

If side reactions, including gastrointestinal symptoms or allergic manifestations, occur the drug should be discontinued in favor of insulin.

Uncertainty as to the mode of action of tolbutamide and the brevity of experience with it when compared with the many years over which diabetes must be treated require that it be prescribed by physicians, dispensed by pharmacists and used by patients with caution. The manufacturer has prepared an excellent leaflet in which safeguards are given appropriate emphasis. The drug has been released by the Food and Drug Administration for sale on prescription only. This means that, in order to avoid violation of the law, pharmacists who are accustomed to dispensing insulin without prescription to patients familiar with its use must resist any temptation to do so with tolbutamide.

During the past few months a guanidine derivative,

temporarily designated DBI, is being tested in clinical and experimental diabetes. This substance belongs to a different chemical family from that of Orinase. The available information is too scant as yet to allow even preliminary conclusions.

It is hoped that the investigators working in this field will be given undisturbed and unpressured time to investigate fully any of these drugs so that premature introduction into general use does not occur.

INFORMATIONAL COMMITTEE ON ORAL
HYPOGLYCEMIC COMPOUNDS
AMERICAN DIABETES ASSOCIATION, INC.

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Henry Rawle Geyelin

1883-1942

William C. Stadie, M.D., Philadelphia

H. Rawle Geyelin was born in Villanova, Pennsylvania, May 12, 1883. Unlike many of the sons of the old families who obtained their college and even preparatory education away from home, Geyelin received all of his formal education in Philadelphia. He prepared for college at the Haverford Grammar School and in 1902 entered the University of Pennsylvania in the combined course leading to an A.B. degree in 1906 and M.D. in 1909. Following graduation from medical school he served an internship in Philadelphia and was fortunate then to be able to have a period of study in Germany. Here were planted the seeds which stimulated his interest in clinical research, particularly along chemical lines.

Upon his return from abroad Geyelin moved to New York in 1912 to begin his graduate medical career at the Presbyterian Hospital. He was fortunate to have for his chiefs of medical service two men who were not only sympathetic but actively encouraged the new advances in clinical research which were beginning to develop in the metropolitan hospitals of this country. Theodore C. Janeway was Professor of Medicine at Columbia University when Geyelin began his post-internship work. Later, Warfield T. Longcope succeeded Janeway who had left to assume the Professorship of

Medicine at Johns Hopkins University. New laboratory methods for the scientific study of clinical problems were being developed rapidly in Germany and both Janeway and Longcope were eager to apply them to clinical problems encountered in the medical service of the Presbyterian Hospital. Geyelin was called upon to undertake this task.

The difficulties of this undertaking are best appreciated when it is realized that Geyelin's general cultural background was about what was considered appropriate for a physician at that time. He had had little training in physics and chemistry in either high school or college and his knowledge of these fields was not appreciably increased during his medical training. The men in the city of New York who knew these fields well enough to be helpful to him were few indeed, and he was forced to rely mainly upon his own resources and diligent study of the literature. But to overcome these handicaps in fundamental scientific training he was filled with an ardent desire to master the new technics. He wanted to develop a critical judgment in applying them to clinical problems, and an ability to ask the right questions and frame the appropriate experiments by which they could be answered by the laboratory methods which were then available. In addition he had

the capacity for hard work. These attributes of character were more than enough to make up for his lack of specific knowledge in the chemical and metabolic fields.

At the beginning of his research work at the Presbyterian, Geyelin served as the Blumenthal Fellow in Medicine and he chose for his field the application of chemistry to problems of metabolism in disease. Geyelin's initial interest was the study of carbohydrate metabolism in thyroid disease, but he soon shifted to diabetes. At that time only cumbersome and laborious methods were available for blood or urine analysis. For example, the old Bertrand method was standard for blood sugar determinations. This required the withdrawal of 50 to 100 cc. of blood which was defibrinated by stirring in an evaporating dish as it was drawn from the vein. The blood was heated and a deproteinized filtrate prepared. Then followed the preparation of a cuprous oxide precipitate which had to be washed and weighed. Soon, however, Benedict, Folin and Van Slyke, among others, developed accurate and relatively simple new microchemical tools for the determination of various constituents of blood. Geyelin was ready for the application of these new methods to the many problems which presented themselves for study in the hospital wards. Meanwhile he had gathered around him a devoted group of younger men who were prepared to work under his direction.

Geyelin was determined that this new investigational approach should be made available for the study of patients in the general wards, in the outpatient clinics, and in private offices. This, indeed, was an ambitious scheme because it was the current opinion among the older men—who formulated the policies of the medical school and the clinic—that these difficult and laborious processes of research in clinical medicine could only be employed properly on selected patients in research institutions or in carefully isolated metabolism wards. Geyelin, however, applied himself so assiduously to his new endeavor that within a few years he had established an efficiently functioning metabolic service staffed by a group of devoted young physicians. This service made possible the adequate study of a great variety of problems in patients who were being cared for by general nursing methods in the wards of the hospital. This enthusiasm for research in clinical medicine spread not only among the internes but to the students. The group at the Presbyterian Hospital, as in many similar ones, was constantly renewed by young men coming up through the ranks. From these men came the leaders in medical research and clinical advancement in the United States for the next half century.

A new era in medicine had begun in this country. The leaven, which had worked so well on the Continent and in England to stimulate advances in medical research, had been imported by American students who were fortunate enough to spend a year or two in study abroad. Within a short time the new point of view brought about a revolution in the organization of medical training here, influencing the medical schools as well as the hospitals. Geyelin was numbered among the pioneers who helped in the initiation of these changes.

Much of Geyelin's early work in diabetes preceded the advent of insulin. His best-known work was on the famous diabetic, C. K., who was considered an example of a totally diabetic individual. Geyelin studied him for many years. C. K. eventually went to the Russell Sage Institute in New York where methods for the determination of total metabolism were available. Much of the chemical data published in association with the total calorimetric work at the Russell Sage came from the laboratories of Geyelin at the Presbyterian Hospital.

Geyelin was one of the first to use insulin in juvenile diabetes. He published a carefully documented paper containing detailed metabolic studies on nine juvenile diabetics ranging from the age of two to fourteen. This was in August 1922 when very little insulin was available for research, and even less information was at hand to guide its therapeutic use. Geyelin had no idea how much insulin to use to offset the glycosuria on a given carbohydrate diet, and he had to feel his way with utmost caution in each individual. By stepwise increase of insulin dosage and carbohydrate intake he succeeded in arresting the downward course of the disease, achieving in each case a total food intake appropriate to the age requirement in calories for the individual. He demonstrated in every case a steady gain in weight and growth, and an increase in mental and physical vigor. By his caution and care in the use of the available insulin he was able to avoid any serious incidence of overdosage.

In essence Geyelin was engaged in a full-time academic career many years before medical schools recognized such specialization. But this academic career ended just before World War I. Sheer necessity compelled him to open an office for the practice of medicine. Here he achieved immediate success, but the onset of a succession of illnesses limited his activities. His last years were filled with pain and anxiety, but he wasted no time in self-pity or depression but kept on actively until his death in 1942.

The main contribution of Geyelin might be regarded as the demonstration that scientific procedures along chemical and other lines could be conducted with ac-

curacy and reliability on patients who were taken care of in the open wards. The influence of this work upon young physicians and upon students in stimulation of desire and interest to further research work in clinical medicine was incalculable.

During his life Geyelin was associated professionally in the following positions: at Presbyterian Hospital, Blumenthal Fellow in Medicine 1912-16, Assisting Visiting Physician 1915-21, Associate Attending Physician after 1921; at Babies' Hospital, Consulting Physician 1923-28, Assistant Visiting Physician 1928-32, Associate Attending Physician after 1932; at Vanderbilt Clinic, Chief of Medical Clinic 1918-19; at Colum-

bia University, College of Physicians and Surgeons, Instructor in Clinical Pathology 1913-16, Associate in Clinical Pathology 1916-17, Associate in Medicine 1917-21, Assistant Clinical Professor of Medicine after 1921. He was also Consultant Specialist in Diseases of Metabolism at the United States Veterans' Hospital, Number 81, New York City, from 1924 to 1933.

Geyelin was a member of many scientific societies, among which were the American College of Physicians, the Association of American Physicians, the Harvey Society, the Interurban Clinical Club and many others. His clubs were the Century Association of New York and the University Barge Club of Philadelphia.

BOOK REVIEWS

ABC FOR DIABETICS, A MANUAL FOR PATIENTS. (ABC FÜR ZUCKERKRANKE, EIN RATGEBER FÜR DEN KRANKEN) By Prof. Dr. F. Bertram, Hamburg, \$1.00, pp. 84. 8th completely revised edition, Georg Thieme Verlag, Stuttgart, Germany, 1956.

The new edition of Bertram's well-known manual for diabetic patients summarizes again in clear and simple form the essentials of etiology, symptomatology and therapy of diabetes mellitus. As in the previous editions the importance of dietary management is stressed and the value of oatmeal days, which have not found equal appreciation in the U.S.A., is emphasized. Insulin treatment and the technic of insulin injections is thoroughly described as well as the importance of exercise, hygiene and regularity in mode of living for the control of diabetes and the prevention of complications.

The American reader will be surprised, however, that some etiologic and therapeutic concepts are presented to the patient as factual information which at least in this country are considered to belong still in the field of investigation. Thus diabetes is divided into the commonly accepted insulin-deficiency type and into the contra-regulatory type which is said to be due to preponderance of the A cells and to hyperfunction of glucagon. The oral therapy with sulfonylurea compounds is presented as a distinct practical therapeutic progress useful particularly in the contraregulatory type. The author makes the rather bold statement that "there are several drugs which act in a large number of diabetic patients, unfortunately not in all, often even better than insulin and which offer in addition the advantage that they do not need to be injected." Accordingly, the chapter on dangers of the sulfonylureas

minimizes their possible side effects and conveys the impression that the new drugs are safer than insulin, since they do not produce hypoglycemic reactions. The serious shortcoming of these drugs that they are ineffective in diabetic acidosis is not mentioned.

It would have been wiser, particularly in a manual for the laity, to indicate clearly which part of the information is based on secure and confirmed knowledge and which is speculative or hypothetical.

ESSAYS IN BIOCHEMISTRY. Edited by Samuel Graff. \$6.50, pp. 345, John Wiley & Sons, Inc., New York, 1956.

This collection of twenty-five splendid essays was assembled to honor Hans Thacher Clarke on the occasion of his retirement as Professor of Biochemistry at the College of Physicians and Surgeons, Columbia University. The essays were written by Professor Clarke's former students and close academic associates, all of them distinguished leaders in the field of biochemistry. They cover a wide range of subjects, indicated by this partial list of topic headings: metabolic products of fungi; development of a plasma expander; conjugated proteins; thymine metabolism; steroid hormones; biochemistry of bacterial viruses; the nature of cancer; lipid metabolism; nitrogen-sparing effect of glucose; inositol; ferritin; biosynthesis of porphyrins; chemical structure of proteins; glycogen turnover; and the chemical basis of heredity determinants. The discussions constitute a critical survey of the present status of many major problems in several closely allied fields of biochemical research, and offer provocative speculations on probable future trends. The concise well-written essays reflect the high standards of scientific scholarship set by Professor Clarke.