# SCIENCE

Vol. LXVIII

August 31, 1928

CONTENTS

No. 1757

#### .....

The Forgotten Physician: Dr. Samuel W. Lambert	189
A Research Delusion: PROFESSOR GEO. L. PELTIER	
Recent Developments in Quantum Mechanics: Dr.	
EDWARD U. CONDON	193
Scientific Events:	
Conference of the British Association on the	
Preservation of Scenery; Research on Air Naviga-	
tion; The Arnold Arboretum; The Swampscott	
Meeting of the American Chemical Society	195
Scientific Notes and News	
University and Educational Notes	
Discussion and Correspondence:	
"Centers of Research," a Reply: Professors	
LEONARD B. LOEB, KARL T. COMPTON and RAY-	
MOND T. BIRGE. Blood Pressure Depression by	
Light Irradiation: Dr. C. I. Reed. A Morphological	
Explanation for the Failure of Necturus to Meta-	
morphose: Dr. Frank J. Figge. Halibut Fishing:	
BIRGER R. HEADSTROM. The Function of the	
Lateral Line Organs: Dr. Walter Freeman	202
Reports:	
The Fourth General Assembly of the International	
Research Council: Professor Charles E. St.	
JOHN. Vitamin B Terminology: PROFESSOR R.	
Adams Dutcher	205
Scientific Apparatus and Laboratory Methods:	
Electrical Apparatus for the Accurate Generation	
and Measurement of Noise and Tone: Dr. Donald	
M. Crawford	209
Special Articles:	
Mutation, Chromosome Non-disjunction and the	-
Gene: Dr. John W. Gowen. Regulating the	
Storage of Vitamin A in Animals that are to be	
Used for the Determination of this Vitamin: Dr.	
E. M. Nelson	211
Science News	x

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKeen Cattell and published every Friday by

### THE SCIENCE PRESS

New York City: Grand Central Terminal.

Lancaster, Pa. Garrison, N. Y.

Annual Subscription, \$6.00. Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

#### THE FORGOTTEN PHYSICIAN<sup>1</sup>

I APPRECIATE to the full the honor which has been given me to be present to-day on this platform. I have elected to say something on a subject which is very prominent in my thoughts and very pertinent to the modern trend of medical education and development, and shall speak of the forgotten physician.

In the fall of 1904, at its one hundred and fiftieth anniversary, Columbia University gave the honorary degree of LL.D. to three graduates of the College of Physicians and Surgeons. These three men, who in their day meant much to the profession of New York, were Edward G. Janeway, Francis Delafield and William M. Polk. At the time these men graduated there were three outstanding proprietary medical schools which to-day have developed into three university schools of the highest rank. Janeway, Delafield and Polk became connected in high office, each with a different one of these three schools, and each came to stand for the ideals of the profession and the aspirations of the schools. It were indeed strange if I dared to refer to such men as forgotten physicians. All three at one time were connected with Bellevue Hospital, in which institution you have received a large part of your own education. It can not but be true that you found in Bellevue a tradition emphasizing the work and influence of each one of these leaders during the days of your grandfathers. Delafield was a trained pathologist, who brought an intimate knowledge of microscopic anatomy to his studies at the bedside. His lectures as professor of the theory and practice of medicine at the College of Physicians and Surgeons combined the observations of a scientist with the analytical judgment of a keen clinician. His diagnostic ability had a mathematical method which followed a thorough study of the relative frequency of diseases as had been formulated by Dr. Louis, of Paris, in the middle of the nineteenth century. Janeway was a typical clinician of the old school. His diagnoses were famed throughout this larger metropolitan district and known as far as his students wandered from their home school, the old Bellevue Hospital Medical College, to settle throughout this country and practice medicine as they had been taught by their honored teacher in the clinics and at the bedsides of Bellevue Hospital. Janeway's

<sup>1</sup> Address delivered to the graduating class of Cornell University Medical College, June 7, 1928.

diagnostic ability was founded on the broad foundation of hard work in the autopsy room and enhanced by a sort of roving commission to be the chosen consultant of every interne in Bellevue, to see every case of doubtful causation or of difficult diagnosis in any ward of any division of that celebrated hospital. Polk practiced an entirely different branch of medicine and left his mark on Bellevue Hospital as surgeon and obstetrician. In his earlier career he came under the influence of one of the greatest physicians of his day in this city, John T. Metcalf, and Polk became a physician of broad philosophy and keen appreciation of the whole science of medicine, although he limited his work to a specialty. This association and training had much to do with the development of his natural ability to become an educator of broad vision and the dean of this college.

Polk, Delafield and Janeway will never be forgotten whenever the history of medicine during the last twenty years of the nineteenth and the first ten years of the twentieth century shall be reviewed and written. There was a common characteristic of these three leaders, rivals though they may be considered, in medicine of forty years ago. They all stood for traditions of the past, for the brotherhood of the profession, for the individualism of the family doctor. But these personal qualities were not peculiar to such leaders in the art of medicine as the three I have selected as outstanding examples. The majority of the physicians of the nineteenth century were men of the same stamp, and such leaders as Polk and Janeway and Delafield were pushed into their preeminent position not by their own estimation of their ability, but by the general demand upon their time from their confrères that they consulted, so that there was no time left to them for the regular visitation of the ill in family practice. I wish to emphasize the fact that it is the physician of the nineteenth century who has been forgotten and that the leaders of the profession of that day are remembered for the brilliant achievements and not for the philosophy of their lives which they shared with the large majority of their colleagues. I wish to emphasize that the medical men of fifty and sixty years ago were family doctors because of their environment and of the general state of medical knowledge and that their successes depended largely on their character and personality.

It was often said of these men that they worked hard and died poor, and so they did. They make up the army of the forgotten physicians. It were well if some of the ideals of these men were still more in evidence amongst us. Your methods of practice will not be theirs; they knew only the beginning of modern bacteriology with its serums and inoculations and foreign proteins, and yet they put smallpox off

the medical map and developed aseptic surgery. Their methods were the best that medical knowledge provided and they were specialists in making their patients comfortable. You must learn to practice the art of medicine to that same end and remember the homely details of caring for the sick and not limit your therapeutics to so-called specifics and autogenous poisons, misnamed vaccines. Not only is the type of physician I am trying to portray forgotten. but his materia medica is likewise forgotten. Pharmacology has taught us that many of his favorites have little worth, but many others are neglected nowadays in spite of their real value. It is a greater neglect to-day that the writing of a particular prescription to meet the individual indications of a single patient is a lost art. Let me warn you against the almost universal habit of prescribing ordinary remedies by numbers from some hospital formulary, or from the trade list of tablets of some wholesale drug firm, and I regret the giving to every patient with a cough even the bronchitis tablets of Delafield or to every anemic person the formula for the tartrate of iron frequently used by Janeway. Let me warn you against the insidious, glib-talking representative of the manufacturer of proprietary mixtures of known contents, or even of patent medicines of unknown composition. It has been one of my grim amusements in recent years to be talked to by agents of this class whom I recognized as old students of mine whom I, when a dean, prevented from becoming doctors and changed their occupation from fooling their wishedfor patients to trying to cajole the physicians who were their former and more intelligent fellow students. Be an individualist and learn to mix your drugs with brains, and avoid the use of multiple mixtures, the so-called shotgun prescription. This error has crept into the giving of modern specifics and resulted in treating acute infections with the dead germ vaccines of multiple diseases from which the patients do not suffer.

The forgotten physician possessed a sense of humor and there is much help in observing the foibles of mankind from such a viewpoint. He cultivated a philosophy which led him to meet the grave and gay, the cure of most of his patients and the death of some, with equanimity, provided he could feel that he had done his best for their cure and comfort. On no other basis can any one practice the art of medicine. If a physician can be sure of his diagnosis and that he has done his best, he can temporarily forget the very sick case and give of his best to every other case, concentrating on each in turn and, dismissing all and their worries from his mind, sleep soundly at night.

The older physician of the early nineteenth century was a specialist in no branch of his art but a master of all in so far as human knowledge permitted. He was surgeon and internist, obstetrician and oculist. a general practitioner in fact as well as in name, and his reputation has endured. Before the discovery of anesthesia and of aseptic surgery, he, as McDowell in Kentucky, performed a successful ovariotomy; as Jenner in England he discovered the interrelation of cowpox and smallpox: as Laennec in France he discovered auscultation and as Auenbrugger in Austria he practiced percussion. The forgotten physician of the later nineteenth century became a specialist by preliminary hard work in general surgery and internal medicine. He was a doctor of medicine before he was a specialist. He knew nothing of the modern mischief of specialism. We are threatened to-day with specialization even of our medical students, and much harm has already been done by this pernicious theory of education of allowing one to study only that in which one is specially interested. As applied to medicine at least, the basic groundwork of the specialist is neglected. I have known of laparotomies begun by specialists, and because the disease found was not as diagnosticated and did not belong to the specialty of the operator the operation was left unfinished to be completed by a general surgeon. I met last summer on a steamer bound for Europe some seventy odd modern specialists making a tour to Vienna for a six weeks intensive training. This trip was the seventh annual pilgrimage under the same instructor for the same purpose. Far be it from me to belittle the attempt of any physician to improve his skill and add to his knowledge, but I must confess to a shock when I met some of the returning pilgrims two months later and found that their chief interest in the expedition was centered in the increased fees they expected to charge for their services in the future.

The forgotten physician was not troubled with the modern errors of commercialism which are creeping in all too fast to lower the standards and corrupt the inherited ideals of our profession. Professional fees were formerly on a sliding scale because the forgotten physician always maintained that the poor were entitled to free service not only in hospitals but in their own homes. Lawsuits for the collection of medical fees in the eighteen fifties and eighties were practically unknown. The modern view that if the poor demand the time of a physician without remuneration the rich must be called upon to pay for the same is vicious. It it quite proper to scale a physician's fees down for the moderately well-to-do, but it is not good ethics to scale them up in proportion to the largest income of

the very rich. Much has been printed of late concerning a questionable practice known as the splitting of fees. Investigation has shown it is more wide-spread than it was supposed to be and that it is endorsed more or less publicly by some members of the profession. It is conceived in dishonor, it is carried on in secret, it involves the payment of money to one person for the unknown benefit of another; it is a secret system of bribery to further a consultation or special practice on the one hand, and of graft to increase a professional income at the expense of an exploited patient on the other. By these facts it carries its own condemnation.

You have spent six years at least in preparation for this ceremony. You have worked hard, and that you are here to-day means that you have learned to work and to think in medical terms at all times when awake, and to dream medicine when asleep. But your job is only begun. You must never cease to study, to read medicine, to observe the scientific facts of the laboratory and the clinical pictures at the bed-side of the sick. You must correlate and apply the findings of chemistry and physics, of physiology and of pathology to the diagnosis and treatment of disease. It was no mere chance that brought success to Banting in the discovery of insulin nor to Murphy and Minot in the application of a diet of liver to the cure of pernicious anemia.

You can not all be Polks or Janeways or Delafields, but you can aim at the standards set by these leaders, and you will go further if you do than you otherwise might. Thereby you will escape the pitfall of modern commercialism; the seduction of a too early specialization; the enticement of stupid short cuts to knowledge; the lure of a smug acquiescence in a diagnostic conclusion in spite of the development of new facts, and the laziness of a stubborn adherence to an opinionated therapeutics against the advice even of a younger man, and when you find yourself in professional error you will frankly and promptly admit it.

Do not forget that medicine has a past which antedates any of the religious sects of to-day, that the ethics of the profession antedate Hippocrates, who formulated them, that even your grandfathers in the profession, the forgotten physicians, were celebrated men who lived lives of worth and honor and who accomplished much with less technical knowledge than you possess but with an appreciation of human nature and of men and women second to no modern M.D. with all his new-fangled nomenclature of the analysis of the psyche and the soma derived from misapplied Greek and Latin roots.

Live your lives and practice the art of medicine as did your predecessors of two generations ago and you will enjoy a life full of service to those in trouble, you will be remunerated according to your deserts. you will always be able to look ahead with something still to do. something still to learn, something still to be discovered.

And now at the end of your novitiate, at the beginning of your real career, it is my pleasure to join with your faculty and your medical friends and to welcome you as fellow members to our profession.

SAMUEL W. LAMBERT

NEW YORK ACADEMY OF MEDICINE

## A RESEARCH DELUSION<sup>1</sup>

WITH the administrative heads of many of our educational institutions demanding a doctorate of every member of the permanent staff, as it is supposed to be a prerogative for research, and the issuing of a list of titles published each year by their staff, the urge for so-called research, namely, a list of titles, goes madly on. In fact publication sometimes becomes a sort of self-defense, for the absence of any titles over a brief period of years stamps one either as lacking the ability of doing research or inefficient. Likewise, such a policy has permeated the staff, so that their interest is centered in output rather than in quality. This is just another characteristic symptom of megalomania, so prevalent in our day in most lines of endeavor. I think that on an occasion of this kind a brief period can be profitably spent in analyzing the present tendency in research in order that we may have a better understanding of what actually constitutes research.

Research consists of more than the mere accumulation and publication of facts. Research in its highest aspect is something creative, akin to the well-known masterpieces of art, music and literature. A masterpiece is the product of the artist's mind, in that any one using the same oils and paints could not create a similar picture. The same creative urge is shown in music and literature. It is true that the scientist can not create any new material thing, but neither does the painter use anything in the way of materials other than those available to any one. However, the master scientist can so arrange his materials and facts that they represent a fundamental contribution to science as a painting does in art. As in art a masterpiece may go unnoticed for years, so in science the true value and significance of a contribution may escape attention for decades, but once its proper value is ascertained it persists for ages.

1 Address of the past president of the Nebraska Academy of Science, Fremont, Nebraska, April 27, 1928.

It is rather disconcerting to listen to classical music and to realize suddenly that the melody transposed and in quickened tempo forms the basis of the latest jazz hit. The same feeling comes over one after reading an article to find that, although some new data are added, it is just a transposed rendition of some old familiar contribution. As in the arts, music and literature there are too many imitative and not enough creative minds. It is impossible for us all to become creative scientists, but we should at least strive towards this goal.

The English cleric who recently suggested that all active research be abandoned, for a period of ten vears, had in mind, I think, that too much work was being repeated and the period of inactivity would bring us to a realization of the futility of doing research without an adequate understanding of what has previously been accomplished. An analysis by a master in his field of all existing data in his specialty would advance research much faster than the addition of more data during this period. As a merchant takes stock once a year and balances his accounts to see what progress has been made, so should we take stock at intervals of all the endeavors in our special field of science. A carefully digested inventory of the investigations in our field can not but lead to research of a higher standard. Not only do we fail to digest properly the publications of previous workers, but we are so intent on the mere collection of data that we do not take the time to weigh our data in their broad relationships.

It is true that from an economic standpoint the collection of new facts has yielded large returns, but soon, unless some precautions are inaugurated, having been so thoroughly sold on the benefits of scientific endeavors, the public will expect the impossible. Have the contributions of science to the progress and development of civilization made us a better and more cultured people? Scientific discoveries have no doubt given us more leisure than the world has ever known before. Are we producing any great works of art, music or literature in our times as the result of this leisure?

Perhaps at this point it might be well to review the history of science and attempt to determine how fundamental discoveries were brought to fruition. It is well known how the philosophical theories of Aristotle permeated the thought of Europe for centuries. While many of Aristotle's observations are sound, his deductive reasoning on natural phenomena probably more than any other factor held in abeyance the adoption of the experimental or inductive methods in science. Galilei, on the other hand, after much thought propounded his theory of falling bodies and