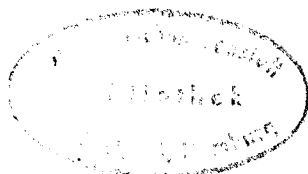


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STUDIES OF PRIMARY PRODUCTIVITY AND OF PARTICLE
SIZE SPECTRA IN THE SOUTHERN NORTH SEA.

by

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An intensive study of the primary productivity and the planktonic ecosystem in the southern North Sea was started in 1968-1969. De Kroon measured the potential primary production of surface water samples in the eastern part of the Southern Bight. A dense station grid was occupied during four two-week cruises, that took place in May, August-September, and November 1968, and in February 1969. Spring values were found to be high, summer values even higher. The isopleths of potential primary production showed a dominant influence of the Rhine-Scheldt estuary; in general they appeared to run parallel to the Dutch shore line, with a trend of rapidly decreasing values progressively farther from the coast. The four figures attached to this paper show the distribution pattern of potential primary production.

It should be kept in mind, however, that these measurements have a relative meaning only, and merely indicate differences in production potential between different seasons and different areas. Therefore, the investigations were continued and are now carried out by Gieskes, who started a study of the in situ primary productivity and of the phytoplankton and its interactions with the environment in North Sea waters in August 1970. The influence of the highly eutrophic river Rhine on the planktonic ecosystem of the eastern part of the Southern Bight will be studied in detail.

Data have already been obtained on in situ primary productivity, chlorophylls, particulate matter, phytoplankton volume, and nutrients at a number of stations in late winter and in spring 1971. Quantities (in terms of volume) of both nanoplankton and microphytoplankton (diatoms etc.) and of detritus have been analysed with a Coulter Counter^R model BMJ. The C-14 method used is a considerably

improved version of the one in general use, because not only the particulate, but also the dissolved organic portion of the primary production is measured with liquid scintillation techniques to estimate radio-activity of both filters and filtrates. Eutrophication of Dutch coastal waters by the Rhine effluent is clearly shown by this study (which is still in progress) of the distribution of nutrients, in situ primary productivity patterns and other ecosystem characteristics, and from particulate matter analyses. A report will be prepared for the ICES General Meeting of 1972.

