

## INTRODUCTION

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The field of prosthetic and sensory aids is so highly specialized that few outside the profession have considered its problems, but its scope is much wider than many realize. Dictionary definitions readily suggest that a publication on prosthetics might include artificial limbs, braces or orthopedic appliances, dentures, and aids to the hard-of-hearing and the blind. All of these devices, with the exception of dental prostheses, are topics of interest to be covered in the "Bulletin of Prosthetics Research."

Until World War II, however, the medical, paramedical, and engineering professions long tended to neglect these important aids so necessary to so many of our severely disabled citizens. Although each major war aroused a surge of interest in the plight of the disabled, this concern was largely emotional and transient. Even the layman could recognize the service-connected and combat-incurred disabilities of soldier amputees, paraplegics, and the deafened and blinded. Indeed, the impressive concentrations of military hospitals made it virtually impossible to ignore the problems of the war-wounded. Yet, few realized that the incidence of civilian disabilities requiring prosthetic and sensory aids was steadily increasing and often greatly exceeded the annual rates of the wartime armed services.

In contrast to the heavy concentration of wounded in military hospitals, the disabled civilians were thinly scattered in thousands of hospitals and millions of homes throughout the country. Thus it was not recognized that the total number of civilians with disabilities requiring prosthetic and sensory aids was many times greater than the corresponding roster of disabled veterans. Consequently, research, development, and education in these aids were sporadic, uncoordinated, and generally ineffective. Improvements in devices resulted mainly from the dedicated efforts of private inventors, many of whom were themselves disabled. Dissemination of information on prosthetics was poor. Numerous improved devices were known only to the few neighbors of the craftsman-inventor and seldom gained commercial or clinical use. Other devices, ranging from mediocre to excellent,

were sometimes sold by imaginative salesmen, many of whom were unhindered by scientific facts, ethics, or medical supervision.

Since World War II, there has been a determined and continuing effort to improve this situation. The Veterans Administration has been a major participant in this work, alone, and in cooperation with other agencies of the government and private enterprise. It is the purpose of this Bulletin to provide a continuing report on these efforts and their results.

In addition to providing the major prosthetic and sensory aids already mentioned, the Veterans Administration also furnishes numerous other aids, ranging from wigs to orthopedic shoes. Plastic eyes and cosmetic restorations for ears, noses, or substantial portions of the face are custom-fabricated when necessary for function, appearance, or both. The Veterans Administration also provides for eye glasses that range from simple prescriptions to high-power lenses for the legally blinded with partial sight. The extensive VA program in research in medicine was largely responsible for the development of cardiac pacemakers, used by surgeons for heart implantation. Wheelchairs, lifting devices, crutches, canes, and tips are also furnished the severely disabled. Under special circumstances, VA physicians may prescribe a wide variety of other aids or accessories for deficiencies of form or function of the human body. Many items requiring frequent replacement, such as stump socks for amputees, hearing aid batteries, urinals for paraplegics, and colostomy bags, are also provided by the Veterans Administration. All these items fall within the scope of the "Bulletin of Prosthetics Research."

Even the specialist interested in only a small fraction of the contents of this Bulletin may well profit from skimming through seemingly unrelated titles and abstracts since a number of his patients may have more than one disability. Age, too, often adds secondary problems to a patient's primary disability. Increasing age leads not only to greater risk of serious disease or accident but also to many minor debilitating conditions. These disabilities have a cumulative effect, and the proper management of the one requires an incisive understanding of the others. The amputee with bifocal glasses, for example, has particular difficulty approaching and descending stairs. The knowledge of this simple fact enables both the ophthalmologist and the physiatrist to give their farsighted amputee patient better counsel. The blind person with increasing loss of high-frequency hearing, which is beyond the range of present hearing aids, loses his ability to locate objects by the echoes of his footsteps. This added handicap occurs long before he encounters difficulty in understanding speech. His doctor should be aware of these facts.

Information gleaned from apparently unrelated areas has often helped improve research methods as well as clinical techniques. The use of the methods of the Bioengineering Laboratory of the VA Prosthetics Center by the Research and Development Division of the Prosthetic and Sensory Aids Service is a case in point. The photographic techniques of the Bioengineering Laboratory, normally used to study the gaits of amputees, were applied by the R&D group to a study of the arm-swing patterns of the blind carrying curb-detecting devices. The results were most worthwhile.

It is the purpose of the "Bulletin of Prosthetics Research" to supplement and bridge existing publications in the field. Consultation among editorial boards will prevent mere duplication of overlapping areas, but upon occasion, abstracts, summaries, or even major reprints may be included in the Bulletin to assure widespread dissemination of important matter.

The "Bulletin of Prosthetics Research" will emphasize research work and clinical studies under VA sponsorship as well as reports on a wide variety of aids beyond the scope of other journals. Because of its primary concern with devices, however, it is unlikely that the Bulletin would cover the broader aspects of sensory problems already treated by existing publications.

Although the Bulletin is published by the Veterans Administration, its contents are not to be regarded as official policy. Such official policy will continue to be stated through the usual circulars and manuals. Indeed, the Bulletin may publish admittedly controversial statements of views or tentative theories in an attempt to stimulate interest or to speed dissemination of research results. As in any scientific journal, the author will be solely responsible for the intellectual defense of his article. Book reviews also will reflect the personal opinions of their signers. Frequently, however, new publications will be listed simply for the information of our readers, without implication of specific endorsement.

To initiate widespread distribution of the Bulletin, each VA installation will be sent several copies. In addition to copies for the Manager or Director and the libraries, copies should be given to each person directly and substantially concerned with prosthetic and sensory aids, e.g., prosthetics specialists, prosthetics clerks, and physicians responsible for prescription and checkout. In many stations, chiefs of orthopedic shops or of audiology of plastic eye and cosmetic restoration clinics might use personal copies effectively. All concerned, even marginally, should have access to the "Bulletin of Prosthetics Research" through the library or by systematic circulation. Individuals, such as the outstanding surgical consultants heading our orthopedic

and prosthetic appliance clinic teams, as well as limb facilities, hearing aid manufacturers, or similar vendors should also receive free subscriptions. To implement our policy of disseminating results of research, the Bulletin will be available to agencies and individuals outside the Veterans Administration. Key workers outside the United States may also receive the Bulletin.

In order to achieve the dual purpose of improved services to the disabled along with a more stringent economy, I urge that copies of the Bulletin be widely circulated and carefully read. Since issues may go out of print, copies of the Bulletin should be saved for repeated future reference.