of sugar. An approximately similar relationship of insulin and glucose is obtained from the hormone and sugar requirements of a severely diabetic child. The values of *0.07 unit* and *0.25 gm* are thus bracketed together, and have some usefulness therapeutically, but they have little obvious further significance. However, this empirically established relationship of insulin and glucose supplies fundamental data, needed in the following calculations:

(*a*) Molar equivalent of 0.07 unit of insulin.:

1 mg of pure, crystalline insulin = 22 units, and mol. wt. of insulin = 35,100.

Hence, 1 unit = 1/22 = 0.0454 mg, and 0.07 unit = $0.0454 \times 0.07 = 0.00318$ mg, or 3.18×10^{-6} gm.

Therefore, the molar equivalent of 0.07 unit of insulin = $3.18 \times 10^{-6}/3.51 \times 10^{4} = 9.06 \times 10^{-11}$ M.

(*b*) The molar equivalent of 0.25 gm of glucose (mol. wt. = 180) = $0.25/180 = 1.39 \times 10^{-3}$ M.

Therefore, the molecular ratio of glucose to insulin = $1.39 \times 10^{-3}/9.06 \times 10^{-11} = 1.53 \times 10^{7}/1$. Thus, per molecule of insulin required by the completely diabetic (or produced by the normal organism), 15,300,000 molecules of glucose are utilized (fully oxidized) per hour, or 255,000 molecules per minute. Attention may be drawn to the fact that care has been taken to state the relationship of insulin and glucose in such a way as not to imply that insulin is necessarily directly concerned with the oxidation of glucose. The exact functions and mode of action of insulin are still open questions. The calculations are of interest and valid as an indication of the relative frequency or magnitudes of two simultaneous processes, the production of insulin and the oxidation of glucose, for which some interrelationship is probable in the organism. If insulin is concerned with glucose oxidation, the value of 255,000 molecules of glucose taken care of by 1 molecule of insulin per minute assumes the character of a turnover number. As such, it is unusually high, and has the added distinction of being referable directly to the living organism. Insulin does a good job, the magnitude of which is defined clearly by the molecular relationship of the hormone and sugar.

Summary

Calculations have been presented to illustrate the insight which may be gained from the development of concepts of biological magnitudes upon the basis of molecular dimensions.

OBITUARY

RECENT DEATHS

ROBERT ELMER HORTON, consulting hydraulic engineer to the Tennessee Valley Authority and chairman of the Board of Consultants on Flood Control of the U. S. Department of Agriculture, died in his seventieth year on April 22.

DR. MARTIN H. ITTNER, chief chemist of the Colgate-Palmolive-Peet Company, died on April 22. He was seventy-four years old.

ARTHUR ROBERT HINKS, astronomer and since 1915 secretary of the Royal Geographical Society, died on April 18 at the age of seventy-one years.

DR. HANS SACHS, formerly professor of immunology at the Medical School of the University of Heidelberg, who was connected with Trinity College in Dublin, where he had a fellowship, died on March 28.

SIR AMBROSE FLEMING, known for his work in wireless, radio and telegraph developments, died on April 19 at the age of ninety-five years.

SCIENTIFIC EVENTS

NEW MECHANICAL ENGINEERING BUILDING AT THE CALIFORNIA INSTITUTE OF TECHNOLOGY

THERE has just been completed for the use of the Mechanical Engineering Department of the California Institute of Technology a five-story, reinforced concrete building. This follows the usual type of construction with three floors above the ground level and two floors below. However, the so-called first floor is five feet above the ground level so that by the use of light wells, daylight is supplied to the entire first basement, and because of a portion of the first basement floor being omitted, sunlight actually reaches the very lowest floor level. The building contains two very good drafting rooms on the top floor with excellent daylight lighting and also is illuminated by fluorescent lights. These lights are arranged on the ceiling in diagonals so that with the drafting tables located square with the room no shadows will be cast. There are two very good classrooms and a lecture room equipped with a projection lantern and screen and a demonstration table supplied with water, gas, compressed air and 110- and 220-volt AC current. The building also contains the offices for the members of the instructing staff and a good portion of the equipment of the Laboratory of Mechanical Engineer-