

Research in Physical Medicine and Rehabilitation

UPON request to comment on some subject of interest and importance to the field of physical medicine, I have chosen the subject of research. I do this because our specialty is a branch of medical science which, like all others, can thrive only if it has a substantial background of fundamental knowledge, and if it includes a group of talented investigators endeavouring to analyse critically our basic knowledge and striving to develop new information essential for progress. We are all too well aware of the criticism that our therapy is based purely on empiricism and, in order that we may take our rightful place among our colleagues, properly carried out investigative studies, leading to acceptance or discarding of our therapeutic procedures, are of great importance.

Thinking again of progress, we must all realize that we cannot rely on the past or present but must look to the future, which lies in the type of young physician whom we can attract to our field. Physical medicine and rehabilitation can never successfully be isolated from the general practice of medicine, and for research purposes should also be correlated with research in other specialties. With this concept in mind, the Branch Committee on Physical Medicine and Rehabilitation proposed that model centres, including research departments, should be set up to attract talented young men and to make possible the necessary research and education that results from their activities. The wisdom of this decision has already been demonstrated not alone by the centres made possible by the Baruch gift, but by other centres established with similar objectives during the past 10 years. From these centres have come numerous important contributions to medical knowledge, some of a fundamental nature, others of more immediate clinical application.

When one thinks of some of the commonly accepted therapeutic agents, such as the application of heat, one finds that even now more research is indicated, in order to determine its physiological effects as applied by different means, including the newer methods of micro-wave diathermy and ultrasonics. The casual reader may still be quite perplexed by the seemingly contradictory evidence as to the effects on circulation by different wave-lengths of radiant energy and by different frequencies of diathermy application. Most of the studies have been carried out on normal subjects or tissues, and we are still at a loss to be certain of the desirability of such physical agents upon pathological tissues, particularly in relationship to the further complexity of effectiveness caused by widespread use of antibiotics and chemotherapeutic agents. Surely

there remains a great challenge for investigators concerning this, one of our oldest therapeutic agents.

Another of our primary interests for study in physical medicine and rehabilitation relates to muscle physiology. Physiatrists should take more interest in the action of muscles than should probably any other specialty, and this gives them a wide field of investigation because it comprises the largest single tissue of the human body. We seek the help of the biochemists, of physiologists concerned with circulation, of those interested in the biophysics of muscular contraction, of the neurophysiologists and, on a more clinical level, we study electrodiagnosis by means of excitability tests and electromyography. This important field of basic and clinical research would seem to be one that we, as physiatrists, should particularly foster.

Muscle physiology is of importance primarily, however, in relation to the function of muscles as motors to move joints, and accordingly therapeutic exercise, in its broadest concept, is the backbone of our specialty. It is within this category that our possibilities of study surely reach the horizon. One of the most important aspects is, of course, that of motivation, because voluntary muscular contraction to achieve a functional goal is our essential aim. The physician and therapist accordingly must be thoroughly trained and cognizant with new developments in the field of psychodiagnosis and therapy, and the physiatrist must learn to appreciate the possibilities of a wide variety of stimulative media of treatment, as employed in occupational therapy, educational therapy, the arts and crafts and various socializing activities.

At the present time it appears that the social and economic considerations of the individual patient, in relation to his physical and emotional needs, are accepted by the physiatrist as an essential part in the total treatment programme of the physician, and it has enabled our specialty to accelerate at a tremendous rate. This concept is accepted by the lay public and social agencies so avidly that we must consider whether or not we as physicians and, I hope, some of us at least as scientists, accept the challenge to prove, by methods of research, that what we are doing in this new field of medical rehabilitation is really as successful over a long-term period as we feel it to be, and also that we critically analyse the methods we use, in order to see that they are best adapted to the physiological needs of our individual patients, and whether or not newer and better methods cannot be developed. Our field of physical medicine and rehabilitation is so large, and it requires the help of so