ments, which are done almost routinely (resolution and accuracy of 0.01°). Gregg and Pederson (1980) have described the principles of salinity measurements. McPhaden et al. (1990) have reported salinity time-series results from a moored instrument in the equatorial Pacific (0°, 140°W) indicating instrumental drift of less than 0.015–0.055 psu (practical salinity units) over 6-month observational periods. Comparisons with shipboard CTD profiles taken in the vicinity of the mooring show rms differences of 0.05 psu. Special antifouling measures were found to be useful for this relatively biologically productive open ocean region.

Many new sensors and systems for measuring biological, optical, acoustical and chemical variables on time scales comparable to physical sensors have been developed during the past decade (e.g., Dickey, 1988, 1990, 1991, 1993a,b; Dickey and Siegel, 1993; Dickey et al., 1997). Many of these can be deployed independently or as part of various integrated systems (see Fig. 14.1) from moorings (Fig. 14.2), ship profiling packages or towed bodies, drifters (Fig. 14.4) and autonomous underwater vehicles (AUVs). Some important variables that can be measured presently include scalar irradiance, natu-

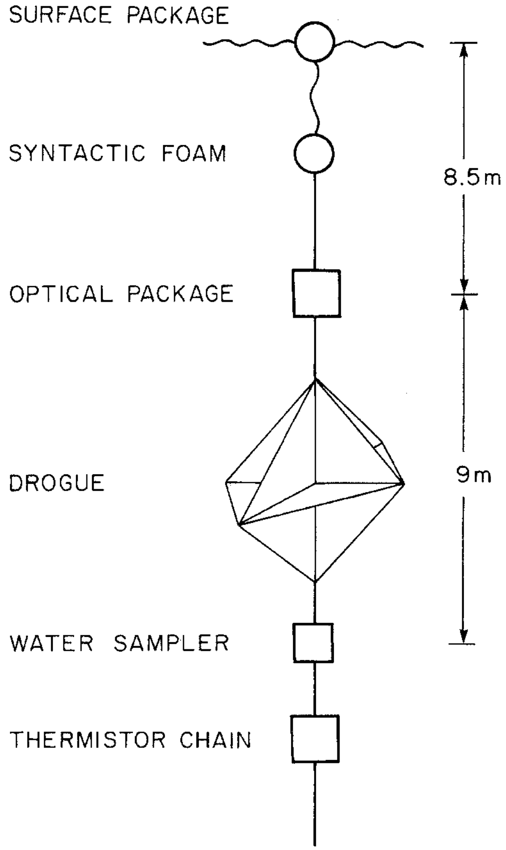

Fig. 14.4. Tri-Star-II drifter with tethered instrument array that was used to sample Lagrangian currents, bio-optical properties and water chemistry in the coastal ocean. (After Abbott et al., 1990.)