stimulate the erythrocytopoietic tissues nothing is known. Dallwig, Kolls and Loevenhart, finding also that carbon dioxide concentrations of from 0.5 per cent to 1.0 per cent cause some stimulation of the bone marrow, suggest that the mechanism of this stimulation is to be found in the acid properties of carbon dioxide and its consequent power to decrease oxygen fixation.

That certain of the nitrogenous waste substances formed in metabolic activity, *e. g.*, ammonia, may be concerned in the stimulation of erythrocytopoiesis must be admitted as possible. However, certain other observations have led the writers[15] to the provisional conclusion that the products of protein metabolism constitute the fundamental stimulus that induces a lymphoid hemoblast to differentiate into a granular leucocyte. Thus, the fundamental stimulus for erythrocytopoiesis is regarded as coming from carbohydrate and fat metabolism, the stimulus for granulocytopoiesis as coming from protein metabolism.

Given lymphoid hemoblasts in suitable locations differentiating at a certain rate into erythrocytes, the data from the rather extreme conditions studied suggest that an increased concentration of some product of cellular metabolism, probably carbon dioxide, accelerates the rate of erythrocytopoiesis, decreased concentration retards it. The inference follows that in normal metabolism the more immediate fundamental stimulus for erythrocytopoiesis is the presence of a certain concentration of this metabolite.

202 (2434)

What determines the color of the light of luminous animals?

By E. NEWTON HARVEY.

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A luminous ostracod (species unknown) occurs in the sea about Jamaica, B. W. I., whose light is more yellow than the Japanese ostracod, *Cypridina hilgendorfii.* Like the Japanese form, the Jamaican form exhibits the luciferin-luciferase reac-

tion, *i. e.,* a hot water non-luminous extract of the luminous gland allowed to cool (containing luciferin), will give light when mixed with a cold water extract of the luminous gland allowed to stand until its luminescence completely disappears (containing luciferase). Moreover, luciferin from the Jamaican species will luminesce if mixed with the luciferase of the Japanese species, and *vice versa.* By carrying out the four possible *"crosses"* one may determine whether the color of the resulting light is controlled by the ostracod supplying the luciferin or the luciferase.

The following results were obtained:

Japanese luciferase x Japanese luciferin—bluish light.

Jamaican luciferase x Japanese luciferin—yellowish light.

Jamaican luciferase x Jamaican luciferin—yellowish light.

Japanese luciferase x Jamaican luciferin—bluish light.

It is apparent that the luciferase determines the color of the light.

203 (2435)

The influence of volume of culture medium and cell proximity on the rate of reproduction of Protozoa.

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Experiments were undertaken to determine (1) the relationship between the volume of culture fluid and the division rate of Infusoria, and (2) the effect of cell proximity on the division rate. The Infusoria studied were pedigree races of *Paramecium aurelia, Paramecium caudatum,* and *Pleurotricha lanceolata.* The experiments comprised four lines of each species bred in 2, 5, 20 and 40 drops of hay infusion. Forty drops were approximately equal to 1 cc. At the end of five day periods the average per diem division rate was obtained for the four lines in each volume.

In the set of experiments with different volumes of culture medium, the average per diem rate was higher in the larger