

as to the student. The book is admirably produced and the diagrams are clear and distinct.

*The Elementary Principles of Wireless Telegraphy and Telephony.* By R. D. Bangay. Third edition, revised by O. F. Brown. Pp. xii + 268. (London: Iliffe and Sons, Ltd., 1930.) 10s. 6d. net.

To anyone desiring instruction in the principles underlying the working of modern radio apparatus this work can be recommended. It is necessary to have a working knowledge of electricity and magnetism and the principles of wave motion. This is given first, and then we have chapters on aërials, receivers, masts, thermionic valves, and triodes—their use as amplifiers being explained. There is a good chapter on the frequency stabilisation of transmitters, descriptions being given both of control by tuning-forks and by quartz oscillators. The design of a modern broadcast radio receiver is fairly fully described, and also the use of a.c. and d.c. eliminators.

Stress is laid on the danger of amateurs using home-made all-electric sets which are connected directly with the public electric supply mains. There is always a risk that sooner or later one of the outsiders of the public supply mains may make contact with earth, thus raising the potential of the middle main to 200 volts or more. In this case there is a real risk from shock, and the fire risk is also serious. The Institution of Electrical Engineers publishes regulations showing how these risks can be obviated. There is a chapter on radio direction-finding which gives in little space a description of the Bellini-Tosi and the Robinson systems. The final chapter discusses the propagation of waves and the causes and effects of atmospherics. The lower ionised region of the atmosphere produces little attenuation on very short waves, and hence short waves which suffer multiple reflections between the ionised layer and the earth frequently travel better by day than by night. No method of eliminating entirely the effects produced by atmospherics has yet been found.

*Alternating Current Electrical Engineering.* By W. Tolmé MacCall. Second edition. Pp. viii + 496. (London: University Tutorial Press, Ltd., 1930.) 15s.

THIS book can be recommended to students reading for the B.Sc. examinations of the University of London. It gives the necessary groundwork for the electrical technology required in the examination. Very little knowledge of the calculus is required, and the author's aim has been to make the theoretical part of the subject easily intelligible to the average student. This naturally prevents him discussing many of the difficulties that arise. He gives, however, a fair number of references to advanced books and papers. We were pleased to notice that he has brought the nomenclature into line with the British Standard Glossary (published by the B.E.S.A.). The word 'capacitance' instead of 'capacity' (electrostatic) seems now to be generally adopted.

The chapter on harmonic analysis is rather brief. No clear distinction is drawn between the Fourier analysis and the Lagrange method of interpolation. Perry's method is an example of the former and Runge's method of the latter. We think the best and most accurate way of analysing a wave is to apply the modern formulæ for mechanical quadrature to the Fourier integrals. It is pointed out that various authors following the interpolation method of Runge have given 'schedules' to facilitate the calculations when the harmonics have to be calculated to the eleventh or beyond. One authority quoted divides the half-period into 26 ordinates and then gives a schedule for getting the first 25 harmonics inclusive. It seems to us that this would be a waste of labour. The values of the harmonics above the ninth obtained in this way would probably be inaccurate, unless it so happened that no harmonics greater than the twenty-fifth were present.

*Easy Lessons in Television.* By Robert W. Hutchinson. Pp. vii + 175. (London: University Tutorial Press, Ltd., 1930.) 1s. 9d.

It seems fairly certain that television will have a great future, but, like all inventions, it is difficult to predict when it will become commercially successful. Of the systems in use, that invented by Baird seems to have made the greatest progress, and this little book gives an excellent description of it in non-technical language. Perhaps too much stress is laid in the opening chapter on the atomic nature of electricity. It is not very instructive to quote numbers beyond our comprehension. A clear description is given of the photoelectric cell, which enables a varying light scattered by the object to be 'televised' into a varying current of electricity. The varying currents can then be changed by a neon lamp to a fluctuating light which can be received on a screen; for television, neon is found to be the best gas to use, as it responds instantaneously to changes in the current.

The thermionic valve and the radio receiving set are described, and the book finishes with a description of the televising of a silent film (called telecinematography), television in the theatre, and telephotography. The Siemens system is used by the Post Office for transmitting pictures to Germany and Denmark, the Belin system is largely used in France, and the Bell system in the United States.

*Modern Bridge Construction: a Treatise setting forth the Elements of Bridge Design and illustrating Modern Methods of Construction.* By F. Johnstone Taylor. Pp. xii + 235. (London: Crosby Lockwood and Son, 1930.) 15s. net.

A SHORT treatise on any branch of engineering may serve as an introduction to the subject, as a handy book of reference, or as a guide to the latest practice. The book under notice may well do all these. In twelve chapters the author deals in turn with masonry bridges, small steel bridges, trussed girders, girder-bridge construction, steel bridges, constructional details, steel-arch bridges, swing bridges, lifting bridges, erection methods,