

BOOK REVIEWS

book is printed on excellent glossy paper and included are 150 colour photographs. The price of Rs 230 is modest for any library, though I wonder if an individual farmer can be persuaded to buy it. Let us focus on the advice offered. Some of it is regarding general agronomic practices ('avoid shallow planting', p.15 or 'Place only dried leaves in the basin', p. 30). Some are so widely known as to be superfluous ('Plant casuarinas to serve as wind shield', p. 10 or 'Cut heavily infested leaves and burn', p. 51). Some are precise ('place pheromone traps @ 1 per hectare', p. 53). But only a few are explicitly about weather (During cloudy weather...adopt...drying methods for getting good quality copra', p. 79). Some encouraging news is found (p. 89) that demonstrates the ability to forecast incidence of bud rot in coconut. Very high humidity and cool temperature seem to promote it. The advice to farmers is 'Upon forecast of occurrence, take prophylactic measures'.

So, there are some redeeming features, but in general, I am hard-pressed to locate gems of insights that can justify the ambitious title.

Sometimes I wonder about a tendency in some institutions to put out fancy, glossy documents titled reports/manual, etc. These are not journal publications. Many would not stand peer scrutiny. The present document purports to be more than that, a priced publication, a book. But it seems to have been put together with inadequate effort. Editing is not sharp. Some pictures are repeated (copra dryer on p. 78 and 93, water harvesting pond on p. 24 and 92). Some pictures have obscure justification. Why would anyone want to see a picture titled 'heap of coconut leaves' (p. 45)? The same comment applies to 'coconut palm' (p. 4) and 'cocoa tree' (p. 7). On the other hand, some crucial data such as number of farmers taking advantage of extension services related to weather or estimate of savings from forewarning, etc. are hard to find.

One can only hope that the institution will iron out such deficiencies when it brings out a second edition.

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A Textbook of Medical Instruments. S. Ananthi. New Age Intl (P) Ltd., 4835/24 Ansari Road, New Delhi 110 002. 569 pp. Price: Rs 275.

It is difficult to write a textbook. It is daunting to write a textbook on biomedical instrumentation. Biomedical technology is an area that resulted from an unlikely fusion of a heuristic, largely intuitive practice of medicine and the precise processes of engineering. Ananthi must be commended on the work (wo)man-like job done on this book.

The book covers in detail various small and large diagnostic instruments. All relevant branches of medical practice are covered. Anesthesiology, radiology, various branches of medicine, and some of the instruments involved in surgery are presented, though the choice of instrumentation seems to be based on what was accessible. As the preface and the blurb indicate, a lot of information given is derived from commercial products. Adequate acknowledgements do not seem to be made. The publishers may have to verify on whether any copyright issues are involved. The quality of many of the illustrations is poor, probably due to the process used to scan these from commercial literature.

The chapter on surgical instruments is cursory. This may have to do with limiting the size of the book that is already nearly 600 pages long. Minimally invasive surgery is now becoming a rule rather than an exception to minimize hospital stay. Lasers are used for many more applications than ophthalmology alone. May be these areas will get more attention in a subsequent edition.

It is not clear why a heart-lung machine is included in this book. This leaves the door open for a whole gamut of other devices like plasma pheresis equipment, dialysers, artificial kidneys, and left ventricular assist devices to claim inclusion. A disproportionate amount of space has been given to describing an antiquated disc blood oxygenator, which is virtually a museum piece now. Even small surgical centres now use capillary membrane oxygenators.

If pacemakers and defibrillators can find a place, why are devices like hearing aids, cochlear implants, and deep brain stimulators excluded? Currently used pacemakers have batteries lasting more than seven years and have smart circuits that give warning prior to loss of power.

The book describes units with antiquated mercury batteries having one-year life.

A lot of materials science is involved in biomedical instrumentation. A pacemaker lead just delivers tiny current pulses to the heart, but it has to have a fatigue life in the region of 300 million cycles in a seven-year period. Tissue compatibility of materials is another major constraint. Many of these have a bearing on compromises to be struck in designing actual systems. Even when biocompatibility is not a primary concern, other pitfalls lurk. Initially, stainless steel was used as an ECG electrode material. There is a recorded case of a patient being given five defibrillation jolts because of a flat ECG trace, though in fact the heart started working with the first shot. The culprit was the stainless steel electrode that got passivated and blocked the signal! A chapter on related materials science aspects would have been useful.

Between the engineer and the doctor it is easy to forget the *raison d'être* for biomedical instrumentation. The patient. Quite often, many different instruments are connected to a patient. Some of them may have leads connecting directly to vital internal tissues like the brain or the heart. It is of vital importance to design all instruments to be safe even under abnormal conditions. The concept of patient as the centre of electrical ground is at the core of all instrumentation. Considerable care is required to avoid circulating currents, occasionally through unlikely paths of a surgeon's hand touching the patient. The book rightly addresses this problem and emphasizes the importance of patient safety.

There is the occasional typo, which seems inevitable in the modern publishing context.

Merits are many, faults are few. As a whole, this is a useful book for students taking a course in biomedical technology. It will serve as a basic reference for research workers and medical professionals. It will have but limited use in the actual design of biomedical instruments. The book is worth library shelf space.

The publishers should be complimented on bringing out a good book at a reasonable price on a difficult field of study.

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