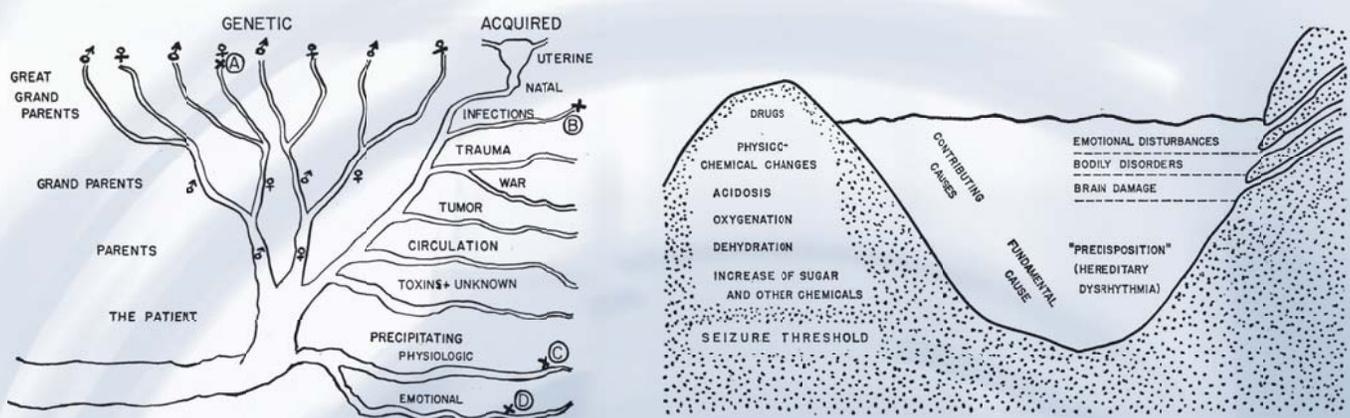


GENETICS AND EPILEPSY

Hippocrates considered epilepsy to be an inherited disorder, and right through history the importance of what we now call 'genetic' factors was realised. This though has been a troubled history. We opened the exhibition with Lombroso's 'faces of epileptics', reflecting the view that epilepsy was inherited degeneracy and linked to criminality. The eugenics movement in the early part of the century similarly viewed epilepsy as a 'taint' which should be selected out by eugenic means. Many of the ILAE leaders were committed eugenicists, and several were instrumental in the forced sterilisation of persons with inherited epilepsy in continental Europe and the USA. Eugenics however had its apocalyptic moment when it became the theoretical underpinning for the mass murder of the handicapped and the epileptic in the occupied countries during the Second World War. Thereafter, and in recognition of this shameful science, genetic research became taboo for several decades. Lennox though (an active eugenicist before the war) remained interested in familial epilepsy, and perhaps not least because of his own family history of epilepsy. After him came the publication of classic work of Metrakos and Metrakos in 1961 on spike and wave epilepsy. The elucidation of the molecular basis of inheritance in the last three decades has made genetics again a popular subject for research in epilepsy. Through family genetic linkage studies, the genetic basis of most Mendelian metabolic disorders, in which epilepsy is a part, has been uncovered and also the genetic basis of at least 13 pure Mendelian epilepsies. The recognition that some forms of epilepsy are channelopathies has led to advances in our understanding of the mechanisms of epilepsy and also to novel pharmaceutical therapy. The promise of gene therapy beckons. As Lennox himself recognised, however, the common forms of epilepsy are the result of environmental and genetic (almost all polygenic) interaction – and the finding of any gene abnormalities in common epilepsy has remained elusive (and from the perspective of history, this is perhaps a good thing).



Illustrations by Lennox of the multifactorial nature of epilepsy. Lennox envisaged the epileptic predisposition as a 'stream' with many tributaries – some genetic (multiple genes) and some acquired or developmental (many types). He also envisaged the epileptic threshold like a dam, with a fluctuating water level, changing under multiple environmental influences.