

New Materials

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New materials are primarily plastics for cosmetic appearances. Not only visual but tactual aspects are now receiving considerably more attention. Twenty-five years ago, big improvements were made by the introduction of rigid plastic laminates for artificial limbs; these revolutionized the limbs formerly made of rawhide-covered wood, leather, metal, or fiber. Recently, there has been a resurgence of interest in modular skeletal structures of metal or composites with resilient flesh-like foam covering. Now there is renewed enthusiasm for development of a strong, tough, skin-like structure which either can be adhered to the skin in the case of ears, noses, and other custom-formed maxillofacial prostheses, or can be used to make cosmetic covers for skeletal-type artificial limbs, probably largely by mass production with minimal custom forming.

Dr. Schweiger, a dentist, heads a maxillofacial restorations clinic at VA Hospital, Wilmington, Delaware. He and Dr. Lontz, organic chemist and biophysicist, are principal investigators in a program funded through a contract with Temple University. The goals are to evaluate the physical characteristics of current materials for cosmetic restoration, to search for and evaluate new materials, and to test them in a large series of cases.

Some of the older participants in the program will remember that Dr. Fred Leonard, of the Army Prosthetics Research Laboratory, a friend of Dr. Lontz, had been involved in some of the early developments of similar material for use in the cosmetic glove worn over the APRL mechanical hand. There is a current prosthetic interest as well in terms of cosmetic covering for the endoskeletal or tubular type artificial limbs. Mr. Mauch began a group of three discussions on that topic.

Dr. Krouskop and the Texas A&M groups have worked on an interesting system for preparing a thin stocking over the remaining leg of an amputee, turning it inside out, and filling it with a foam.

Great ideas have a way of recurring. Professor Radcliffe first started in the prosthetics research program at Narmco, in 1946-1947. Even then,

one of their concepts was an endoskeletal prosthesis with a foam covering to conserve energy and impact so as to protect the skeletal structure. A thin elastic sponge rubber tape provided further resiliency, and a cosmetic “skin” was pulled over that. It seems that successive generations of these problems of cosmetic covering return to similar solutions. Professor Radcliffe now offers current views, based on his experience at the University of California.