myelitis remains to be considered. We have long known that monkeys may be rendered actively immune by successive small injections, or one large injection, of poliomyelitis virus made beneath the skin[24] or by successive inoculations made into the skin.[25] Both these methods of securing immunity suffer from the disadvantage that occasionally monkeys develop paralysis instead of immunity. It appears that monkeys, in common with human beings, exhibit varying degrees of susceptibility to the presence of the virus in the body. An effort is being made to improve and perfect this means of active immunization in order to avoid the rare onset of disease. The combined use of immune serum and virus offers greater security. That active immunity can be obtained by the injection of mixtures of the serum and virus has been shown by Rhoads.[26] Recently we have carried out experiments on a larger scale, in which virus and serum have been injected separately into the body of monkeys. These animals developed active immunity and, up to the present, without the appearance of symptoms of infection in any case. Moreover, evidence is accumulating that as the original, human virus is passed from monkey to monkey, it undergoes modification, and while retaining its immunizing properties, changes its infective power. Whether or not use may be made of this transformation in securing active immunization of human beings when menaced by epidemic poliomyelitis, future study alone can determine.[27]

OBITUARY

RUFUS LOT GREEN

PROFESSOR RUFUS LOT GREEN, professor emeritus of mathematics at Stanford University, died in Palo Alto, California, on November 19 at the age of 71. With the death of Professor Green, Stanford University loses one of its most faithful servants, teachers, counselors and friends, and the community one of its most serviceable citizens.

It does not fall to the lot of every man in academic work to stand out as a teacher par excellence, a counselor with wise judgment, a citizen with a high sense of public duty and a friend with understanding mind and heart. So did this man, best known, however, only to his colleagues, students and friends. The name of Professor Green does not stand out in the annals of science, nor will historians of science record any great achievements of his in mathematical research or published monographs—but in the hearts of his students are indelibly impressed the sterling and modest qualities of a quiet and unassuming teacher, endowed with high ideals of true scholarship. For a period of over 40 years, teaching mathematics was his one great task.

Professor Green was born in Rush County, Indiana, on March 3, 1862, the son of Samuel and Elizabeth Anne (McKee) Green. He showed early aptitude for both mathematics and natural history. His first two years in college were spent at the University of Indiana from 1879 to 1881 under Daniel Kirkwood in mathematics and David Starr Jordan in natural history. From 1881 to 1883 he attended Cornell University, after which he returned to Indiana University, where he graduated in 1885 with a B.S. degree, and immediately became an instructor in mathematics at his alma mater. During this time he prepared for his master's degree, which he received in 1888. His long teaching career was interrupted only once when he spent one year as a graduate student and fellow by courtesy at Johns Hopkins University in 1887–88 under Sylvester. Professor Green's advancement was rapid; he filled successfully the position of associate professor (1886–90) and attained the position of full professor at the age of 28 (1890–93) during the period of David Starr Jordan's presidency of Indiana University (1885–91). Two years after the new university Leland Stanford first opened its doors in 1891 with Dr. Jordan as president, Professor Green received a call to become associate professor of mathematics, and in 1894 he was promoted to full professorship. He was just a year too late to be classified with the "Old Guards," an affectionate term for the pioneer professors who came with Dr. Jordan. (It was three years later that the writer became a student of his and formed a friendship which endured until Professor Green's death.) He became executive head of the department of mathematics in 1925, from which position he retired in 1927.

In the councils of affairs of the university he assumed more than his full responsibility on various committees. He was best known, however, as chairman of the students' affairs committee. His fairness and justice in administering student disciplinary cases won him great respect and esteem. The students recognized in Professor Green a man of high principles and this made him a favorite among them.

The work in his classroom was unusually interesting

[24] S. Flexner and P. A. Lewis, *Jour. Am. Med. Assn.*, lv, 662, 1910; C. P. Rhoads, *Jour. Exp. Med.*, li, 1, 1930.

[25] W. L. Aycock and J. R. Kagan, *Jour. Immunol.*, xiv, 85, 1927; F. W. Stewart and C. P. Rhoads, *Jour. Exp. Med.*, xlix, 959, 1929.

[26] C. P. Rhoads, *Jour. Exp. Med.*, liii, 115, 1931.

[27] S. Flexner, *Jour. Am. Med. Assn.*, xcix, 1244, 1932.

in that he presented the subject-matter with a feeling of freshness and clarity. For mathematics was to Professor Green a live and growing science; he constantly emphasized the theoretical and practical phases, showing their parallel with the philosophical aspect. One of his favorite and constant admonitions to students on giving an examination was that the purpose of a test was to see what we could do "under pressure." He introduced a number of new courses to Stanford, one of which particularly interested him, namely, statistical mathematics.

His broad and catholic interest in life and its problems manifested itself in his interest in economic, social and political problems. So well was he posted on various issues that during political periods he was constantly sought by his colleagues and by organizations for advice and elucidation of the problems. His was the habit of clear thinking. Although he was never robust in health, he loved outdoor life and during his early days at Stanford, like David Starr Jordan, he was a leader in mountain walking with his students. For many years during the summer period he directed a camp in the Yosemite Valley, later becoming director of the Yosemite Park and Curry Company.

Professor Green was a fellow of the American Association for the Advancement of Science, member of the American Mathematical Society, Mathematical Association of America, American Economic League, Academy of Political and Social Science, American Political Science Association, California Academy of Science, American Museum of Natural History, and American Association of University Professors.

Thus closed an active and full life, devoted to state, church and university.

On August 11, 1886, he had married Miss Emma Edwards, of Knightstown, Indiana, who in addition to two daughters and one son survives him.

FREDERICK E. BRASCH

EVERHART PERCY HARDING

ON October 10, 1932, Professor Harding died at his home in Minneapolis after an illness of more than two years. Before his retirement, owing to ill health, in September, 1931, he was the only remaining member of the staff of chemistry of the University of Minnesota whose service antedated the foundation in 1904 of the school of chemistry as an independent faculty. His connection with the university as a student and as a staff member extended over more than forty years.

Professor Harding was born on August 15, 1870, at Waseca, Minnesota, where he had his early education. He entered the University of Minnesota in 1890 and maintained a high record of scholarship during his entire career, achieving election to Phi Beta Kappa and later to Sigma Xi. At the same time, he set an all-time record for athletic prowess, especially in football. Participation in intercollegiate athletics was at that time not limited to three years, so that his career as an athlete was continued through the entire period of his undergraduate and graduate years. He took the bachelor's degree in 1894 and was awarded a scholarship, which enabled him to take the M.S. degree in 1895.

After serving as instructor in chemistry from 1896 to 1899, he pursued further studies in chemistry under Professor Curtius at the University of Heidelberg, where he was granted the Ph.D. degree in 1901. From 1905 until his retirement, he was successively assistant professor and associate professor of chemistry. He also took a prominent and responsible part in the management and supervision of intercollegiate athletics.

During the decade prior to his death, Professor Harding was in charge of technological chemistry, a division of the school of chemistry which comprised instruction and research in chemical technology, particularly of foods and fuels. It was in these fields that most of his researches were made, although some of his earlier work was devoted to pure organic chemistry. His interest in fuels led him to investigate extensively the presence and distribution of sulfur in oil shales for the determination of which he developed methods of unusual accuracy.

Professor Harding was frequently called on for public service and acted as consultant for industries of the state, particularly in connection with city gas supplies. Early in his career, he rendered valuable aid in the introduction of the sugar beet industry into Minnesota.

In all his relations, Professor Harding was characterized by his spirit of loyalty and by the strictest conscientiousness in the performance of all duties. He was equally devoted to his students and to research, which he carried on until his health failed. He was a member of Phi Beta Kappa, Sigma Xi, Phi Lambda Upsilon honor societies, of Alpha Chi Sigma and Phi Delta Theta fraternities and of numerous professional and scientific societies.

He is survived by his widow and three children.

S. C. LIND

RECENT DEATHS

DR. ELIAKIM HASTINGS MOORE, professor emeritus of mathematics at the University of Chicago, died on December 30. He was seventy years old.

DR. JOHN J. CARTY, vice-president and chief engi-