Research in Otolaryngology in Japan and elsewhere.

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In the autumn of 1965 it was my privilege and pleasure to visit Japan as a Visiting Professor to the Medical Schools. It was an inspiring and unforgettable experience, and I extend my thanks and those of my wife also to the many good friends who showed us so well the activities in Neurophysiology and in Otolaryngology at thirteen schools and also the beauty and the hospitality of Japan from Lake Towada to Mt. Aso. Special thanks are due to the U. S. Educational Commission in Japan for my support and to my sponsor, Professor Y. Katsuki, Dean of the Tokyo Medical and Dental University, who originally suggested the tour.

My friend and colleague, Professor S. Horiguti, who helped to arrange a large part of my tour, has asked me to write down some of my impressions of Otology in Japan. I first express my admiration of the three International Congresses that I attended in Japan: the XXIII International Congress of Physiological Sciences, the IInd Extraordinary Congress of the International Society of Audiology and the VIII International Congress of Oto-Rhino-Laryngology. All three were memorable congresses, beautifully organized and upholding well the best traditions of science and of friendly personal contact that are the purposes of these important international activities. It is a pleasure to think that these Congresses will return again to Japan in due time in the future.

My comments on Otology must be very personal, from the point of view of an investigator who is first a neurophysiologist, secondly an audiologist and not at all a clinical otologist. It was clear to me, however, that Otology in Japan is an active branch of clinical surgery and medicine and that it compares very favorably with the corresponding activities in America and Europe. One area of interest was less prominent, namely middle ear surgery for relief of hearing impairment due to otosclerosis. It can be counted a good fortune of Japan that this disease is relatively rare among the Japanese. The improvement of stapes surgery has been a major activity in Western otology, both in the operating room and in the laboratory, but naturally it does not hold such a dominant position in Japan.

Interest in hearing I found to be strong. Many departments of Otolaryngology are active in improving audiological diagnosis in the early detection of hearing impairment in young children, in otoneurology, and in better understanding of the basic physiology and pathology of the auditory system. I recall with special audiological interest the annual meeting of the Institute for the Deaf at Tokyo Medical and Dental University and my visits to the National Rehabilitation Center for the Deaf and Nippon Rowa Gakko in Tokyo, and to Shinshu University in Matsumoto.

In medical schools, not only in Tokyo and Matsumoto, but also in Hirosaki, in Sendai, in Fuku-shima, in Osaka, in Nagoya, in Fukuoka, and in Nagasaki, it was a pleasure to see active research in progress in many aspects of otology and to discuss problems of mutual interest with the investigators. The technical facilities were always good and usually excellent, quite comparable with the many laboratories I have visited in other countries. The enthusiasm and the industry of the young investigators was impressive. Otologists did me the honor of inviting me to speak at their meetings, and they listened with close attention. But in Japan, as in my own country, I found some very familiar problems for which I do not have the answers. The problems are these: What are the proper areas and objectives of research in departments of Otology? Is the chief objective the training of young men in the methods and the point of view of modern medical research so that later, as clinicians, they can really understand and apply new advances made elsewhere, perhaps in physiology, in psychology, or in pathology? Is the objective the indoctrination of future teachers and leaders in otology so that they can, in their turn, direct research and training in
their future departments? Is the purpose to gain better insight into the normal anatomy and physiology of the auditory system, or is the interest in the pathology and the disorders of the system? Is it to improve clinical diagnoses, not only in otology but in neurology and neurosurgery as well? Is it the improvement of surgical procedures or other treatments and the validation of their benefits? What is meant by "basic research" in otology? And, at the practical level, how much can a young man with clinical responsibilities and ambitions accomplish in laboratory research in the number of years and the number of hours per year that are available to him? If he works with complex optical or electronic techniques does he have available the guidance in the use of these methods and the interpretation of the data obtained by them that will make his efforts really productive for medical science? These are questions for otology and for other clinical specialties, both in Japan and around the world.

I do not have the answers to these questions. I have only a few comments which are completely general and are not intended as either criticism or endorsements of any of the laboratories I have visited. First, I find that medical research cannot easily be divided into "clinical research" and "basic research" because what the otologist or other clinical specialist calls "basic research" the physiologist or anatomist will probably call "clinical research." The two groups operate at different levels with different points of view. There are really at least three types of research here. One is the "basic research" of the neurophysiologist, the biochemist, the electron microscopist, the biophysicist and the molecular biologist, all of whom seek to understand the processes common to many organ systems and many animal species. These general processes or structures may happen to be particularly well exemplified in a particular organ system, such as the auditory system, but for such an investigator the auditory system is a special case, just as man is a special case. The investigator in a pre-clinical discipline may actually take advantage of nature's experiments and use abnormal function to improve his understanding of the "basic" normal function, but if he does so he is likely to consider anything abnormal to be "clinical." This is particularly true if he cannot carry out fully planned, well designed controlled experiments. The otologist, however, automatically calls "basic" any study of normal function, whether physiological, anatomical or psychoacoustical. Often he calls "basic" any and all studies that involve the special methods of the pre-clinical disciplines, such as the oscilloscope, the electron microscope, or even the audiometer. Here is the confusion, to mistake the method employed for the nature of the problem investigated.

For the otologist, "clinical research" properly means the study of patients and their responses to his treatment, whether surgical, medical, psychological or rehabilitative. Such research is a time-consuming task. Planned treatments must be carried on for many years, and the follow-up information necessary to assess their value must be obtained, but this is typical or truly clinical research. Such research is of great value even though it is difficult to be rigorous. Every good practitioner and every teacher of clinical medicine should be engaged in it to continually improve his practice of medicine or surgery.

I believe it is helpful to use a special term for research that is directed to the understanding of the abnormal function or the pathology of any particular organ or the diseases peculiar to it, such as otosclerosis or noise-induced hearing loss or Ménière's disease in the ear. This, to the clinician, is "basic research" while to the pre-clinical scientist it is "clinical research." For this type of research on the ear and the auditory system I have suggested the term "otopathic research," i.e. research into the abnormalities of the ear and hearing.

For the young otologist both clinical research on patients and planned otopathic research in the laboratory, perhaps on animals, are appropriate. In the laboratory the tools of "basic research" may be necessary; but now a question arises as to who will teach the young otologist how to use these newly-developed methods effectively and correctly. This
is usually beyond the competence of the senior
members of a clinical department. There are out-
standing exceptions of course, but usually the
method is younger than the senior member and he
has never really learned it personally. The junior
member who undertakes to use such a method will
often flounder helplessly for a long time and pro-
duce many artifacts and few results of real merit. A
great need is to improve the contacts of young otol-
ogists with masters of the techniques they employ
and with modern ideas as to the significance of the
results obtained with such methods. Over the last
fifty years or more a great weakness of otology was
its encapsulation, so to speak, with its attention
confined to its own special problems and literature.

Otology was taken by surprise by modern develop-
ments in psychoacoustics, in biophysics and in
neurophysiology. The barriers have now been broken
down to a great extent. More and more otologists
understand the language and the ideas of acoustics,
of psycho-acoustics, of electron microscopy and of
neurophysiology; but the otologist, with his clinical
interests and responsibilities, can rarely compete in
research in these areas with full-time investigators,
nor is it desirable that he should try to do so. The
solution of the difficulty is for the otologist to
learn to use modern tools and concepts of research
correctly and effectively and to apply them to his
special otopathic problems. Here he needs guidance
and assistance in defining his problems clearly
and in interpreting his data in modern frames of
reference.

The key to success in research, particularly for
young investigators who have limited time or facili-
ties at their disposal, is the good choice of a pro-
blem. The necessary techniques must be within the
reach of his skills and of the tools available to him.
Sufficient time must be made available without inter-
ruption. He must be able to use the techniques ef-
fectively and it should be realistically possible for
him to achieve significant results within a reason-
able period of months or years. The immediate use-
fulness of his results is not as important as the con-
fidence that may be placed in their logical and
technical validity. A solid stone is good for building,
even though it may be small.