shellfish poisoning have generally been inconclusive and until recently the toxicity of *G. aureolum* has been considered doubtful. Experiments with cultured *G. aureolum* and young trout have confirmed the toxicity of this denoflagellate. The effects of the toxin are discussed and the relevance, in this case, of PSP toxin tests is questioned. It is suggested that *G. aureolum* might have toxic and nontoxic phases and that the occurrence of these depends on environmental conditions. It is hoped to discuss results of recent experiments concerned with this hypothesis.—*Scottish Marine Biological Association, Oban, Argyll, Scotland PA34 4AD.*

FIELD STUDY OF SELECTIVITY, EFFICIENCY AND DAILY VARIATION IN THE FEEDING OF THE MARINE COPEPOD *TEMORA LONGICORNIS*, IN THE SOUTHERN BIGHT OF THE NORTH SEA *by M. H. Daro.*—*Temora longicornis* is the dominant species among the zooplankton during the phytoplankton bloom being dominated by *Phaeocystis pouchetti.* Shipboard grazing experiments carried out before, during and after the bloom showed that Temora feeds very inefficiently on *Phaeocystis,* as far as the late copepodites and the adults are concerned. Ivlev Parsons feeding relationships on different size classes of phytoplankton are given for all developmental stages. When diatoms blooming (at the beginning of April, before the *Phaeocystic* bloom) or, when the *Phaeocystic* develops, and after the bloom when only small flagellates are present, different relations for the same stage were found. This inefficient feeding occurs when *Phaeocystis* develops its mucous envelope at the top and in the declining phase of the bloom: colonies of a few mm to a few cm diameter—the top of the bloom can represent 20–30 mg chlorophyll a/m^3 and daily ingestions of late copepodites and adults represent only 15–20% of their own weight. Together with the low ingestion rates, day-night feeding rhythms disappear. Discussion is given about the consequence of 24 hours activity (instead of a few hours nightly at high rates) on the energy budget of the animals whose production is declining, this phenomenon is paralleled by increasing temperature on a shallow water column (higher oxygen demand and metabolic rates). Possible surviving mechanisms are discussed (lipid reserves, resistant egg production, switching to other food diet).—*Free University Brussels, Laboratory Ecology, Pleinlaan 2, B-1050 Brussels, Belgium.*

IN SITU OBSERVATIONS ON SURFACE SWARMING *EUPHAUSIA PACIFICA* IN SENDAI BAY IN EARLY SPRING WITH SPECIAL REFERENCE TO THEIR BIOLOGICAL CHARACTERISTICS *by Y. Endo, Y. Hanamura and A. Taniguchi.*—When underwater observations on a surface swarm of a euphausiid, *Euphausia pacifica,* were made, swarming individuals were collected by a hand net to provide detailed information on their biological characteristics. No fish predators were found near the swarm. Euphausiids do not seem to come to the surface to feed, because the stomach fullness is low and their probable food is not plentiful at the surface layer. Forty-six percent of the stomachs contained crystalline cones of euphausiid eyes and 90% contained crustacean spines, perhaps of thoracic legs of euphausiids. While all the males were in breeding condition, we found no female attached spermatophores. This indicates that mating would occur later in the swarming season.—*(A.T.) Laboratory of Oceanography, Faculty of Agriculture, Tohoku University, Sendai 980, Japan.*

SPECTRAL QUALITY AND QUANTITY EFFECTS ON THE PRIMARY PRODUCTIVITY OF PHYTOPLANKTON *by M. A. Faust.*—Photosynthetic-irradiance response of phytoplankton in sunlight, blue-green and orange-red lights were measured in the Atlantic Barrier Reef Ecosystem at Carry Bow Caye, Belize. The blue-green (400–500 nm) and orange-red (550–700 nm) radiation was obtained by using Roscolene plastic filters. Photosynthetic pigment composition and cell densities of algal assemblages were determined. Dominant phytoplankton were diatoms, cyanobacteria and dinoflagellates, their proportion varied with the site examined. Blue-green and orange-red light in addition to sunlight was effectively utilized by phytoplankton. These results demonstrate that phytoplankton assemblages can effectively absorb in situ radiation over a wide spectral region of the visible spectrum. The ecological significance of light quality and accessory pigments on aquatic primary production will be discussed.—*Smithsonian Environmental Research Center, Edgewater, Maryland 21037.*

SUBSURFACE CHLOROPHYLL MAXIMA IN THE WESTERN PACIFIC OCEAN *by K. Furuya and T. Nemoto.*—Phytoplankton carbon abundance, population structure in terms of size distribution and taxonomic composition, and their growth rates at layers of subsurface chlorophyll maxima (SCM) were investigated and compared with those in the upper layers in the western Pacific Ocean from 1979 to 1982. SCM were primarily due to an accumulation of cells rather than increase in cellular chlorophyll. SCM were characterized by a dominance of cells smaller than 8 μm in terms of phytoplankton carbon. This fraction was composed of non-preservable flagellates and monads, i.e., fragile forms. Among the fragile forms, *Micromonas, Ochromonas, Gymnodinium* and green coccoid forms were dominant. There was no distinct difference in size distribution and taxonomic composition within major taxonomic groups between SCM and the surface layer, though a marked difference existed in species and generic assemblages. Simulated in situ incubation of diluted natural seawater resulted in higher growth rates at SCM than at 10 m depth. Transmission electron micrographs of cells at SCM showed more densely stacked