then each man must have conviction in his own worth as an individual and purpose that fulfills the personal miracle of his existence. It is now too late in the history of science for men to satisfy these demands by retreat to authority. It is, in fact, impossible for the human mind in its integrity to deny for long the inescapable conclusions of its capacity to know and think.

The rational method offers no absolutes and no blueprints prepared in advance to tell us what we want to live for. But science does broaden and secure the ground upon which men can make their choice. It has already shown that human life is not fated to be, in the words of Thomas Hobbes, bloody, brutish, and short. In our increasingly complete and connected knowledge of the cosmos we have an ever clearer understanding of ourselves and our place in nature. We see that the perfected man, that ideal of the 18th century Enlightenment, is the ultimate product of the cosmic process as it is known to modern science.

Science thus bears upon the ends as well as the means of the life of man. We have need for a better understanding of science among the members of our society not only that we may use the power which such understanding gives us, but that we may use it well.

Liberty Hyde Bailey

MANY great men have served on the staff of Cornell University, but it is probable that none contributed so much to the university and to the country as did Liberty Hyde Bailey. Professor in the university from 1888 to 1903 and dean of the College of Agriculture from 1903 to 1913, he retired in 1913 to devote the remainder of his life to taxonomic research in the field of botany. He died 25 December 1954.

Bailey was born on a farm in the wilderness of South Haven, Michigan, in 1858, 3 years after the founding of the first agricultural college in the United States at Lansing, Michigan, and 2 years after Senator Morrill presented to the Congress the land-grant act that bears his name. Both of these events were to play a large role in Bailey's career.

The farm in the wilderness was a world in itself. Soap, candles, leather, cloth, food, and fuel were all produced on the farm. Friendly Indians peered through windows of the home to see what the white man ate and how he lived. Bailey witnessed the transition of the farm from a self-sufficient unit to the highly specialized and mechanized farm of today. During this period he contributed greatly to making the farm a better way of life—and to a better means of living.

As a young boy he began to marvel at the wonders of nature. At the age of 10 he was collecting plants, insects, and rocks and creating museums in his home or in the barn. At the age of 14 he was grafting scions of superior quality to fruit stock of inferior quality for farmers in his neighborhood. With the aid of a neighbor he began a more systematic study of plants. The land, the fields, the streams, the forest, and books were his primary interests. It was natural, therefore, that he should enroll in the Michigan Agricultural College (now Michigan State College). Here he was influenced by one of the masters in botany and soon was collecting plants for the herbarium and for classroom use.

Following graduation Bailey became a newspaper reporter, but after some months in this field he accepted a position as assistant to Asa Gray, the famous botanist of Harvard University. He became professor of horticulture and landscape art at Michigan State College in 1885. Here he established a department of horticulture, the first in the United States. His reputation as a teacher and scholar and his zeal to bring knowledge to the farmer attracted the attention of Cornell. Bailey was then invited to become professor of general and experimental horticulture and began his work at Cornell in 1888.

His impact on the College of Agriculture was enormous, and he was recognized immediately as an inspiring teacher. He stimulated research and extension teaching. Graduate students came to work under his direction, and a host of his students became leaders in the field of horticulture. Textbooks in horticulture, as well as in other fields of agriculture, were lacking. He began to write books on various phases of horticulture, plant breeding, and evolution, and as an editor he stimulated the preparation of textbooks in the various fields of agriculture. These total more than 100.

Bailey's arrival at Cornell catalyzed the extension movement. He traveled widely in the state, he wrote bulletins on the experimental and research work, and when, in 1894, the state of New York appropriated $15,000 for extension work at Cornell, he initiated experiments to control diseases of the grape by the use of bordeaux mixture. This was pioneer work.

Bailey succeeded Isaac Phillip Roberts as dean and director of the College of Agriculture in 1903. The college was lacking in financial support, and the need for a substantial college of agriculture was clear. Roberts, aided by Bailey and others, had prepared the groundwork and had earned the good will of the farmers. Both emphasized the need for a New York State College of Agriculture supported by the state. Despite active opposition by various educational institutions of the state of New York, legislation was enacted in 1904 to establish the New York State Col-

lege of Agriculture at Cornell University. The part played by Bailey in the formulation of a bill and its enactment cannot be overemphasized.

Under Bailey the college grew rapidly. From an enrollment of 100 students in 1902, it grew to 1400 by 1913. The staff increased from 11 to about 100. By 1906 the functions of the college were established by the state as teaching, extension, and research. Bailey believed firmly in the freedom of research. He believed that extension work should reach children and women as well as the farmer. He created a department of home economics, now a large college at Cornell, and fostered nature study for children. Andrew D. White, the first president of Cornell, said in 1914, "When Mr. Roberts came a change began; that was the turning of the tide. Then came the prodigious success of Mr. Bailey."

Bailey's viewpoint on education was broad. In an address made in 1910, he discussed the "Place of agriculture in higher education." He referred to the fact that education in the past had not been related to the living and had been confined to the privileged classes. Then he stated:

> We have practically left the old definition of culture as the end-all and be-all. We are escaping our bonds. We are rising beyond the narrowness and poverty of old educational systems. . . . We shall not lose the old. If the old will no longer constitute the whole it will still contribute its part in the development of the race . . . and be absolutely more important than it has ever been in the past. . . . We really believe that an educated man is not determined by the particular route through which he has come, but by the perfectness to which he has developed in breadth of view, clear reasoning, good judgment, tolerance, high ideals, sensitiveness to art and nature and devotion to service.

Bailey was a prolific writer and was in great demand as a lecturer, not only in the United States, but in many foreign countries. He contributed countless articles to the press and to magazines. He edited and wrote many articles for the *Cyclopedia of American Horticulture,* four volumes; *Cyclopedia of American Agriculture,* four volumes; and *Standard Cyclopedia of Horticulture,* initially six volumes. Of all his publications, he was probably proudest of his book, *The Holy Earth,* which was recently reprinted. His writings ranged from verse to philosophic and social articles and to scientific treatises.

President Theodore Roosevelt, in 1908, appointed Bailey chairman of the Commission on Country Life, the result of which was a broad survey of agriculture in the United States; the report of this survey was written by Bailey.

After his retirement in 1913, Bailey resumed his botanical investigations. He had been interested in the great variability of plants of the genus *Rubus* (blackberries and raspberries), and throughout his career he had collected plants of this genus. He had maintained an extensive herbarium of natural and cultivated plants. Soon after his retirement, he gave Cornell University his herbarium, a valuable collection of botanical books, and the building in which they were housed. This is now known as the Bailey Hortorium and is a part of the College of Agriculture. It is devoted to the origin, evolution, and taxonomy of cultivated plants. Until a few years before his death, Bailey devoted his time to a study of palms, making arduous trips to the tropics for that purpose, and he became the world authority on this important group of plants. In addition, he published memoirs on *Rubus* and on various other genera of plants.

His leadership in the fields of horticulture, agriculture, and botany and his reputation as a philosopher and writer brought him honorary degrees from various universities, medals from horticultural societies of the United States and foreign countries, and membership in learned societies throughout the world. He was a fellow of the American Academy of Arts and Sciences and a member of the National Academy of Sciences and of the American Philosophical Society. He was president of the American Association for the Advancement of Science in 1926 and of the Botanical Society of America in 1928.

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News and Notes

Science News

Primary responsibility for the technical planning and preparation for this country's participation in the United Nations-sponsored **International Conference on the Peaceful Uses of Atomic Energy** has been assigned to the U.S. Atomic Energy Commission. Preliminary plans for U.S. participation in the conference, which is to take place in Geneva, 8–20 Aug. [*Science* **121,** 156 (4 Feb. 1955); **121,** 231 (18 Feb. 1955)] were announced on 23 Feb. At that time the commission named George L. Weil as technical director for U.S. participation. Weil, who wrote the article on "Hazards of nuclear power plants" that appears in this issue, pages 315–317 was formerly director of reactor development for the ACE; at present he is a consultant on atomic energy to the AEC as well as to private firms.

The AEC is assembling, through leading educational institutions, industrial establishments, and research centers, both Government and private, technical information in the fields appropriate to the agenda. The commission also is planning a technical exhibit in which more than 60 institutions and firms already have expressed an interest.