan, at the University of Nebraska by Professor H. K. Wolfe, at Brown University by Professor E. B. Delabarre and at Stanford University by Professor Frank Angell. Professor J. Mark Baldwin was called to Toronto in 1890 and established there a psychological laboratory, as he did at Princeton when he returned to that university in 1893. In 1895 we together founded the *Psychological Review*, which, with its children, *The Psychological Monographs, The Psychological Index, The Psychological Bulletin*, the *Journal of Experimental Psychology*, and the newly established *Psychological Abstracts*, have now, through the generous cooperation of Professor Warren, been acquired and are being conducted by the American Psychological Association.

The professorship of psychology and the laboratory of psychology at Columbia University date from 1891. There worked Professor Thorndike, Professor Woodworth and many others who have led in the development of modern psychology. The following year is notable for the establishment of the psychological laboratories at Harvard and Cornell and the calling to America of Hugo Münsterberg and E. B. Titchener. At Cornell the traditions of the Leipzig laboratory have been best maintained. Titchener brought to us the scholarship of the Oxford don and the research ideals of the German professor. Now he has followed James, Hall and Münsterberg, leaving the world more drab and empty.

Where were James, Royce and Münsterberg was the center of psychology. James was appointed professor of psychology at Harvard in 1889, having been from 1872 to 1880 instructor and assistant professor of comparative anatomy and physiology, after 1880 assistant professor of philosophy, becoming again professor of philosophy in 1897. His great work, "The Principles of Psychology," was published in 1890. In a letter addressed to me as editor of SCIENCE in 1895 James thus tells of the development of work in experimental psychology at Harvard: "I, myself, 'founded' the instruction in experimental psychology at Harvard in 1874–5, or 1876, I forget which. For a long series of years the laboratory was in two rooms of the Scientific School building, which at last became choked with apparatus, so that a change was necessary. I then, in 1890, resolved on an altogether new departure, raised several thousand dollars, fitted up Dane Hall, and introduced laboratory exercises as a regular part of the undergraduate psychology-course. Dr. Herbert Nichols, then at Clark, was appointed in 1891 assistant in this part of the work; and Professor Münsterberg was made director of the laboratory in 1892."

With the publication of James's "Principles of Psychology" in 1890, the opening of the laboratories at Harvard, Yale and Cornell in 1892, and the establishment of the American Psychological Association

in the same year, the earlier period of psychology in America may be closed. The few survivors may look back upon it as the golden age of our science, but that is doubtless due only to the presbyopia that obscures the vision of objects near at hand. In the thirty-five years that have since passed the number of our workers in psychology has increased to an extent perhaps without parallel in any other country or in any other science. We welcome the opening at Wittenberg College of a new laboratory which, under the direction of Professor Reymert, will become a new center for psychological teaching and research.

J. MCKEEN CATTELL

WILLIAM BARNUM

THE Carnegie Institution has recently lost two of its most illustrious friends—Charles D. Walcott and William Barnum. By a strange coincidence both of these men came from Utica, New York, both were pillars in the formative period of the Carnegie Institution of Washington, and they died within a few months of each other. Dr. Walcott was a trustee of the institution since its founding and Mr. Barnum its editor since 1903.

It was in June, 1904, the school holidays, that the writer was given a little note in pencil written by Dr. Walcott and addressed to Mr. Barnum. The gist of the note was "and here is the red-headed boy of whom I spoke this morning." That summer holiday job stretched itself through the years to the present time.

To have worked beside such a man as William Barnum in these past years was an education in itself; to have felt the inspiration that seemed to generate from a noble soul was a blessing indeed; but to have known what this man meant to hundreds of others, to all who came in intimate contact with him, was to know a man the like of which one sees none too often.

Withal, William Barnum was a practical man. Assistance he would render to any one—provided it was an intelligent request. He despised the bluff or insincere. As editor, he would take a fifty-page pamphlet and perhaps reduce it to ten pages. Fine phrases in science writings do not necessarily bring out new information, and Mr. Barnum was an expert in aiding the author to express his thoughts. So too would he turn tables in such a fashion that the author thought the editor knew more about the subject than he did. The late Dr. Alfred G. Mayor, a prolific writer and a most sincere scientific writer, too, relied wholly on Mr. Barnum's judgment in his institutional writings.

The three presidents of the Carnegie Institution of Washington, Dr. Daniel C. Gilman, Dr. Robert S. Woodward and Dr. John C. Merriam, valued and depended upon the great abilities of Mr. Barnum. Dr. John C. Merriam has recently extolled his ability.

As editor of the publications of the institution for nearly a quarter of a century, William Barnum's monument is a library of over five hundred volumes on nearly every scientific subject, the author of each book a debtor to the editor.

The writer would pay a tribute to his friend if he knew how. Perhaps the memory of him in years to come will compensate for my lack of ability to do him justice.

IRVING M. GREY

SCIENTIFIC EVENTS

THE ENLARGED PROGRAM OF FOREST RESEARCH

THE McSweeney-McNary bill, which became a law with the approval of the president on May 22, represents the most important piece of fundamental forestry legislation enacted since the Clarke-McNary law of 1924, according to a statement by Secretary of Agriculture Jardine, who also said:

> Forest research has hitherto failed to keep pace with many other forestry activities, notwithstanding the fact that research is the foundation upon which forestry development should be built. A greatly enlarged research program is called for by this situation, and the comprehensive policy of forestry research provided in the new bill will enable the department to cooperate with other agencies in a definite and far-reaching program of investigations which will form the basis for a permanent system of forest production and utilization for the entire nation.

The new bill establishes and outlines a ten-year program for forest research. A little more than $1,000,000 is now being expended by the federal government each year for this purpose. Under the terms of the McSweeney-McNary bill this amount may be increased each year by about $250,000 until the maximum annual expenditure of $3,500,000 is reached. All classes of forest research are contemplated by the bill, including investigations in growing, managing and utilizing timber, forage and other forest products, watershed protection, fire prevention, insects and disease. The various lines of research contemplated will be conducted by several bureaus of the department, including the Forest Service, the Bureau of Plant Industry, the Bureau of Entomology, the Biological Survey, the Weather Bureau, the Bureau of Chemistry and Soils and the Bureau of Agricultural Economics.

The McSweeney-McNary bill was backed by a widespread, aggressive public interest from all parts of the United States and representing widely diversified groups, including many Chambers of Commerce and