

- A. B. Klugh.** Studies on the photosynthesis of marine algae. No. 1. Photosynthetic rates of *Enteromorpha linza*, *Porphyra umbilicalis* and *Delesseria sinuosa* in red, green and blue light. Contrib. Canad. Biol. & Fish. N. S., vol. VI, No. 4. Toronto, 1930.

About half the paper consists of a critical review of previous work upon photosynthesis in various regions of the spectrum.

Pieces of the fronds of *Enteromorpha linza*, a green alga, growing just beneath the surface of the sea, of a red alga, *Porphyra umbilicalis*, of which the brownish red fronds were growing on the side of a dock at half-tide level, and of *Delesseria sinuosa*, a bright magenta-red alga from a depth of 18 metres in Passamaquoddy Bay, were placed in vials of sea water (previously brought to pH 7 by the addition of KH_2PO_4) behind Corning red, green and blue filters, which had been brought to equal intensity in the photo-synthetically active part of the spectrum, and exposed to sunshine. The increase in alkalinity, due to the using up of carbon dioxide was determined by observing the pH value with the set of capillary tubes containing standard buffers, and phenol red as indicator, prepared by the British Drug Houses, Ltd., of London. Photosynthetic rates for each species were determined by dividing the gain in pH (in hundredths of a unit) by the time. The photosynthetic rates of these three species in the different regions of the spectrum were different, those of *E. linza* being, red = 1.80, green = 0.16 and blue = 1.16; of *P. umbilicalis*, red, 2.46, green and blue 1.65; and of *D. sinuosa*, red, 1.35, green, 1.25 and blue 1.05. These results fit in well with the transmission coefficients for red, green and blue light in the Bay of Fundy at the place where the experiments were carried on, as green light penetrates best, blue next and red least.

It may be noted that the change in pH value has been used as an index of the carbon dioxide consumption, as over this range the two are proportional; thus the latter is not proportional to the change in the hydrogen ion concentration, but to a function of this, the pH value. The temperatures of the experimental tubes were 25° C. at the start and never rose above 27° C., being the same in all. The adjustment of the filters to equality was made by the aid of a pyrhelimeter using neutral tint screens, also a Wratten infra-red (No. 88) filter. It was taken that mid-day sunlight consists of 50% visible and 50% infra-red radiation.

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- A. Krogh and E. Lange with W. Smith.** On the Organic matter given off by algae. Biochem. Journ. Vol. XXIV, No. 6, London, 1930.

Although this paper deals with, fresh water algae, the results are of very considerable interest to marine workers. According to Putter's well known hypothesis, aquatic animals of all groups live largely on dissolved organic matter present in the water and this is considered to be derived from the photosynthetic processes of the plankton algae. The object of the present work is to find whether, and to what extent, algae give off organic matter to the surrounding medium. The final solution of such a problem in the sea is not yet possible because of the difficulty of estimating, with even a moderate degree of accuracy, the total dissolved organic matter present. KROGH, however, has described a fairly accurate combustion