hands are constantly moistened with grapefruit juice containing large quantities of citric acid, this amount of alkali would be rapidly neutralized. It was believed unlikely, therefore, that the alkali was causing skin irritation. Determinations of the p_H of the hands of the sectionizers, made while the workers were actually engaged in the operation of sectionizing, showed that it was about 3.5.

The peel oil which peelers, graders and "de-cellers" contact is a primary skin irritant. In sufficient concentration for a period of time it will produce a marked reaction on the skin of a normal person. The hot peel was found not to yield oil as readily as does the cold peel. Thus, heating the fruit before peeling assists in causing retention of the oil within the peel. Although the peel oils of orange, grapefruit and tangerine are chemically similar, the essential differences which occur exist in the aldehyde fraction; this imparts the characteristic odor to the different fruits. It is to be noted that d-limonene, the principal component of peel oil, is closely related to the hydrocarbon terpene, the irritant factor of turpentine. This relationship has been pointed out by Horner.[3]

PATCH TESTS WITH DYE

During February 1950, many of the plants that had been studied in 1947 were revisited. It was found that the problem of dermatitis is still greatest among the canners of citrus fruits; however, the program of prevention that had been offered to the industry in 1947 had decreased the incidence considerably. The main object of this follow-up study was to perform patch tests with the dyes used to color the oranges. The dye commonly used is F., D. and C. red 32[4] (not sudan 3), and it is used in concentrations varying from 1:50 to 1:100, depending on the fruit to be dyed. Dye was taken directly from the dye bath for patch test purposes. In addition, the control patch test consisted of a 1:50 aqueous solution of the dye. The aqueous solution was used because the various packing companies add different amounts of alkali to the dye bath, dependent on the nature of the water supply. Therefore, the control patch was standard throughout the study, and the other varied in alkalinity, depending on the plant studied. Twenty-four persons of four different plants were given patch tests, and the tests were read at the end of 24 and 48 hours, and in many instances, again in 72 hours. There were no positive reactors among the volunteers. Patch tests were not performed with the concentrated dye solution, since it was known that the soap base in this concentration would cause positive reactions by virtue of its high content of alkali. Schwartz[1] made patch tests with the dyes used in 1938, and there were no reactions. Our results, as well as those of Schwartz, show that the dyes used are not primary skin irritants, nor are they appreciable skin sensitizers.

PREVENTION

Dermatitis has been such a common occurrence in this as well as other canning industries that it has been looked on as an almost inevitable accompaniment of the trade. However, with the advent of recent workmen's compensation laws, which

4. F., D. and C. is an abbreviation of Food, Drug and Cosmetic. It prefixes the terms used to signify dyes certified by the Food and Drug Administration, Federal Security Agency.