

an angel had touched our lips with a coal from off the altar.

Such contacts have meant everything to Wisconsin. For fifty years this spirit has moved among us. The Wisconsin Experiment Station has done a great work, and when all is said and done, the spirit of Babcock has been the pervasive power that has been imminent through it all.

It was Babcock's refusal to adopt the then prevalent notion that a completely balanced ration could be constructed on the basis of chemical analysis that led later here at Wisconsin to the epoch-making discoveries in the field of vitamin research and the rôle of mineral elements in the nutrition of animal life. While Babcock was a chemist, he was no such blind adherent to chemical methods that he lost sight of the fact that life was made up of something which could not be put into a test-tube.

Twenty-five years ago, Hart and his colleagues started their famous single ration diet for cattle, the results of which have made it necessary to rewrite almost wholly the text-books on nutrition, both as to the human as well as the animal. The germ of this suggestion came from Babcock's untrammelled mind. It was here that the torch was passed from the hand of the master to the pupil.

The world at large knows Babcock primarily for the beneficent invention of his famous test for butter fat, whereby the intrinsic value of milk could be easily and accurately determined. This came at a most opportune time and is one of the foundation stones on which the modern science of dairying has been built. Prior to this time, dairying was merely a haphazard art, but with this tool in hand the tremendous advance in the improvement of the special dairy breeds of cattle became possible.

The wide-spread utilization of the Babcock test made such unscrupulous practices as adulteration, watering and skimming the milk no longer profitable, because the test enabled such deceit to be quickly detected. As Governor Hoard once said the Babcock test had made more dairymen honest than had the Bible because of the summary verdict which it rendered.

Babcock's phenomenal grasp of the essentials of any problem to which he directed his attention is well shown by the remarkable contribution which he made in the field of physiology. His studies on "metabolic water," *i.e.*, liquids produced in the bodies of insects living upon perfectly dry matter made a new chapter in the physiology of metabolism. He bred clothes moths and carpet beetles, living on air-dry woolens and found that these animals could produce enough water as a result of their own life processes to bathe their body cells so that their normal

functional activity could be carried on. From the standpoint of actual contribution to the advancement of science, Babcock always considered this his most important biological discovery.

It is impossible now to assign a proper value to his researches on the constitution of matter on which he has been laboring for almost two decades. He has been urged to give these results to the scientific world but characteristically he would not do so, because he did not feel that they were wholly complete. For the past twenty years, he has been working in his own way, reducing his ideas so far as he could to an experimental basis. During the past two years he has been very sanguine that he was going to be able to demonstrate in an experimental way some of the principles on which he has spent these years of thought and study. The record has been reduced to written form, and in his will this unpublished manuscript is to be given to the university. It is to be hoped that this work may soon be made available for the study of others.

To the world at large the name of Babcock will long be held in reverence, along with the great men that have left their impress on the minds of men, but the genial and jolly Babcock will always be the memory of those of us who were fortunate enough to have the privilege of actual association with him.

H. L. RUSSELL

ADDRESS GIVEN AT THE FUNERAL SERVICES IN MEMORY OF STEPHEN MOULTON BABCOCK

EXPRESSING the mood of myriads of men and women throughout the world, who have known the boon of his spirit or the beneficence of his science, the University of Wisconsin to-day bares its head and bows its heart before the memory of Stephen Moulton Babcock.

Inventor of a device and a formula that emancipated the dairy farmer from the injustice of the rule of thumb that long prevailed in the market place!

Trail blazer in the crucially important field of vitamin research!

Symbol of the best that the pursuit of science generates in the scholar and gives to the state!

Joyous comrade!

A friend beloved beyond measure!

Inspirer incomparable of the vast army of young scholars serving as acolytes at the altar of science!

Like the great seminal minds of the Renaissance, this grand old doctor of science was himself greater than anything he did, and thus, in death, he gives to us, the legatees of his spirit, a goal towards which to point the education and the science of our time.

This merry man of many years was made of the

stuff that gives mankind its saints and its martyrs. But he was a saint without seriousness, and he could have gone to martyrdom, without a murmur of self-pity, as part of the day's work.

For his was a casual greatness!

He pursued the most painstaking research as if he were playing a game. He brought to his tasks that gaiety of spirit which authentic greatness can afford. His spirit never surrendered that incorrigible playfulness which so often marks men of power. He brought laughter into the laboratory, for there was about him that deceptively careless air which creative spirits have as they go about their business.

But there was toughness to the fiber of his mind!

He was a teacher who scorned the tyranny of the text-books, and he did not think it impertinent to doubt the authorities. Each morning he met the universe with a question. His was the creative heresy of an insatiable curiosity. The cleansing winds of the critical spirit swept freely and forever through his mind.

He belongs to the apostolic succession of the great pioneers of research—Pythagoras, Aristotle, Archimedes, Copernicus, Galileo, Harvey, Newton, Lavoisier, Dalton, Faraday, Helmholtz, Darwin, Pasteur, Gregor Mendel and Einstein, for, like them, he was an adventurer into the unknown to whom research was an intellectual passion rather than an institutional ritual, to whom creative thinking was more important than elaborate equipment, and for whom there was no barricaded frontier between pure and applied science.

In an age when scholars all too often hasten to publish even before they prove their findings, he was content to let his greatest work speak for itself, for perhaps the most illuminating fact of his career is that he never published so much as a word about his part in the discovery, definition and defeat of that "hidden hunger" from which man and beast might die while eating their fill.

In an age smitten with the passion for publicity, he forgot himself into immortality!

And in the midst of the sickness of an acquisitive society, his spirit remained unsullied even by legitimate personal considerations!

Scholar of a great university!

Servant of a great state!

Shy benefactor of mankind everywhere!

Laughing saint of science!

Being dead he yet speaks!

GLENN FRANK

UNIVERSITY OF WISCONSIN

RECENT DEATHS

DR. DANIEL A. K. STEELE, dean of the College of Medicine and head of the department of surgery of the University of Illinois, from 1882 to 1917, died on July 19, aged seventy-nine years.

FREDERIC DUNN BELL, until last year chairman of the board of directors of the Lederle Antitoxin Laboratories of New York, and secretary of the New York Tuberculosis and Health Association, died on July 17.

MAJOR T. F. CHIPP, assistant director of the Botanical Gardens, Kew, died on June 28.

TRUMAN P. GAYLORD, vice-president of the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, formerly assistant professor of electrical engineering at the Armour Institute of Technology, died suddenly on July 5 at the age of sixty years.

HERBERT TOMLINSON, F.R.S., formerly principal of the South-Western Polytechnic at Chelsea, England, known for his work on the properties of matter, died on June 12 at the age of eighty-six years.

Nature reports the death on April 16 of Miss Anne L. Massy, known for her work on the pteropods and cephalopods.

SCIENTIFIC EVENTS

THE ROYAL BOTANIC SOCIETY

ACCORDING to a report in the London *Times*, numerous fellows of the Royal Botanic Society attended a recent meeting at the Royal Botanical Gardens to hear a statement which foreshadowed the dissolution of the society at the end of the year in consequence of the decision of the Treasury not to renew the lease of the gardens. While the break-up of the society in its present form seemed to be regarded as inevitable, hopes were expressed that the gardens might yet be preserved, and Colonel T. C. Moore, M.P., who has been in recent touch with Mr. Lansbury on the ques-

tion, was co-opted a member of the council. The First Commissioner of Works, he said, had given him an undertaking that if any proposition could be made which would bring a more democratic influence to the gardens and yet make it possible to run them without loss it would be given favorable consideration.

Mr. C. C. Hoyer Millar, who presided, said that the lease of the gardens would expire on April 5 next year. He described the long struggle of the council to retain them, and expressed their deep regret that efforts to obtain a new lease had been of no