

Walker, D.A.: **Like Clockwork – an Unfinished Story.** – Oxygraphics 2000. ISBN 1 870 232 12 7. 125 pp.

Up till now, it is much better to read printed books than their electronic form. Sitting at the PC and looking at the illuminated screen is certainly far from being comfort. Nevertheless, the recent development of small book-size pocket-tops, not heavy and with batteries working for 24 h, is a progress, even if I do not believe that it will be possible to use them in a bath tube. But electronic books are already here and one has to cope with this progressive form of literature. Also the man who likes (scientific and other) gadgets, emeritus British professor David Walker, started with writing his popular scientific texts only in electronic version. Of course, there are some advantages and disadvantages of this attitude. The advantage is that the reader can get, using internet, modified version of chapters of his book and also find the happy end of the unfinished Chapter 7 (unfinished on October 15, 2000). By simple clicking the reader can also get related information that is already present in the net. The reviewed electronic book is extremely small (ca. 62×81×1 mm) and can be stored in any pocket. All figures are in colour, using as much colours as the author wants, also the text uses colours for underlining some parts, *etc.*

The book explains the process of photosynthesis in a form understandable to high school pupils. Introductory chapters are very simple, but in last chapters the reader has to be more attentive. First chapter entitled "Robert Hill" deals with oxidation and reduction, equation of Einstein, atomic structure, moving of hydrogen atoms, electron transfer, chemical bounds and their breaking, *etc.* It contains also description of the place where the author lives, Biddlestone Village, and detailed information on his teacher, R. Hill (1899-1991), one of the well-known men of photosynthesis. Next chapter "Energy in Parcels" is on radiation, energy of photons, Planck's constant, *etc.* Story of the Royal Society of London and its book of signatures, the book on optics written by Newton, and other historical facts are also shown here. In Chapter 3 ("Down to Earth") many stories from the history of science are given. Splitting of water, pH, ATP, and similar terms are explained here. Chapter 4 "The ATP Generator" is on thermochemical gradients, laws of thermodynamics, Z-scheme, high efficiency of photosynthesis, *etc.* Also a column commemorating Frederick, Duke of York, is shown. The reader finds even a possibility to hear a related song from internet. Chapter 5 "The Dark Staff" deals also with the story of Black Death in Europe, but mainly it describes reactions of photosynthesis running in darkness. Chromatography and use of ^{14}C in science are explained here. Walker discusses here also the discovery of photosynthetic carbon cycle and criticises the fact that Melvin Calvin in his book "Following the Trail of Light" (1992) did not mention the

participation of A. Benson in the well-known discovery of photosynthetic carbon cycle. According to C. Fuller, A. Benson was "the real leader in the laboratory both intellectually and experimentally. He should have been a partner in the Nobel Prize". In Chapter 6 "Doing it in the Dark" the reader learns the CAM cycle and also the results of experiments of D. Walker with Crassulacean plants. Julius Sachs, Professor at Prague University, and his experiments on starch formation in irradiated leaves are also mentioned here (pp. 80-81). The correctness of summary equations of photosynthesis is also discussed ("where does the water come out"). The unfinished Chapter 7 ("Chlorophyll Fluorescence Made Easy") gives, among others (chirality in science and praxis), interesting recipes ("UV-irradiate tonic water bottle, admire peak blue fluorescence, then add gin, consume" – p. 91) and recommendations ("If you know how to wave at a green leaf, you can get it to wave back" – p. 95). The reader gets information on Pasteur's discovery of asymmetrical molecules of tartaric acid, on the movement of primary photosynthates through chloroplast envelope, on immediate products of photosynthesis, *etc.* In Postscript, Walker discusses the difficulties with access to British university libraries and their opening hours, and underlines the advantage of internet that is "the library that never closes".

What are the advantages of this book? In addition to the above-mentioned advantages, the user gets on the disc also the Acrobat Reader that helps to immediate start with reading. The internet connection :

<<http://www.oxygraphics.co.uk>> enables to find new chapters or improved texts of old chapters, and get direct connections to sources that give more information on photosynthesis.

What are the shortcomings of this book? I do not recommend old, inexact terms or units in new books, even in the popular scientific ones. Why to use weight and not mass, red light and not red radiation or red beams, ergs and calories and not joules, pounds and not kg, *etc.*? Similar as in other electronic texts, punctuation marks are sometimes missing and misprints appear (entities – p. 19, atoms weighs – p. 30, Kcal instead of kCal – p. 37, secs instead of s – p. 106, *etc.*). Yellow colour of inscriptions in figures is almost not legible. Some pages are paginated and some not and hence the page numbers given by the PC and on the book pages are not identical.

Generally, this is an interesting text for young people interested in science, similar in importance to the previous books of the same author. Funny illustrations by Richard Walker help to understand some facts. And openness of the text can make it a never-finished book.

Z. ŠESTÁK (Praha)