intelligence or consciousness arose and arises; and in this case the instinct normally appears only near the end of growth and development—where it is most accessible to study. In these otherwise fully equipped animals the birth of this instinct awaits and requires the cooperation of the hormone. It is thus found that a hormone, a thing of somatic origin, shares in bringing a new element of consciousness into the body-mind of these animals.

It will now be useful to turn for a moment to our ancestral zoological tree with a view to tagging a few of those branches which it has added to itself within the short span of 30 or 35 years. One such tag reads "genetics," and this branch has already ripened some fine fruit: First, that all men are created *un*equal. No politics or poetry or dogma in this; just a straight clean fact of prime importance to decent thinking on human social problems; and possibly a fact that must be learned, digested and assimilated by the great majority of men—particularly in democracies—before unreason ceases to be a threat to all forms of democratic government. Second, a single gene can produce feeblemindedness. Here is found not only a nexus of body and mind, but mental development is seen to depend upon the same pill-box of genes that decides the color of our skin or our degree of resistance to diabetes. Third, changes within the gene and genetic system of just the types apparently required for progressive evolution, and on which natural selection can work, have been witnessed and analyzed. The origin of some species by natural means has now been attested by controlled observation. Thus, it is nowadays the *phenomenon* of evolution that intelligent men study and describe; and nowadays only a brain moving in reverse bogs down on a question of its reality.

Another new branch of the tree of zoological science is labeled "nutrition." A first flower or fruit on this branch reveals that the growth and well-being of our bodies require no fewer than eleven inorganic elements —those age-old ancestors of the first organic matter whose continued interaction with such organic stuff probably produced the first life—and, in addition, we require not fewer than twenty-three rather simple organic compounds, most of which can not be formed in our own tissues but must be obtained from the less evolved plant world. Second, several human diseases can be cured, and better still they can be avoided, as a consequence of this new knowledge. The fruit from this branch, grown within 30 years, has already endowed our generation with beautiful victories of the laboratory, and all later generations of civilized man with somewhat better health, fuller growth—and even a firmer grip on their teeth. We pause to note, however, that these great values—like those from most branches of life-science—are potential only. Whether these good cheques are turned into the gold of better health, greater happiness and more effective living depends primarily upon their being brought to all youth by elementary and secondary education.

Among the other new branches of this tree we here remark only another one, called "endocrinology." Not all the fruits on this new branch are ripe, but let us here taste of two that are. *First:* It has been shown that the ductless glands share largely with the nervous system in regulating those several complicated processes—development, growth and the maintenance of active, healthy bodily states. Nervous regulation and hormonal regulation form a superb partnership which permits existence at a human level. The manifold duties and talents of the endocrine partner are known to share largely in determining our strength, our diseases and our outlook upon life. *Second:* All or nearly all the main elements in the normal hormonal control of mammalian and human reproduction are now known, though fifteen years ago not one of the several hormones chiefly concerned had been separated or assayed. The women of the first human generation that could possibly know or learn the basis and meaning of the cycles and reproductive adjustments which are peculiarly theirs are the women and girls now with and beside us.

(*To be concluded*)

OBITUARY

LAFAYETTE BENEDICT MENDEL

DR. LAFAYETTE BENEDICT MENDEL, Sterling professor of physiological chemistry in Yale University, died on December 9, 1935, after an illness of eighteen months.

He was born at Delhi, New York, on February 5, 1872, and received both his undergraduate and graduate training at Yale, where he was awarded the degree of A.B. in 1891, and that of Ph.D. in 1893. He was a member of the Yale staff continuously from the age of twenty: Assistant in physiological chemistry, 1892–94; instructor, 1894–97; assistant professor, 1897–1903; professor since 1903, and Sterling professor since 1921. On leaves of absence, he worked at Breslau and Freiburg in 1895–96, traveled and lectured widely in subsequent years, and served on the Inter-Allied Scientific Food Commission during the world war.

Always a Yale man, he was both a product and a builder of the institution of which he saw the emergent evolution, from a rather conservative college with a

loosely connected scientific school and an even less integrated and then-little-known school of medicine, to a great modern university, coordinated, progressive and distinguished throughout. His prompt selection for the exceptional honor and opportunity of one of the then newly established Sterling professorships, and his long-continued appointment to the governing boards of the university graduate school and the university library, as well as to those of the schools of medicine and science and to the directorship of his own and often of related departments, were among the intra-mural recognitions of his distinguished scholarship, his wise and conscientious administration, his indefatigable spirit of service, his steady habit of broadly constructive, unifying, hard work. As was said at his funeral in Battell Chapel, in his passing his university has lost one of its most commanding and influential spirits, and the world of science is bereft of an outstanding leader.

So great and so personal is the loss, not only to his students and his immediate colleagues but to the host of scientific friends, whom also he generously called colleagues and who as laborers in the same great field were inspired by his example and largely guided by his wise judgment, that it may be too soon for an entirely objective evaluation of his career and contribution. It is probably also, and more importantly, true that any attempt at any time to appraise his life and work in merely objective terms would fall far short of showing its true significance. Here, we might well be content with a very incomplete sketch of the outward evidences of his accomplishment, if also we could glimpse even a little of its inner and enduring spirit.

He published an influential book, "Nutrition: The Chemistry of Life," based on his five Hitchcock Lectures at the University of California and summarizing briefly some different aspects of nutrition from the view-point of 1923; also a number of shorter and more specialized summaries; and about three hundred research papers, many of which are joint contributions by himself and coworkers.

His research bibliography, like the record of his academic service, shows the breadth of his mind and the generosity of his spirit of cooperation. He was alert to utilize the special opportunities of his place and time, not for personal prestige but for his official family, his university and for the advancement of science. And imperturbably he followed his own inner oracle without too much anxiety as to passing fashions in research or as to questions of priority and originality. Without discussing it, he lived the principle that originality consists in thinking for oneself, not in thinking differently from other people. And to recall his coworkers in research is to realize anew how unselfishly and openmindedly he served the advancement of science, with equal readiness making himself a junior partner to Chittenden or Osborne, or taking into partnership a student to whom he would painstakingly teach the very first rudiments of research procedure.

Equally noteworthy is the large number of highly productive careers in research which began thus under Dr. Mendel's guidance. For not only had he trained himself to high facility in the technique of his subject, especially on its more physiological side; he also gave his students an introduction to research which comprised more than merely instruction, demonstration and direction. To work with Dr. Mendel meant something more, and did something deeper and permanent, to the beginning and developing researcher than to be directed by any professor (however learned) who lacks the sanely and wholeheartedly sympathetic attitude which Mendel had consistently cultivated and developed in himself. Also, it meant more to the student than any amount of mere intimacy and elbow instruction which lacks the backing of broad reading in the literature of the subject, and deep reflection upon its problems.

Mendel's knowledge of chemical physiology and especially of nutrition was both broad and deep, and so was his research contribution. Because of the breadth of his interests and reading, he was accustomed to offer his advanced students a wide range of research topics and as often as possible to accede to the desire of the student that Dr. Mendel be a partner in the research. From these partnerships there resulted contributions to widely diversified sectors of the advancing front of physiological chemistry and chemical physiology. At the same time his research jointly with T. B. Osborne upon proteins and vitamins was highly intensive and deeply fundamental. Their experimental correlation of the amino-acid constitutions of different proteins with the functions and efficiencies of these proteins in nutrition will long remain one of the outstanding landmarks in either a chemical or a physiological survey of modern science. Their investigations of vitamins were also of outstanding significance. Dr. Mendel also contributed largely to the critical literature of growth.

Believing strongly in the importance of the orderly recording and adequate dissemination of the findings of research, he gave generously of his time and thought as member of the editorial boards of the *Journal of Biological Chemistry,* the *Journal of Nutrition* and the *Scientific Monograph Series* of the American Chemical Society; and as an unofficial contributor to the editorial pages of the *Journal* of the American Medical Association.

While his life-long habit was one of unselfish service

and entire willingness to submerge himself in the larger interests for which he worked, yet the world of science did not fail to recognize his great contributions to knowledge, and the noble, self-disciplined, unspoiled character which kept his mind open and his judgment unbiased.

He was the recipient of honorary degrees from Michigan, Rutgers and Western Reserve Universities; of the gold medal awarded by the American Institute of Chemists for noteworthy and outstanding contributions to chemistry; and the Conné medal for outstandingly meritorious chemical service to medicine.

On his sixtieth birthday his former students from far and near gathered to do him honor; presented his portrait to the university; and filled, with papers on important branches of science in which they are recognized authorities, a special number of the *Yale Journal of Biology and Medicine,* which was dedicated to him.

He was a member of the National Academy of Sciences; research associate of the Carnegie Institution of Washington; past-president of the American Physiological Society, of the Society of Biological Chemists and of the American Institute of Nutrition; and an officer of several other scientific and professional organizations; member of the Council of Pharmacy and Chemistry of the American Medical Association and of its Committee on Foods, and of many other boards, commissions, committees and councils; and, as well, he was official adviser on scientific research to the United States Department of Agriculture as well as unofficial but none the less influential adviser and trusted councilor of innumerable organizations and individuals in the field of pure science, the professions of medicine, dietetics and home economics, and in the world of practical affairs especially as bearing upon the food industries. He had so thoroughly established both the habit and the reputation of well-balanced scientific judgment that his advice was much sought in many difficult problems; and as a result of the self-discipline of a life-long devotion to science he could share the confidence which others felt that his judgment would remain unbiased whatever the economic interests involved.

That he did not need to isolate himself from the world of affairs in order to maintain his intellectual integrity; that his institution, while recognizing and prizing his scientific productivity, yet constantly drew heavily upon his time for administrative functions because his wisdom and justice were so highly esteemed by those who knew him best; that he continued to give such generous service in so many directions even after, as he told me some years ago, he "had discovered the importance of the principle of the conservation of the individual"; that while often over-busy his considerateness was never-failing; that he personified the principle of *noblesse oblige* and was held by his students in a literally ineffable esteem: were these the results of merely fortuitous "gifts" of separate scientific and spiritual qualities to the same man? One ventures to hope that there is more than coincidence here. His example, with the evidence of his inspiring and enduring influence, suggests that as science outgrows the over-confidence and the too-mechanical point of view of the past three or four generations, the cultivation of the true spirit of science may minister directly to the growth of those qualities of character which have made Dr. Mendel's life and work at once a service to the whole human race and a personal inspiration to all who were privileged to know him.

HENRY C. SHERMAN

REGINALD GORDON HARRIS

DR. REGINALD G. HARRIS, director of the Biological Laboratory of the Long Island Biological Association since 1923, died on January 7, 1936, at the Huntington Hospital of pneumonia. Dr. Harris was born in Medford, Massachusetts, on July 18, 1898, the son of Benjamin R. and Adella (Wilder) Harris. His father was a Baptist clergyman of Massachusetts and his mother came from Vermont—thus Dr. Harris was a product of Puritan New England.

Under Dr. Harris's administration, the Biological Laboratory advanced from the status of a summer school of biology to a leading center of research in biophysics and physiology. The most striking feature of the work of the laboratory in recent years has been the series of symposia on quantitative biology in which have cooperated chemists, physicists and mathematicians with biologists. The results of these symposia are published in three large volumes which have been called for by leading libraries and learned men of all civilized countries.

The success of Dr. Harris's work depended largely upon certain prevailing personal traits. Among these were a love of travel in the wild, not merely for travel's sake but to meet peoples of primitive culture. These he met on such terms that they became his fast friends. While at Darien looking up "White Indians" he and his wife were invited to sojourn on an island from which whites had hitherto always been rigorously excluded. He studied at the University of Algiers, he traveled across South America, collecting rare insects, he traveled in Panama, Brazil, Peru, Yucatan, Guatemala, Colombia.

His broad imagination gave rise to new ideas and his administrative ability enabled him to realize them. Thus, his was the great idea of bringing together the physicists, chemists, mathematicians and biologists for exchange of ideas in their fields where these sciences make contact. This idea appealed to the supporters