Man has recognised an association of light with life and medicine for over 3000 years. Today the major challenges to this topic include the elucidation of photochemical reactions involved in photobiology at the molecular level. This includes the use of a variety of modern probing techniques that directly measures the reactivity of excited states and free radicals involved in biological reactions. This text-book is based on such an approach and has arisen from some of the lectures delivered at the NATO ASI held at Hotel Capo Caccia near the Centre for Advanced Research in Photobiology (CARP) in Sardegia, Italy. The ASI took place from 30 September -13 October 1993 and involved a total membership of 90. The book, like the NATO ASI itself, is divided into four themes starting with fundamental aspects and ending with complex medically related systems. Thus Theme 1 covers aspects of the underlying photophysics and photochemistry with particular emphasis on modern experimental techniques to study molecular mechanisms of biological processes. Theme 2 applies many of these fundamental studies to the chemical reactions of most relevance to photobiology and photomedicine such as photo-addition, -isomerization, -sensitization and -pigmentation. The third and fourth Themes deal with the deleterious and therapeutic aspects of light with particular emphasis on the use of Photo-Dynamic Therapy (PDT) to treat cancer and on viral and micro bioi infections.