

REFLECTIONS

LYMPHOLOGY AND THE 10th INTERNATIONAL CONGRESS

It was particularly gratifying to me, now in my retirement after a life-long interest in lymphatics, to have been able to attend the Xth International Congress of Lymphology, the first such congress to be held in my native country of Australia. The choice of Adelaide for its venue was ideal for several reasons. One such reason, to those interested in history, was the fact that our most distinguished medical scientist, Lord Florey, was born and educated in this fine city. Howard Florey graduated in medicine in the University of Adelaide in 1921 after which he proceeded to Oxford to study with Sherrington. Although he is most widely known and recognized for his work on penicillin which heralded the antibiotic era, he was deeply interested in the lymphatic system for most of his life, making several major contributions to our understanding of lymphatic function. In his earlier years in research, in the 1920s and 1930s, he wrote several papers on rhythmic contractility of lymphatic vessels and on the permeability of the lymphatic capillaries, relating these functions to micro-structure. Later, in the 1950s, J.L. Gowans, working in Florey's laboratory in Oxford, described the recirculation of lymphocytes from blood to lymph nodes and so introduced a new dimension to our understanding of the life-history of these cells. At about the same time, in 1959, J.R. Casley-Smith, also a graduate of the Adelaide medical school, went to Oxford to work with Florey and it was in the early 1960s that their classical papers on the ultrastructure of small lymphatic vessels appeared. Florey died in 1968; had he been alive today, it would have given him much pleasure to know that one of his pupils had organized a congress in Adelaide attended by lymphologists from many countries of the

world.

My own interests in lymphatic research overlapped, in time, those of Florey, beginning about 45 years ago. I had gone to Oxford in the early 1930s to work on physiological problems of respiration and general metabolism in J.S. Haldane's old laboratory. In 1940 I was stationed in a war-time establishment in England investigating, among other things, the effects of various agents on the microcirculation and on the lymphoid tissue. To further these investigations it became necessary to collect lymph for analysis. At this time J.M. Yoffey had just returned to England after working with C.K. Drinker in Harvard. He had learned from Drinker the most modern refined techniques for cannulating lymphatic vessels with glass cannulae, and he readily agreed to instruct us in the use of these techniques. Drinker had become interested in lymphatics in 1926 when his research on lymph formation in mammals continued where Ernest Starling had left off earlier in the century. I was encouraged in the use of Drinker's techniques of lymphatic cannulation and lymph collection by Professor Lovatt Evans with whom I was associated at the time. Lovatt Evans had been a pupil of Starling's in the days when Starling was working on the physiology of the heart, but he often spoke of Starling's earlier work on lymph. This had begun in 1892 when Starling went to Breslau to work with Rudolf Heidenhain, a proponent of the theory of lymph secretion. On his return to London he carried out his classical experiments on lymph formation with which all lymphologists are now familiar. When Starling turned to other research ventures early in the 20th century, it was Drinker who eventually became the leader in the study of lymph formation for

which he devised more modern methods of investigation. I felt privileged for the opportunity to learn the latest techniques that had been improved over the years by such a distinguished line of lymphologists. While still a relatively young scientist, I was able to appreciate the importance of modern technology and of personal contact in medical research.

In tackling problems in several fields of lymphatic function in which my colleagues and I have worked since my return to Australia in 1948, I was, therefore, aware that major advances require not only ideas but advanced technology with which to carry them out. Perhaps the most important of these technological advances was the introduction by J.L. Bollman and his co-workers in 1948 of polyethylene tubing to replace the glass cannulae we had been using. By this means lymph could be collected continuously over long periods of time from a lymphatic fistula in a conscious animal, including man. Such a preparation had long been Drinker's dream, but with the failure to overcome clotting in the cannula it remained but a dream. Now it was a reality, to be used by lymphologists world-wide. Other major advances in technology used by lymphologists in the early post-war era included the labelling of proteins and cells with radioactive isotopes, the ultracentrifuge to separate the lipoproteins for analysis, various forms of electrophoresis for protein separation, and the electron microscope which brought a new dimension to lymphatic structure. Using these new technologies lymphologists were able to advance at an amazing speed our understanding of the many physiological and pathological mechanisms in which the lymphatic vessels are involved as part of the circulatory system of the body. Technological advances in lymphology also spread to clinical medicine. I well remember visiting John Kinmonth at St. Thomas' Hospital in London in the 1950s when he showed me the technique he had perfected for visualizing the lymphatic vessels in his patients with lymphedema. These methods were extended to enable both vessels and nodes to be visualized in several parts of the body. Thus for the first time clinicians were aided in the diagnosis and treatment of

many disorders of the lymphatic system by the fact that they were able to observe the gross lymphatic structure in their patients.

The first two decades after the war were certainly exciting times for lymphologists—a truly golden age. So many advances in lymphatic structure and function were made during this time that in 1965 the first conference on lymph was held in Tulane University in New Orleans as a tribute to that distinguished lymphologist, H.S. Mayerson. This conference covered the many aspects of lymphatic function that were being actively pursued at the time. Mayerson expressed the hope that profitable directions for future inquiry would be delineated during the course of the discussions. The following year the International Society of Lymphology was formed and the Xth Congress in Adelaide marks the completion of a further two decades. I think it is true to say that during this latter time the role of the lymphocyte in immunity and in organ transplantation has attracted the attention of large numbers of research workers interested in the lymphatic system. Nevertheless, considerable progress has also been made in the many other areas of lymphatic function.

Although the Adelaide Congress was able to cover a wide field of lymphatic research, special attention was given to the diagnosis and treatment of lymphedema, that disorder which affects so many millions of people in certain parts of the world. Despite the efforts of the past 40 years, many old problems remain to be solved while new ones, such as acquired immune deficiency syndrome, have suddenly appeared to alert us to the fact that there is still a great deal about the lymphatic system that we do not fully understand. The International Society of Lymphology with its biennial conferences facilitates that important factor in research that I have already mentioned, personal contact and discussion, which in my experience is so necessary in the further development of our concepts of the role of the lymphatic system in health and disease.

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