At the end of chapter eleven you will find information like (these may not be true today): the compound with most elements (10), the longest CA index name (1578 characters), the longest single-ring parent (288 carbons), the largest ring system (61 rings), the longest aliphatic chain (384 carbons), and so on.

Finally, there are a number of add-ons at the end of the book in the form of appendices, of which the most useful ones are on brief etymology of some traditional chemical names (over 300 entries), origin of element names, and Nobel Prizes in science from 1901 to 1986.

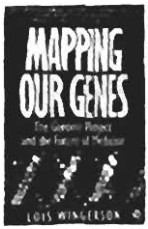
A final word on this book which we often ignore while teaching: a lot of chemistry is described with good humor. In fact, the authors make a statement in this book which may be somewhat relevant here: *"actually, chemists do have a good sense of humor but lose it when they serve as referees"*.

I recommend the book to everyone.

Uday Maitra, Department of Organic Chemistry, The Indian Institute of Science, Bangalore 560 012, India.

The Trail of Genetic Detectives

Vani Brahmachari



Mapping our Genes; the Human Genome Project & the Future of Medicine
by Lois Wingerson. Price $ 12.95

In 1986–87 a major worldwide project in biology was conceived namely the human genome project which is often compared with the Manhattan project in terms of its magnitude and financial investment. This raised a lot of debate on its utility and need. But taking a stock after 10 years one begins to realise the impact of the project not only in terms of the information on genome and genetic disorders that is acquired in a worldwide effort but equally significant are the techniques and technology that were developed as a means to achieve the goals of the project. The book *Mapping our Genes; the Human Genome Project and the Future of Medicine* by Lois Wingerson is a lucid narration of the story of human genome project. As the title suggests, the book highlights the efforts at gene mapping rather than genome sequencing. The two differ in that mapping is like finding an address for a house while sequencing is like identifying every brick that makes up the house. One of the premises that is explicit throughout the narration is that the first step in curing a disease is to know what the disease is and to find out the cause of the disease. This requires enormous time and effort to understand aspects related to the disease which sometimes may be very remotely related to the cure; almost beyond the comprehension of a non-scientist. But Wingerson makes it comprehensible by an optimum mix of scientific details and the personal stories of families afflicted with a certain genetic disorder. Each of the chapters

discusses one genetic disorder, and the progress being made in mapping, the approaches taken and then is left at a point that was current for the time of publication (1990). But the writing is not in the order I have just listed but is built impressively around an individual, his/her family and their interaction with geneticists and clinicians. This engaging style brings it close to a novel in style that would appeal to a large readership. For instance Betty LeBlanc's son Darren is suffering from Freidreich's ataxia, slowly Betty realises that three of her six children have the disease. While the name does not mean much to the family it gives an assurance to Darren that it is not that he is clumsy by choice but he has a reason for it. What is remarkably presented is Betty's efforts at tracing her own and her husband's genealogy triggered by a question asked by almost every clinician whom she consults, are you and your husband related? It was an inevitable query as Freidreich's ataxia is a recessive disorder; for a child to be affected both of his/her parents should carry a copy of the defective gene (see Know your Chromosomes, *Resonance*, Vol. 1, March 1996). This whole story of Betty's kindred, strikes as a robust example of what education can mean to a society. The detailed account of the efforts of clinicians and scientists starting from sample collection to analysis makes it difficult not to admire their tenacity and perseverance however self-centred the punchline could be for the investigating scientist. As the author mentions in the preface to the book the information was gathered not only from books but by personal interviews and from conferences and meetings that the author attended. This authentic information has been deftly combined with a novelists' narrative style thus making it almost gripping like a detective story.

It is said that many a time the scientists forget the men, women and children behind the cells, the DNA and protein that they handle. There are occasions that lack sensitivity in an over enthusiasm to prove one's contentions specially in research related to human subjects. This aspect has been well illustrated in the book, in the discussion on Tourette's syndrome, a condition where the patient has involuntary tics and twitches. A mistaken association of this condition with socially unfavourable traits such as alcoholism, drug-addiction and aggressiveness had been concluded based on disputed methods of study. While debating the validity of these results one group of scientists point to lack of sensitivity of scientists in attaching a label of psychosis and antisocial traits to individuals already suffering from a genetic tragedy.

The existence of a slightly different but equally unacceptable attitude is brought out in the discussion of the role of Amish community in genetic research. As the author points out, a sociologist's approach of winning the confidence of the people helped the geneticists at large to collect some information that would have been impossible for someone who went with a clipboard knocking at the door and ticking a questionnaire. It is through the efforts of this sociologist turned geneticist

that the famous geneticist Victor Mckusick became aware of the Amish community; as also the creation of immortalised cell lines derived from large pedigrees. The author projects the unjust claims and possessiveness of scientists over the cell lines while the people from whose blood samples these cell lines were derived had no claim on them. The return of benefits to people who donate blood samples that are so vital to genetic research is an aspect that is most critical from the point of view of society but is taken for granted most often.

The book presents a comprehensive view while projecting the impact of the new approaches in genetics to address the etiology of diseases that are known for many years and are reasonably well managed. There is an informative discussion on cancer and the concept of predisposition to cancer that is within the realms of genetics. The author has not left out the details of methodologies utilised in the effort to map human genome, which at times may go beyond the comprehension of the uninitiated reader. At the same time there is no loss of continuity if one skips these sections. It is indeed creditable that the author has discussed the problem of 'phase' and 'lod' scores. One of the issues that is widely debated is the question of predictive medicine. Is it necessary to know at the age of twenty that at the age of 60 one would suffer from Huntington's disease, is it worth ruining a perfect present by worrying about a tragic future? By narrating a story that ends happily the author dismisses a lot of negativeness about predictive medicine. But there is an objective description of the counsellors and clinicians on this issue, that leaves a positive note.

The book could have had a few more illustrations. The author has also provided a list of books and research papers that an interested reader can consult.

I recommend the book not only to everyone who has curiosity about the Human genome project, but also to anyone who is sceptical about the project. I believe it helps even people from families afflicted with a genetic tragedy. Through the personal stories of several families the book succeeds in replacing the feeling of personal failure of patients and their families with an assurance that these are genetic accidents for which they are not responsible.

Vani Brahmachari, Dr B R Ambedkar Center for Biomedical Research, University of Delhi, Delhi 110 007, India.

Rumford took the subject of heat as his special study and dealt with it in all its aspects. He even applied himself to the design of kitchen fires and to the best use of fuel in cooking and heating rooms. Indeed, the fireplaces used in England today owe much to his original suggestions.

Stories from Science, Vol.4, A Sutcliffe and A P D Sutcliffe

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