Medium methods of preparation, packaging, distribution, and sale of fruits and fruit products in recent years have vastly increased the variety, availability, and consumer acceptance of these items to the point that they are commonplace and are a part of the American diet. Processed fruits retain their healthfulness and aesthetic qualities over periods of months and years, but all deteriorate with age. It is of interest to the manufacturer, and all who handle or store and use these items, to know how to handle and preserve them in the best manner. An initial complication is the fact that the manufacturing dating practices and procedures are as diverse and numerous as the items themselves.

Since health hazards caused by food-borne diseases from processed fruits are rare, major attention can be directed to retaining their aesthetic and nutritional qualities in storage. Manufacturers preserve fruits in an endeavor to reduce the rate at which such deterioration and alteration occur. Even fully processed fruits deteriorate in a readily detectable manner, and aesthetic qualities—flavor, color, texture, appearance, and nutritional qualities—can be measured.

In addition to the normal and gradual deterioration that occurs in processed fruits, mishandling by the fruit processor, warehouseman, fruit
service establishment, and enduser may damage fruits and reduce their quality.

Manufacturers generally employ diverse systems of coding and self-monitoring for quality maintenance; however, individual consumers would not benefit from knowing the actual age of food items. But, to prevent quality losses in processed fruits due to aging, systems regulating their orderly rotational flow, on a first-in, first-out basis, should be used. These systems should also include temperature and humidity standards. Postmanufacturing handlers and consumers lack both awareness and technical sophistication regarding the viability of processed fruits. Traditional existing federal and state laws regulate only food manufacturers. To assure wholesome food quality, these laws should be extended to include warehousemen, food retailers, transporters, and distributors (Hoofnagle 1971A).

The most important causes of quality deterioration of canned fruits are very slow chemical changes that take place during storage. They are responsible for changes in nutritive value, flavor, color, and texture of the product; however, none of the chemical products formed are harmful to health. Air trapped within the container can cause surface darkening, development of off-flavors, and loss of vitamin C. Contact of raw materials with utensils or equipment and dissolution of minute quantities of iron and copper in the food may result in a grayish or black discoloration.

Processed fruits are rarely nutritionally equal to raw fruits. Nutrients are destroyed during processing because of their sensitivity to pH, oxygen, light, heat, or a combination of these. Trace elements and enzymes catalyze certain catabolic reactions. Canned fruits and fruit juices are often fortified with ascorbic acid to increase the vitamin C content and to offset that which is lost during storage. Vitamin C in prune juice is lost due to the antagonistic effect of anthocyanins.

Lowering of sensory qualities and nutrient levels of processed fruits occurs during all stages of processing, in channels of trade, in storage, and in the home. Since about 1965, there has been an increased interest in the quality of processed fruit on the part of consumers. Consumer interest has resulted in stricter labeling and demand for control of nutrient levels of foods, culminating in the establishment of nutrition-labeling guidelines by the federal government.

The sensory quality of citrus fruits, particularly orange juice, deteriorates more rapidly than does the vitamin C content. Orange juice concentrate will retain sensory quality more than 2 years at 0°F, and will lose less than 10% even at temperatures as high as 40°F.

At storage temperatures of 40°F or lower fruit juices suffer very small losses of vitamin C in 2 years. When held at 80°F canned fruit juices lose