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 Engineering. The latter includes all the steam laboratory machinery, together with some other pieces, such as an air compressor, a refrigeration machine, a Servel gas-fired, air-conditioning unit for laboratory purposes, and similar items. Most of the internal combustion engineering equipment is left in the previous old laboratory, which is separated from any classrooms because it is noisier than the machinery just mentioned which is in the new building. Water that is used in the steam condenser and other cooling equipment is in turn cooled in a forced draft cooling tower on the room of the building.

R. L. DAUGHERTY

THE CORROSION RESEARCH LABORATORY OF THE ILLINOIS INSTITUTE OF TECHNOLOGY

THE war has been responsible for an increased interest in corrosion, due to the shortage of materials, the difficulty of replacement and the severe corrosion attack of semi-tropical climates.

The problem will become of even greater importance in the post-war period when many thousands of tons of intricately built equipment will be stored in government warehouses for immediate call on notice of from thirty days to perhaps twenty years. The corrosion protection measures involved will be on an unprecedented scale.

It was to meet the need for an educational and research center for studies on corrosion in this country that the Corrosion Research Laboratory was recently established at the Illinois Institute of Technology at Chicago. Dr. H. J. McDonald, associate professor of chemistry, has been appointed director of the new laboratory. At present the most extensive project under investigation is a study of the stress corrosion of mild steel.

The Illinois Institute of Technology provides space for the laboratory and its staff and a certain amount of funds for its equipment and operation. However, to continue the basic research program of the laboratory and to assure its permanency, industrial sponsorship of its fundamental research program will be sought.

THE ROCKEFELLER FOUNDATION[1]

ACCORDING to a review of the work in 1944 of the Rockefeller Foundation by Dr. Raymond B. Fosdick, president of the foundation, appropriations amounted to $10,306,258. This sum represents a substantial increase over the $7,760,186 appropriated in 1943. The income of the foundation from investments during the year was $8,209,807. This income was supplemented by a balance remaining from the preceding year.

[1] From review of work in 1944 of Dr. Raymond P. Fosdick of the Rockefeller Foundation.

The appropriations were distributed for the most part in five major fields, roughly as follows: Public health, $3,200,000; medical sciences, $1,253,000; natural sciences, $1,090,000; social sciences, $2,193,000; and humanities, $1,548,000.

Of the money appropriated during the year 72 per cent. was for work in the United States and 28 per cent. for work in other countries.

As fast as possible contacts are being reestablished in Europe. An officer of the foundation has been stationed in London throughout the war. In 1944 a staff member of the International Health Division was also assigned to the London office, and as soon as conditions permit, it is expected that he will establish headquarters in Paris. The director of the Division of Social Sciences spent two months in Great Britain, and in the latter part of the year representatives of the foundation were able to visit France. The Far Eastern office, formerly in Manila and now in Delhi, has been manned throughout the war. . . .

Ever since 1939 the Rockefeller Foundation has tried to keep in touch with as many as possible of the scholars and institutions of war-torn nations. Contact with countries like Norway, Denmark, Holland, Czechoslovakia and Poland has presented unsolvable difficulties, and only recently have relationships been reestablished in France. But over all this period, assistance has been continued to research projects and institutions in Great Britain, Sweden and Switzerland; and it is gratifying to report the extent to which fundamental work in science has been maintained. During 1944 continuing support was granted to eighteen projects in the natural sciences located in Europe. Of these, nine were in England, seven in Sweden and two in Switzerland. These projects were for the most part related to the application of the techniques of physics, chemistry and mathematics to biological problems.

No words can do justice to the devotion and gallantry with which much of this research has been carried on—sometimes in bombed-out laboratories and generally under conditions of hardship which would discourage all but the stoutest hearts. Shortages of materials and scientific literature, interruption of communication with other institutions, overcrowded laboratories due to the influx of refugee scientists—these are only a sample of the difficulties which have confronted the few remaining research centers in Europe.

But the experience of these years has proved once again that scientists everywhere speak the same great language of ideas—an international language of tolerance and hospitality for those who choose to hear. The letters which the foundation has received during the last few years bear eloquent testimony on this point. Professor Manne Siegbahn, of the Academy of Sciences in Stockholm, has opened the doors of his