QUOTATIONS

MEDICAL RESEARCH

MEDICAL research is of so continuous a nature that attempts to review its progress at any given time are necessarily fraught with great difficulty. Observations and experiments which to-day assume large proportions may to-morrow seem relatively insignificant in the light of clearer understanding. On the other hand, labors which at this present hour appear to hold out but little promise of immediate utility may come to occupy a first place in the records of achievement. These facts should be borne in mind in considering the annual report of the Medical Research Council, a summary of which appears in another column. The number of investigators initiated or assisted by the council during the past year is so great as to be almost bewildering. These investigations, too, cover a field within the limits of which are included many other sciences distinct from medicine, yet, as is now known, ancillary to it. If certain observations appear to stand out from the others, and in consequence attract a larger share of attention, this fact must not be allowed to discount the possibility that the more obscure may yet prove to be the more important work. That proviso having been made, it may be acknowledged that the researches of the past year have been fruitful. New light has been obtained on some of the more recondite processes of nutrition. The importance of sunlight in the early years of life has found substantial and striking confirmation in the study of rickets carried on at the Kinderklinik in Vienna by workers from the Lister Institute and the Medical Research Council. Further, the discovery made at Toronto of a method of obtaining the anti-diabetic substance "insulin" seems likely to effect great changes in the treatment of this disease. That discovery belongs in no sense to the Medical Research Council, which merely recounts its history and pays tribute to its value. Nor, as our correspondent shows, have other scientific bodies been idle during the period under review. The papers submitted last night to the Royal Society of Tropical Medicine and Hygiene on the treatment of African sleeping sickness, if they do not profess finality, at least advance this difficult problem a stage farther towards solution. The German drug known as "Bayer 205," which was introduced to professional attention some short time ago, has afforded in the hands of British tropical disease investigators a large measure of success. Its failures are not less interesting or instructive; nor is the parallel between it and the preparation of arsenic, elaborated at the Rockefeller Institute and recently subjected to trial in Africa, without its significance. These observations, like the observations made at home and in temperate areas of the empire, have abiding value, whether or not the conclusions based on them remain valid. For they represent conscientious and disinterested work undertaken with no other idea than the advancement of knowledge. This quality of disinterestedness is the noblest possession of science. So long as it is maintained unsullied the faith which millions to-day repose in the exercise of human reason as the cure of human ills will not fail of justification.—*The London Times.*

SPECIAL ARTICLES

THE MINIMUM CONCENTRATION OF LUCIFERIN TO GIVE A VISIBLE LUMINESCENCE

LUCIFERIN is the substance of luminous animals which produces light when oxidized. An enzyme, luciferase, likewise found in luminous animals, must be present with luciferin for light production. In 1916[1] I calculated that one part of luciferin from an ostracod crustacean, *Cypridina,* in 1,700,000,000 parts of sea water, when mixed with luciferase, gave a light visible to the unaided eye. This figure is so much smaller than the concentration of substances detectible by ordinary chemical reactions, which at most run into the millions, that I have repeated these experiments, only to find that my preceding estimate may be bettered. The light from weaker solutions of luciferin than 1:1,700,000,000 can be seen.

In this work an important source of error has appeared which must be carefully guarded against and to which I call special attention below. The exact procedure of determining the minimum concentration is as follows: 0.0954 grams of dried *Cypridinae* are weighed out, ground in a mortar, dissolved in boiling[2] sea water and quickly diluted to 954cc cold sea

1 *Amer. Jour. Physiol.,* XLII, 335, 1917.

2 Boiling destroys the luciferase, but not the luciferin.