

**A NOTE ON THE ORGANIC PRODUCTION IN THE INSHORE
WATERS OF THE GULF OF MANNAR**

By

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ALTHOUGH considerable data are available on the standing crop of plankton, practically no information is available on the daily production of organic matter in our waters and therefore investigations were started in 1957, with a view to measuring the magnitude of production of organic matter by the plankton algae and its fluctuations. Productivity has been defined by Wood¹ as "light energy transformed by photosynthesis into energy-containing plant material, and this rendered available for further biological use". The technique employed in the present investigation for measuring the primary production is the well-known dark- and clear-bottle experiments. The authors are fully aware of the limitations of this technique but due to lack of facilities for employing the much more sensitive method of using ¹⁴C and also due to the fact that the investigations are conducted in an area where the depth does not exceed 6 metres, the present technique was employed. After a series of preliminary trials the duration of the experiment was fixed at 48 hours and routine measurements were made once a week.

production of organic matter recorded by some of the earlier workers for a few selected areas is given in Table I. The available data further indicate that in the area under investigation, production is usually higher at the lower temperature and salinity ranges.

Concurrent with these experiments, studies are also being made of the standing crop of phytoplankton in terms of chlorophyll, rate of production of diatoms, standing crop of zooplankton and its relation to primary production, rate of grazing, total organic nitrogen and protein nitrogen of the standing crop of plankton. The detailed results of these investigations will be published in due course.

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TABLE I

| Locality | Production | Method employed | Author |
|---|--|---------------------------|--|
| Bay of Bengal | .. 0.12 to 0.24 g. C./m. ² /day | ¹⁴ C technique | Steemann Nielsen and Jensen ² |
| 10 stations in the shallow depth in the Indo-Malayan waters | 0.24 to 1.08 g. C./m. ² /day | do. | do. |
| Equatorial part of Indian Ocean (Mombasa to Ceylon) | 0.13 to 0.47 g. C./m. ² /day | do. | do. |
| Sargasso Sea | .. 0.03 g. C./m. ² /day | O ₂ technique | Riley ³ |
| do. | .. 0.00017 g. C./m. ² /day (0.043 to 0.058 g. C./m. ² /day) | ¹⁴ C technique | Steemann Nielsen ⁴ |
| Long Island Sound | .. 0.04 to 0.25 g. C./m. ² /day | O ₂ technique | Riley ⁵ |
| Georges Bank | .. 0.014 to 0.395 g. C./m. ² /day | do. | do. |

Based on the data available from the experiments conducted so far, the production of organic matter in this area has been calculated and it is found to vary from 0.335 to 1.216 g. C./m.² per day. The rate of production appears to be high but it does not seem to be unusual for such areas as the present one because Steemann Nielsen and Jensen² found during the Galathea Expedition that the rate of organic production anywhere in the tropics in shallow waters is practically high. For comparison the rate of

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1. Wood, E. J. F., *Journ. du Cons.*, 1956, **21**, 280-83.
2. Steemann Nielsen, E. and Jensen, E. A., *Galathea Rept.*, 1957, **1**, 49-136.
3. Riley, G. A., *Jour. Mar. Res.*, 1939, **2**, 145-62.
4. Steemann Nielsen, E., *Jour. du Cons.*, 1954, **19**, 309-28.
5. Riley, G. A., *Bull. Bingham Ocean. Coll.*, 1941, **7**, 1-93.