Quantum Biology by S. P. Gupta. New Age International Pvt. Ltd., 4835/24, Ansari Road, Daryaganj, New Delhi 110 002. 1996. 102pp. Rs. 250.

There is a never-ending demand for specialized text books, which can be easily accessible to research workers and post-graduate students. Although quantum biology is not a very new subject, the emphasis on use of different methods has changed from time to time. This was mainly due to progress in the computer hardware and availability of software at a reasonable price. Thus in the sixties people had access to 16 or 32-bit computers like IBM 1600, Honeywell 400 M, etc. and use of nonhomogeneous empirical methods as Del-Re method for σ and Huckel method for π electrons were popular. The most popular books were *Quantum Biochemistry* by B. Pullman and A. Pullman (Inter Science, New York, 1963) and *Electronic Aspects of Biochemistry* (ed. B. Pullman, Academic Press, 1964). In late sixties and early seventies, methods based on Self Consistent Field (SCF) theory approach with neglect of differential overlap as: Parriser–Parr–Pople (PPP), CNDO, INDO, etc. were developed and became popular because of availability of IBM 360, CDC 3200 and UNIVAC 1400 computers. The books *Approximate Molecular Orbital Theory* (J. A. Pople and D. L. Beveridge, McGraw Hill, 1970), *The World of Quantum Chemistry* (eds R. Daudel and B. Pullman, D. Reidel, Dordrecht, 1974) were found to be extremely useful. Much of the information was still available in good review articles like 'Organic molecule studies by semiempirical method', by Fonnandez-Alonso. The applications of biology were covered in books by Kier like *Quantum Pharmacology* (Academic Press) or *Molecular Orbital Theory in Drug Research*. Application of *ab initio* methods became popular with the availability of better IBM and CDC machines and computer programs through quantum chemical program exchange (QCPE) at University of Bloomington, Indiana, USA. There had been several short reports and even a dictionary of *ab initio* charges by Richardson was available. There had also been some specialized books like *Chemical Applications of Atomic and Molecular Electro-static Potential Molecular Electrostatic Potentials* by P. Politzer and D. C. Truhlar (Plenum Press, 1981).

Today the most important thing is to select the right method for a particular problem since lot of software is already available from commercial vendors as Biosym, Tripos Asso, Gausian Inc. and also freely supplied as a public domain software. Hardware prices are reduced and their speeds have increased fantastically. The main difficulty for a researcher, especially of a biology origin, is to have training enough to carry out his work. Most of the time, the user is not interested in development of hard core theory or writing his own software. He just has to know essential details of the methods and use in particular cases so that he can just pick up the method and do calculations. This demands more concise books which should be easy to follow. S. P. Gupta's book represents an ideal book for this purpose. It is concise and gives basic principle of ZDO approximation. He has enumerated essential details of CNDO, CNDO/1, CNDO/2, INDO, NDDU, PCILO, EHT, HMO, Del-Re, and Pariser–Paar–Pople method. He has given use of these methods for nucleic acids, proteins and phospholipids. He has also given a chapter on the use of these methods for quantum mechanics and transport in biological systems and drug–biomolecule interaction. The book is a perfect textbook for post-graduate and post-doctoral students in biomedical sciences. I only felt that the author could have given some information on *ab initio* method and molecular electrostatic potential maps, using different MO methods, their applications and some information on software packages. That would have benefitted the reader. The book on the whole is well written. The author and publisher have taken great efforts to set the mathematical equations.

V. KOTHEKAR

Department of Biophysics,
All India Institute of Medical Sciences,
New Delhi 110 029, India