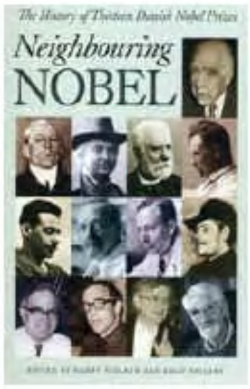

Neighbouring Nobel: The History of Thirteen Danish Nobel Prizes. Henry Nielsen and Keld Nielsen (eds). Aarhus University Press, Aarhus. 2001. pp. 624. ISBN 87 7288 899 7. (Translated from Danish to English by Heidi Flegal).

On the occasion of the 100th anniversary of the Nobel Prize, it was likely that different books would appear. One of them, written by the well-known writer Elisabeth Crawford (France) has recently appeared and the same holds for a book by Robert Marc Friedman (Norway). As far as I can judge, a small but effective Danish historian group has superseded the two prominent authors by bringing out their book in early 2001.

In the preface the reader is told the motivation behind this project, namely, the 100th anniversary of the Nobel Prizes and the Nobel Prize for Chemistry for Jens Christian Skou in 1997.

Unfortunately the title *The History of* ***Thirteen*** *Danish Nobel Prizes* (emphasis added) downplays the achievements of the editors, because the book deals with not only the 13 Danes who won the Nobel Prize in various fields until the end of twentieth century but also many Danecases are discussed, which came within the close choice. The study of these 'losers' is one of the many strong points in the book. Out of 13 winners, the nine laureates before the period 1949 are discussed with the help of primary sources like the reports of the Nobel Committees, the experts and the nomination letters. As under the Nobel Archives regulations, only documents more than 50 years are allowed to be seen, in the rest of the four cases the authors had to use other means.

The first chapter written by the editors themselves is about the history of foundation of the prizes, a short biography of the founder, his Will and motives behind such prizes. This information is well known in the existing literature, but reproducing them once again, has been a good step as it makes the book self contained.

Originally the prizes were given for work in the fields of Peace, Literature, Physics, Chemistry, Physiology or Medicine. The Economics Prize was introduced in 1968 by the Swedish Bank. In the book, one peace, two literature, three physics and chemistry and five physiology or medicine prizes are elaborated.

Kurt Jacobsen in 'The Peace Prize: A Survey' tells us that no original documents of Nobel explain why he decided that the Norwegian parliament ('the Storting') should award the Peace Prize. However, in political and historical context (relation between Sweden and Norway) he tries to give possible reasons. Swedish monarch Oskar II, who wanted to keep Norway under his control, was of the opinion that Nobel was influenced by peace fanatics, particularly by women. In this chapter all Danes and Danish Societies that were nominated but never awarded the Nobel Prize are discussed. The cases of nomination and rejection are given. The next chapter is about Fredrik Bajer – a military man who in his earlier career – turned out to be a social reformer, pacifist and the founder of Danish Foreign policies.

Jacobsen notes that in the case of the 1901 prize, Henri Dunant's promoters were hard at work and sought supporters. On page 72 he says, '*The first campaign waged to win the Peace Prize was a solid success, and it would not be the last of its kind. Nevertheless, in the years that followed, there is no evidence of any actual campaign organised to promote certain candidates, ...*'. To verify it one needs to check each and every case. At least in the case of the Indian pacifist Mahatma Gandhi we know for sure that there was a campaign[1], perhaps not to the mass level of 1901.

The next three chapters (4–6) are devoted to the Literature Nobel Prizes. Based on Kjell Espmark's book (*The Nobel Prize in Literature. A study of the criteria behind the choices*, Boston, 1991) it is shown that in general the influential members of the committee preferred some definitive styles such as literary neutrality and universal interest. The author shows that three Danish scholars like Georg Brandes, Jacob Knudsen and Ernst von der Recke who had great influence on the social and cultural life of Denmark were not awarded the prize as they did not fit a 'particular literature style' as the members of the academy wanted.

There would not have been better title chosen by Claus Jensen than as 'Karl Gjellerup and Henrik Pontoppidan (Literature 1917) – AN ODD COUPLE'. Gjellerup has been described as an opportunist, anti-semitic and politically not correct, with his writings influenced by German contemporaries. At one stage he turned to the spiritual philosophies of Greece, India, etc. He tried to use his contacts in Germany (where he lived for long time) and Denmark to get himself nominated. He knew very well what the members of the Nobel Committee want to hear about the achievements of an author. According to that the nomination letters were formulated. On the contrary, Pontoppidan was an atheist, critic of the society and 'Folk writer'. In the conclusion the author notes that by the modern literary community the case of the latter was considered reasonable while the former is seen as a wrong decision by the Academy. The next chapter is about a less controversial author, Johannes V. Jensen, who received the Nobel Prize in Literature in 1944.

A general survey of the physics and chemistry is done by the editors themselves. They have outlined the development of these two subjects in Denmark in the first half of the twentieth century. In their own words, '*It was therefore unavoidable that the personal preferences, power struggles, and cool calculations of the individual committee members often had quite a notable impact on the proceedings involved in the awarding of these two Nobel Prizes in science – depending on which areas of physics or chemistry they found it most appropriate to support*' (p. 246). After a scant analysis of the physics and chemistry community in Denmark, they discuss different physicists, chemists and technicians like Valdemar Poulsen and his colleague Peder Oluf Pedersen – the inventors of telegraphone, the world's first magnetic tape recorder. They conclude that, the latter were not awarded the prize because of changing policies in the selection field, fast technological changes in communication technology and the Nobel Prize for their countryman Niels Bohr for modern physics. By the same authors, the chemists explored are: Niels Janniksen Bjerrum, Johannes Nicolaus Brønsted and Soren Peter Lauritz Sørensen. They found that –

contrary to Bjerrum and Bronsted – Sorensen was never considered seriously by the Nobel Committee.

The case of the first successful Nobel Laureate in Physics, namely Niels Bohr has been explored by the eminent historian of science Finn Aaserud. From his previous publications it is well known that he masters this field. It is no surprise that each and every part of the chapter has been dealt with systematically and excellently: starting from Bohr's life to the scientific achievements, international relation and contacts within the Nobel Committee members. In my opinion, the most impressive part is the use of newspapers to explore how Bohr was seen by the media in Denmark and other countries. Aaserud also shows that Bohr had a special strategy for nomination, which made him a successful nominator. On p. 288 the author writes, '*It is remarkable that of all the Nobel Prize nominations for Bohr, not a single one was submitted by a Dane*'. Why so? The answer to be found in the conclusion is as follows: '*... the lack of Danish nominees and nominators should be understood in terms of the nature of Bohr's field of work and not in terms of any kind of resentment on the part of his peers in Denmark*' (p. 309). Most probably in order to keep the length of the chapter appropriate, the author has not explored why Bohr did not nominate even a single Dane.

The second and the last Nobel Prize in Physics for Aage Bohr and Ben Mottelson has been discussed by Helge Kragh and Jesper Degn Nielsen. The former, a renowned historian and author of *Quantum Generations: A History of Physics in the Twentieth Century* (Princeton, 1999). To start with, the structure of the atomic nucleus and the contribution of Leo James Rainwater, Aage Bohr and Benjamin ('Ben') Roy Mottelson are given. The latter, born in USA, became a Danish citizen in 1971. The Prize was awarded jointly in 1975, mainly for their work done between 1950 and 1953 on the collective nuclear model. After discussing the issue of some of the 'delayed prizes', the authors suggest that one of the reasons in this case is that comparison of theory with experiment took place after a long time. The Prize is discussed in political and social context. '*It seems that the prize had no real political power, and that its significance to the future of the Niels Bohr Institute was negligible*', the authors claim (p. 335). In conclusion they disagree with the psychologist Frank Sulloway's view that '*the most innovations in science, especially radical ones, have been initiated and championed by "laterborns", whereas firstborns are more drawn to conservative or "reactionary" innovations*'. To support their case the authors have compared some aspects of Niels Bohr and his son Aage Bohr. They are of the opinion that: '*Psychology is therefore of little use in this context*'. Also they disagree with the three categories suggested by Crawford, viz. international luminaries, favourite sons, and stay-at-home. They rightly suggest that in the post-war time science has become international with a strong tendency towards cooperations.

Denmark has only received one Chemistry Nobel Prize. The Prize for 1997 to Jens Christian Skou is an exotic and strange prize adjudication of the Nobel Committee. At that time he was a 79-year-old emeritus professor. As early as in 1957 he discovered how the cells in a human body are able to maintain a significant difference in the concentration of these two ions within and outside the cell membrane, i.e. the explanation lay in the so-called sodium–potassium pump. Skou shared the prize with Paul D. Boyer and John E. Walker. Skou's scientific work belonged to medicine and physiology. The prize came with an almost 40 year delay. According to the author Thomas Vorup Jensen, this prize had special significance for Denmark as it triggered a debate on the standard of natural sciences in Denmark and about the chances of producing eminent men of science. Skou made use of his position as a Nobel Laureate to criticize the political control over the bodies giving research grants. He suggested the allocation of more money to young scholars to allow them to pursue their own ideas without excessive control.

Physiology and medicine are the fields in which Danes received five prizes and in two more cases they were very close. Under 'The Physiology or Medicine Prize: a Survey', Henry Nielsen and Keld Nielsen show that it is largely due to a strong group of Danes compared to the physics and chemistry. In this chapter we learn another important information; namely, how the members of the Nobel Committee for Physiology or Medicine after 1901 agreed to a strategy to make unanimous recommendations to the Nobel Assembly of the Karolinska Institute – the final decision making body, so that the recommendations would stand a better chance of being successful. The authors argue that Christian Bohr and Wilhelm Johannsen lost the race for the Nobel Prize, as in the first case, Bohr's respiration theory became increasingly challenged after 1906, and in the second case, the Nobel Committee decided not to award work perceived as basic biological research. With the help of secondary literature the shift of prize adjudication from microbiology and classical physiology, to hormones and vitamins, to investigations of neurons, genetics and molecular biology is demonstrated.

The first Dane Nobel Laureate was Niels Finsen. His work and life has been treated by Arne Hessenbruch and Flemming Petersen. Finsen developed new methods for radiation therapy. The author discusses the details of methods, their reception by the scientific community and the issue of the Nobel Prize. Finsen being a man having good contacts with engineers and businessmen in Copenhagen succeeded in collecting money to establish Finsen Medical Light Institute.

Another popular Nobel Laureate, August Krogh, has been explored by Anita Kildebaek Nielsen. The chapter starts dramatically with Krogh's resignation from the membership of the Danish Academy of Sciences and Letters (founded in 1742). Krogh was the first person to take this step. The whole chapter is written like a 'crime story' with suspense. The author explores the issue of Krogh's rapid recognition with him being a modest man who avoided media. A point which is missing in most of the cases, the role of 'Laureate's wife', is slightly touched on in this chapter. Krogh had been shown to be a practical minded person, who worked not only in the field of physiology but also constructed instruments to study propulsion of fishes in water and insects in air.

In order to keep the length of this review appropriate, I shall skip the details and simply state that the three remaining Nobel Laureates Johannes Fibiger, Henrik Dam and Niels Kaj Jerne are discussed by Anita Kildebaek Nielsen and Eivind B. Thorling, Helge Kragh and Mads Kleis Moeller, and Thomas Söderqvist respectively.

In the conclusion the editors have shown that compared to normal citizens, almost in all cases, the Nobel Laureates had bet-

ter social and educational background; they confirm the conclusions of Crawford and Friedman that the members of the Nobel Committees preferred to award candidates from their own field; in the case of the literature and the peace prizes, the Danes had some advantages due to cultural and linguistic issues. Another important point to be mentioned here is that they have studied in detail how the newspaper media in the USA ignored or criticised the prize at the early stage, but with time, as more and more Americans got this recognition, the public interest grew. And finally, why did the number of Danish Nobel Prizes decrease in the second half of the 20th century? According to the editors, the main reasons are to be found in the constantly growing international competition.

It is not an exaggeration if I call this work 'The Bible of Danish Nobel Prizes'. One has to wait at least half a century to see such a work again. Though the issue at stake is the history of Danish Nobel Laureates and almost all the authors and editors are from Denmark, there is no tendency to show nationalistic chauvinism, rather the opposite is the case. Each and every case is dealt with in an objective and rational manner. I need not say that this book is recommendable for the historians of science, as the fact is that for those who wish to do work on the Nobel Prizes, this book is indispensable.

1. See Rajinder Singh and Falk Riess, Mahatma Gandhi and his four chances for the Peace Nobel Prize, *Diskus*, 2000, **10**, 43–48.

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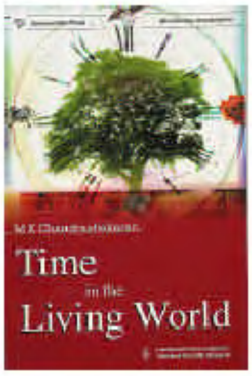

Time in the Living World. M. K. Chandrashekaran. University Press (India) Private Ltd, Hyderabad. pp 198. Price: Rs 175.

Measurement of time is fundamental to all living beings. It enables the organisms to judiciously organize their activities (activity and rest periods, foraging, predation, predator avoidance, timing of reproduction, and interactions with conspecifics and heterospecifics and so on) in relation to daily, seasonal and annual changes in the environment and maximize their fitness. However, the idea that animals, plants and microorganisms can measure time was considered absurd nearly until the mid 20th century. It is around this period, M. K. Chandrashekaran (MKC) began his research career and subsequently made major contribution to chronobiology/animal behavior independently and in association with other researchers working especially in Germany and USA. Study of animal behaviour was popularized in India mainly by the efforts of MKC who was also successful in placing this branch of biology on a firm footing by training and inspiring a large number of students to undertake teaching and research in the area. Biological rhythms are widespread among living organisms. They are shaped by the endogenous pacemakers and entrained by the geophysical correlates of the environment. The circadian (daily), lunar-monthly and circannual rhythms are described for several species of plants and animals. Also, the clock genes are now discovered depicting chronobiological events at the molecular level.

The book has VII chapters. The first chapter introduces the subject of chronobiology, the terminology used, methods of study and historical perspective very lucidly. Chapter II describes tidal and lunar rhythms of the marine crab, *Emerita asiatica* and highlights the ecological relevance of such rhythms. The author details how accidentally he rediscovered the biological rhythm of the crab by working round the clock. Chapter III deals with the circadian clock of the fruit fly (*Drosophila*) and describes the mechanisms governing the eclosion and developmental plasticity. Chapter IV deals with the biological clocks and behaviour of insect bats. It describes many interesting aspects of behaviour of the bats with respect to foraging, recognition of their pups, and factors entraining their emergence from caves and so on. Chapter V deals with the biological clock of the field mouse (*Mus booduga*) and elegantly describes maternal entrainment of the activity rhythms of the pups. Chapter VI deals with the human circadian rhythms of sleep/wakefulness, REM sleep, problems of shift workers, isolation experiments in male and female subjects, influence of isolation on temperature rhythms and menstrual cycles, role of social cues in time estimation, the head clock, implication of circadian rhythms in health, medicine and psychiatry. The last chapter entitled 'Looking Back' narrates the author's sojourn from his graduation days to the present position. All chapters are written lucidly and much of technicalities are avoided so that even a nonspecialist/non-biologist can understand the essence of chronobiology with considerable ease and clarity. The sequence in which the various chapters are arranged is logical. In particular the last two chapters are highly readable and inspiring.

A novel feature of this book is that it reads like the author's memoir providing glimpses of his discoveries and experiences, in India and abroad; interaction with many contemporary scientists, establishment of laboratories for behavioural studies, and isolation facilities for human studies on par with the international standards and so on at Madurai University, documenting carefully and elegantly, in a manner that will surely inspire young as well as senior scientists. The book provides a deeper insight on how plants, animals and humans measure time. I greatly enjoyed reading this book. Certainly, the book deserves a place in the personal library of every biologist.

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