is less severe than these, but which is something more than a mere description of acoustic phenomena, is still a desideratum. Where attempts have been made to supply the want the result is not successful, owing chiefly to the clumsy methods employed in "getting round" the calculus. We are not upholders of the doctrine that the calculus should be "got round"; it is much better, we think, to "get through" it. Experience in teaching others has taught us that pupils find no difficulty in grasping its elements, and this is the case whether they are taught analytically or geometrically. Why then should we seek to devise elaborate methods of eluding the calculus—methods which in most cases we would never think of employing ourselves, and which, moreover, are usually only adapted to the particular problem for which they are devised—when a straightforward introduction to the methods we use ourselves would clear the ground and render the student's progress easy, and enable him the sooner to be his own path-finder instead of needing to rely on the guidance of others?

The book under review cannot supply this want in England, for it is a translation into German (from the Dutch); the substance of the book is in the above respect, however, entirely to our mind.

No calculus is employed in name; but the notion of it is everywhere. Velocity is the limiting value of a ratio and so is acceleration, and their values are found by the usual direct methods employed in proving the initial theorems of the calculus. We would have gone a step further and given the process a name, in order to suggest to the student to what branch of mathematics these and similar theorems belong. But the notion is the main thing. There is nothing here which a man will discard at a future time, having learnt a better way; though he will, of course, learn to abbreviate the logical statements of the process into the mere symbols dx/dt and d^2x/dt^2.

Without making a full analysis, the following subjects dealt with may be briefly stated :—In the mathematical treatment : simple harmonic motion—waves and their composition, with a proof of all the simple theorems.

Fourier's theorem is given, but not proved ; it is illustrated, however. The dynamical equation to simple harmonic motion is given, and the motion deduced by showing that it satisfies the equation. Even the case of a restoring force involving second as well as first power of displacement is given, on account of its importance in connection with the Helmholtz theory of the production of combination tones. The equation to damped motion is treated as an article for faith ; its properties, however, are lucidly described.

Although the experimental phenomena are mainly collected together, the mathematical portion is not wholly free from experimental illustration. For example, we specially note a device which should be found useful for illustrating the behaviour of forced oscillations with different degrees of damping.

Perhaps the most interesting section is that dealing with the interference and diffraction of waves. This might be amplified by an account of recent experiments imitative of Lloyd's mirror and diffraction from two apertures (Young's experiment) ; and, in particular, an account of Rayleigh's brilliant application of the principles of diffraction in *restricting* the spreading of sound to one

plane by suitably shaping the aperture of the fog horns employed in coast signals would form an excellent additional illustration.

The last chapter is concerned with movements of air in pipes, concluding with an account of the secondary motions usually developed, such as the small striations in the cork figures in a Kundt's tube, which were investigated by Walther König and others (König is mentioned without being discriminated from R. König). These are highly interesting, though many will no doubt consider them rather out of place in an elementary book.

There is no mention of Rücker's important experiments in connection with combination tones.

OUR BOOK SHELF.

Malarial Fever, its Cause, Prevention and Treatment. Containing full Details for the use of Travellers, Sportsmen, Soldiers, and Residents in Malarious Places. By Ronald Ross, F.R.S., Walter Myers Lecturer in the Liverpool School of Tropical Medicine. Ninth edition, revised and enlarged. Pp. 68. (London : Published for the University Press of Liverpool by Longmans, Green and Co., 1902.) Price 2s. 6d.

THIS little book is an enlargement of a previous work by the same author, and should prove of the utmost use to those for whom it is written. The exact knowledge concerning the epidemiology of malaria which has been attained during the last six or seven years has made clear the principles upon which the disease may be prevented in the individual and perhaps exterminated in the locality. The wide dissemination of these principles and of the facts upon which they are based is the next obvious step in the campaign against malaria, and the Liverpool School of Tropical Medicine has done good service in the publication of this work. Within the short compass of some seventy pages we find a lucid and succinct account of the nature and life-history of the malarial parasite, of the habits and life-histories of the gnats which serve as its definitive hosts, of the precautions to be taken to avoid infection, and of the elementary treatment of the disease should it be acquired. In short, nothing is wanting that should enable an intelligent man, even if devoid of any scientific training, to escape malaria, even where it is most virulently endemic. The writer's wide experience, and the important share which he has taken in building up our knowledge of the disease and its propagation, are a sufficient guarantee of the accuracy of his information and of the practical value of his rules for guidance. There is a consensus of practical experience that, by attention to the rules here set forth, a man may safely pass through countries where malaria of the most dangerous type prevails. We recommend the book heartily to all who have occasion to sojourn in such lands.

Velocity Diagrams. Their Construction and Uses. Intended for all who are interested in Mechanical Movements. By Prof. C. W. MacCond, A.M., Sc.D. Pp. iii + 116 ; 83 figures. (New York : John Wiley and Sons ; London : Chapman and Hall, Ltd., 1902.) Price 1.50 dollars.

IN this book some examples of plane motions of machines are worked out. The title well describes the scope and contents of the work and the very modest aims of the author.

The main problem to which the discussion is directed is :—Given a skeleton drawing of a mechanism and the speed of the driving point, to find graphically the corresponding speed of the driven point, and to show the latter all throughout the cycle by means of a rectangular