

warping the wings, a freely connected cross-warp tending to eliminate the effect of dihedral angle. If for the time being we neglect the complication introduced by the warping mechanism, the system reduces to one of the cases considered by Messrs. Harper and Bryan, who state that, "for stability, the distance of the tail fin behind the centre of gravity must not be less than a certain inferior limit." The condition is closely connected with the covering of the tail girder, as the covering means that the equivalent fin is brought nearer to the centre of gravity of the machine.

The only representative at the exhibition of another method of obtaining lateral stability is the Handley Page monoplane. In common with other well-known machines, such as the Dunne and Etrich, the Handley Page monoplane has wings of special shape and disposition arranged so as to give righting couples to the machine when rolling or turning occurs. The experimental information available is not yet sufficiently advanced to show that this system of specially shaped wings is either better or worse than the more usual one previously referred to, which depends on wings of a simpler form.

Perhaps the best indication of the position of the subject of lateral stability is to be found in the fact that the whole of the warp and rudder is left to the personality of the pilot, and that both are powerful controls. As the periods of the oscillations are comparatively long, it is quite within the bounds of possibility that a pilot would be able to keep his balance without the aid of inherent stability devices. If, however, the treatment of longitudinal stability is any indication of the trend of construction, then in the near future we may expect considerable attention to be paid to the problems of lateral stability, and that the final solution will not be inconsistent with the principles of stability deduced from mathematical investigations of the stability of small oscillations.

THE SCIENTIFIC WORK OF THE LOCAL GOVERNMENT BOARD.¹

IN the introduction to the report before us Dr. Newsholme surveys the public health of England and Wales during 1911, and reviews the work of the medical department of the Board for the year ending March 31, 1912. The variations in mortality from various diseases since 1901 are illustrated by charts, as in the previous report. The percentage increase of population for 1901-11 remains the same (12.4) as in the preceding decade, but this is due to a fall in the death-rate by 3.0 per cent., which just counterbalances the decline in the birth-rate. The deaths from scarlet fever continued to decline during 1911, those from diphtheria and enteric fever increased slightly, but those from diarrhœal diseases showed a considerable increase over

¹ Forty-first Annual Report of the Local Government Board, 1911-12. Supplement containing the Report of the Medical Officer for 1911-12.

previous years, due to the abnormally hot season; even so, however, there was less diarrhœa, still less infant mortality, in 1911 than in 1899.

The previously plague-infected district in East Anglia has been kept under observation, and during July-October, 1911, 15,332 rats were examined, and twenty-seven farms or other premises were found to harbour plague-infected rodents.

Of the auxiliary scientific investigations carried out for the board, the first is a report on arterial degeneration by Dr. Andrewes. Dr. Newsholme points out in his introductory remarks that while there has been a great reduction in the general death-rate during the past thirty or forty years, this reduction only affects ages up to forty-five years, while higher ages participate in it little or not at all. In fact, for males between fifty-five and seventy-five, the death-rate actually tends to be going up. Inasmuch as one-third of the total deaths for the age period fifty-five to sixty-five is caused by diseases of the heart and blood-vessels, a knowledge of the causation of arterial degeneration is of importance. Dr. Andrewes's report is of a preliminary nature; he considers that the use of tobacco appears at most an adjuvant cause, while the influence of alcohol cannot be satisfactorily demonstrated.

Studies on the frequency of non-lactose fermenting and non-liquefying aerobic bacilli in young children have been continued at Birmingham by Dr. Lewis, and at Liverpool by Dr. Alexander, and Dr. Graham-Smith has investigated the incidence of the same organisms in flies. Prof. Nuttall and Messrs. Strickland and Merriman record observations on the species and number of fleas on British rats.

Prof. Hewlett and Dr. Nankivell have investigated the influence of the Porter-Clark water-softening process on the bacterial content of water treated by it, and find that considerable purification is effected thereby.

Dr. Blaxall finds that 0.1 per cent. of oil of cloves is a valuable aid in the preparation of glycerinated calf lymph free from micro-organisms.

Altogether this volume contains matter of much scientific value and importance. R. T. H.

THE MOUNTAINS AND THEIR ROOTS.¹

(1) IT would be difficult to conceive a greater divergence in character and scope between two books, nominally dealing with cognate subjects, than between the two first-named on our list. Prof. Bonney, in his metaphorical use of the word "building," follows popular usage, for how

¹ (1) "The Building of the Alps." By Prof. T. G. Bonney, F.R.S. Pp. 384. (London: T. Fisher Unwin, 1912.) Price 12s. 6d. net.

(2) Survey of India. Professional Paper No. 12: "On the Origin of the Himalaya Mountains: a Consideration of the Geodetic Evidence." By Colonel S. G. Burrard, F.R.S. Pp. ii+26. (Calcutta, 1912.)

(3) Survey of India. Professional Paper No. 13. "Investigation of the Theory of Isostasy in India." By Major H. L. Crosthwait, R.E. Pp. iii+14. (Delra Dun, 1912.)