The 15 years that separate the publication of *Skin Bacteria and Their Role in Infection* and the emergence of this volume have been marked by significant contributions to our understanding of bacterial skin infections and their prevention. Most of this new knowledge was contributed by the authors whose writings appear elsewhere in this book.

Faced with devastating losses of manpower in Vietnam due to skin infections, the U.S. military sponsored much of the research conducted during those years. From 1965 until 1970, close to $1 million per year was expended by the armed forces on dermatologic research. It is appropriate, therefore, to look back at some of the rewards of those efforts, and to evaluate where we stand today.

**History**

In 1965, the “degerming” of skin of hospitalized patients, newborn infants, and the hands of hospital personnel was accomplished almost entirely by the use of Phisohex, a sudsing antibacterial detergent containing 3% hexachlorophene.

There is no doubt that this product was capable of greatly reducing the numbers of gram-positive bacteria on the skin, and that, when this flora contained potentially virulent strains of *Staphylococcus aureus*, the end result could be demonstrated as a lower incidence of clinical infections, at least in hospitals. As early as 1962, Miller et al. suggested that this product was unsuitable for degerming the skin prior to surgery because of its narrow spectrum. They recommended instead, “agents with rapid bactericidal action affecting all pathogenic bacteria should be used for preparation of the skin for operation.”

The experimental and epidemiologic evidence that agents active only against gram-positive organisms encouraged a shift in the cutaneous flora to gram-negative bacteria went largely unheeded in spite of the increasing incidence of nosocomial gram-negative infections. The demise of hex-
achlorophene came about in an unexpected manner, when evidence accumulated in the late 1960s that this agent could be absorbed through the skin to produce significant and sometimes fatal central nervous system damage. A spirited discussion of this issue appeared in Archives of Dermatology.2,6

In the population at large, antibacterial soaps were already well established in 1965, their popularity due to the demonstrable deodorant effects. By 1968, 50% of all soap purchases were for antibacterial soaps. Mackenzie4 gives a useful listing of the ingredients used in the most popular soaps at that time. All contained one or more halogenated carbamides, salicylanilides, with or without hexachlorophene. The mixtures were often changed, and it is important to realize that data derived in the past using old formulations may not be applicable to the same brand names on sale today. In the late 1960s, two major companies became interested in promoting claims for their products to prevent skin infections, thus bringing them into the classification of drugs under the jurisdiction of the Food and Drug Administration.

Mackenzie initiated a controlled trial of a soap (Dial) containing 0.75% hexachlorophene and 0.75% triclocarban at the U.S. Naval Academy, Annapolis, in 1965.5 During a 6-month period, he compared the incidence of cutaneous infections among 602 men using the antibacterial soap against those in 599 men given a control bar with no antibacterial agents. At the end of 6 months there were 23 infections among the antibacterial soap users versus 41 in the control group.

In 1966, Leonard6 conducted a study at the United States Military Academy West Point in which four companies comprising 474 men used an antibacterial soap (Safeguard) for 2 months. This soap contained a 2% mixture of tribromsalan, triclocarban, and cloflucarban. During this period, their infection rates were recorded against those among five companies of 609 men using a control bar of soap. At the end of 2 months, 17 infections had occurred in the antibacterial soap group compared with 39 in the control populations.

In the same year Duncan et al.3 used the same soap and control bar to study the effects of prophylactic use among 2500 workers on prison farms in Texas. In two groups using the antibacterial soap under regulated conditions, a statistically significant decline in acquisition of new infection was noted. In two other groups in which the daily use of the antibacterial soap was not mandatory, no significant effects were seen.

These three studies indicated that Dial and Safeguard soap as then formulated were useful in reducing the incidence of skin infections. A closer evaluation of these studies shows that almost all of the conditions described, and in one of the studies, cultured, the investigators were dealing with primary staphylococcal infections, including furunculosis, staphylococcal impetigo, infected lacerations, and felon.

In any event, these studies provided sufficient justification for the Armed Forces Epidemiology Board to issue a recommendation in August 1967 encouraging the use of antibacterial soaps for the prevention of skin infections.