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Artificial Limbs

A Review of Current Developments

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Artificial Limbs—Their Human Owners

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In all areas of medicine and engineering where psychological factors are important, consideration of matters of the mind comes late. Physical problems are so obvious, urgent, and definable—mental problems so frequently cryptic, postponable, and unclear. But it usually develops that, soon after some control has been achieved over the immediate physical problems, the psychological problems obtrude themselves and call persistently for solution. Thus, in the field of amputations and artificial limbs, the primary effort has to date been directed quite naturally toward the achievement of physical restoration of function. Proportionately little thought has been directed toward the understanding and handling of the psychological problems which, in the amputee, the markedly altered adjustment situation creates. Although mechanics and the biomechanics of the amputee have many important identical principles, there is a whole area of needed activity of a quite different order.

The psychological problems of the amputee are, of course, not merely problems of the physically disabled person himself. The new situations that are created with loss of limb are clearly social-psychological in character—situations where not only the manifold attitudes of the patient, both implicit and explicit, toward the loss and the replacement are important but also where the attitudes of family and associates toward him and his difficulty are equally significant. Hence, any full psychological study of the problem of physical handicap must involve three aspects: the attitudes of the disabled person toward the changes created in him by his new situation, as it affects his previous concepts of himself and the image he has of his body; the attitudes of others, especially *significant* others, toward his differentness; and, finally, the interaction of these two in the social context in which it occurs.

In a recent evaluation of studies in this general area, Roger Barker and associates deplore the inadequacy and rarity of satisfactory investigations. Whatever the importance of adjustment problems, not only in the amputee but in all persons suffering a misfortune, it is only when problems become prominent and when social obligations are keenly felt that there appears a

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readiness to pay attention to what appear on the surface to be secondary aspects of problems. Just such a situation arose during World War II, when disabled veterans were returning from the battlefields in great numbers but when, although much thought was being given to physical rehabilitation, little had been done to face the problems associated with psychological readjustment. In response to this need, there was established at Stanford University on February 1, 1945, a study group to inquire into the social-emotional relationships between injured and noninjured people. Conducted partially under contract between Stanford and the wartime Office of Scientific Research and Development (recommended by the Committee on Medical Research), partially under a contract between the University and the Army Medical Research and Development Board of the Office of the Surgeon General, War Department, the work continued until April 1, 1948. By far the majority of the handicapped subjects studied were amputees.

Despite the technical significance of the final report of the project, only a few mimeographed copies were distributed. It is only now—more than eight years later—that the results are seeing the light of print. Because it recognizes the basic nature of the contribution and its significance in the presentation of important problems in the psychology of handicap, the Prosthetics Research Board of the National Academy of Sciences—National Research Council has seen fit to devote an entire issue of ARTIFICIAL LIMBS to the reproduction of a single, exceptional monograph otherwise long since obscure and inaccessible. From one point of view, the departure reflects a considerable advance in the field of limb prosthetics—an acceptance of the importance of psychics as well as of the long-recognized importance of mechanics. For this major step forward, the Prosthetics Research Board merits the thanks of all.

With regard to the unusual content of the monograph itself, a few remarks are in order. Barker and associates point out, for example, that physically deviant persons appear not to be a homogeneous group psychologically and that "so far as the somatopsychological relation is concerned there is no direct univocal link between physique and behavior." They state further that "lawful somatopsychological relations between physique and behavior are mediated by the psychological situation...." These affirmations are especially pertinent to the report we are here studying. Indeed, the present material should properly be viewed in the context of these generalizations about the field as a whole. Although many questions are raised, and although many "I-wish-they-had's" remain unfulfilled, it is important to recognize the pioneering character of the study, the complexity of the field, and the reasons for the absence of more objective data and for the limited statistical treatment of the material. We should be grateful for the broad attack on the area, the commonsenseness and humanness of the molar approach used, its consistent emphasis on the total person, and the attempt to tackle the problems broadly in the context of a *general* theory of loss and maladjustment.

We should perhaps not pass by the opportunity of calling attention to a few additional topics of especial interest that are dealt with in the monograph. For one thing, there is the emphasis on the emotional aspects of physical handicap rather than on the intellectual and the attempt to deal systematically with such difficult, though apparently commonplace, topics as misfortune and sympathy, seen from both the standpoint of the stricken person and of the outsider. There is, too, an important discussion on some of the methodological problems, particularly the place of measurement and the interview as a tool, in the present status of psychological study in the field. The presentation is made more effective by the liberal quotations from interviews and the inclusion of records of actual interviews in the appendices.

The authors would, to be sure, be the last persons to claim any definitiveness for their study. Its major contribution lies in opening up questions and delineating areas clamoring for further psychological investigation both by more precise methods and with greater intensity. The authors' own attitudes in this respect may be gathered from the fact that they conclude the body of the monograph with a chapter headed *Direction of Further Research.*

It is to be hoped that the recognition given at this time by the Prosthetics Research Board to this area of study will be the stimulus that the field needs for the multiplication of studies on this important aspect of the adjustment of the disabled person and of the noninjured people with whom he comes in contact.

Adjustment to Misfortune—A Problem of Social-Psychological Rehabilitation[1]

Dedicated to the memory of Kurt Lewin

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BEATRICE A. WRIGHT, Ph.D.[4]

AT PARTICULAR times in the history of science, particular problems become ripe for investigation. A precipitating event brings them to the attention of a single person and sometimes to that of several at the same time. It is therefore understandable that during World War II the need was felt to investigate the problems of social-psychological rehabilitation of the physically handicapped and that someone should look for a place and the means to set up a research project that would try to solve some of these problems. In pursuit of such a goal a research group was established at Stanford University on February 1, 1945. Conducted partially under a contract between Stanford University and the wartime Office of Scientific Research and Development (recommended by the Committee on Medical Research), partially under a contract between the University and the Army Medical Research and Development Board of the Office of the Surgeon General, War Department, the work continued until April 1, 1948.

To investigate the personal and social problems of the physically handicapped, two groups of subjects were needed—people who were considered handicapped and people around them. Therefore, as subjects of the research both visibly injured and noninjured people were used. Interviews were employed as the primary method of investigation, the great majority of the 177 injured persons interviewed being servicemen or veterans of World War II. More than half the subjects had suffered amputations and almost one fourth facial disfigurements. The injured man was asked questions designed to elicit his expectations, experiences, and feelings in his dealings with people around him. Sixty-five noninjured people also were interviewed in regard to their feelings toward the injured man.

A first task in the research project was to determine the meaning of the relationship between the injured and the noninjured. Was it primarily that of the helper and the helped, of the curious onlooker and the one who is looked upon, of the independent and dependent person, the one who rejects and the one who is rejected, the person who pities and the one who is pitied? All these relationships exist between the injured and the noninjured. Some of them were described during the first period of the research program (*1,5,8*). As the research proceeded, it was seen that one particular relationship between the injured and the noninjured was more "basic" than others—basic in the sense that it underlies and determines the character of other relationships. This

[1] A study in the social-emotional relationships between injured and noninjured people. Based on the final report of Project W-49-007-MD-325, Supplement 5, to the Army Medical Research and Development Board, Office of the Surgeon General, War Department, April 1, 1948.

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