parameters and because of the different types of quaternaries used, each type of product has different performance characteristics.

### 8.2 Bleaching Systems

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Major changes have been seen recently in the use of bleaching agents worldwide. These changes have been brought about by a general reduction in washing temperatures, and these have particularly influenced the use of oxygen bleaches. Activator materials for the persalts have grown in usage, and there are trends to incorporating peracids directly into formulations. Photo-activator systems have found limited usage in some countries. The advantages and disadvantages of the currently available systems are discussed, and speculation is made about research activity and changes which will be seen in the next 10 years.

### 8.3 Development of Detergent Enzymes

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The application of conventional detergent proteases and amylases in both powder and liquid detergent formulations has been well established for many years. In response to market needs for more cost-effective enzymes specially designed for washing at low temperatures, new types of proteases have been developed and are now being tested in the marketplace. Ever since the addition of enzymes to detergents became common practice, the industry has expressed its interest in suitable lipases to facilitate the removal of fat-containing stains. Such enzymes are now under evaluation. The latest addition to the detergent enzyme range is a special multifunctioning cellulase. This preparation, which has fabric-softening, color-brightening and soil-removing properties in suitable detergent formulations, is being marketed. These new enzymes combined with a possible use of protein engineering in manufacturing of enzymes offer new opportunities for detergent enzymes with new and improved properties through the 1990s.

### 8.4 Optical Brighteners

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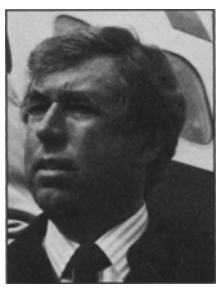
The proportion of white in laundry is estimated. The current chemical types of brighteners in use are surveyed. The influence of temperature, bleach systems, tensides and types of fibers on brightener selection is discussed. Figures of toxicology and ecology cost for new brighteners are given.

### 8.5 Detergent Fragrances



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Fragrance is an important element in the marketing mix of a detergent. Many detergents have similar technical characteristics. The fragrance often plays the role of differentiating one product from another. It also contributes to underlining the marketing claims of the product. Detergents are chemically active. The perfume must be physically and chemically compatible with the bases used and also conform to safety guidelines. Finally the perfume must be consumer-acceptable. Fragrances have advanced from the simple aromatic mixture of yesteryear, in which stability in the base was the primary consideration. Today's detergent fragrance is as complex as the new bases, often approaching aesthetically the level of a perfume for cosmetics. Communication on fragrance briefs between marketer and perfumer is essential. Most fragrance companies have established their own classification of odors to help this dialogue. European fragrance trends in detergents have changed considerably since the 1960s. The 1980s have seen an evolution toward fragrances with more aesthetic and cosmetic appeal, influenced probably by the "softergent" fragrance trend. Perfume can be a key factor in the commercial success of a functional product. If the manufacturer can communicate the qualities of a product with the right fragrance he has a better chance of marketing a successful brand.