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Book review

Gregory, P. H.: Microbiology of the atmosphere. 2nd edition. 377 pp., 8 plates. Leonhard Hill, Aylesbury (Bucks.) 1973.

'Microbiology of the atmosphere' written by the former Head of the Plant Pathology Department at Rothamsted Experimental Station, and first published in 1960, was the first and only treatise on this topic; this year an updated and expanded second edition has been published. The most important publications of the last decade have been incorporated in the text and bibliography (38 pages). New chapters have been added on rain-splash dispersal, inhaled microbes in relation to respiratory infection and allergy, and on survival in the atmosphere.

After a historical introduction and descriptions of the general behaviour of spores in still air and the structures of the atmosphere, the path of the constituents of the air spora is followed: spore liberation (in particular in splash droplets), horizontal diffusion and deposition processes. Gregory gives a modern review of sampling techniques and the constituents of the air spora in lower and upper layers with a discussion of survival. Following topics are effects of deposition in rain, snow and hail, and deposition gradients and long-distance dispersal. These two chapters are of the greatest importance to plant pathologists, since the factors determining dispersal of epidemic air-borne plant pathogens such as *Puccinia* spp., *Tilletia*, *Phytophthora* and *Peronospora* are fully discussed. Professor Gregory has contributed much to research by his wind-tunnel studies on spore translocation and sedimentation and, together with his wife, Margaret F. Gergory, to the subsequent mathematical formulation of the processes. From the deposition gradients predictions on the spread of some plant diseases are possible; the long-distance transport of certain species, however, largely escapes exact experimental study. For a more detailed account the reader is referred to Gregory's contribution on interpretation of plant disease dispersal gradients in Annual Review of Phytopathology Vol. 6 (1968). The aerobiological approach not only affects understanding of general spread of a pathogen but also various other aspects of plant pathology, e.g. the interpretation of spraying trials on plots surrounded by untreated ones. While the book as a whole offers a concise but highly readable text, the mathematical treatment is so condensed that it is often difficult to follow; a list of symbols used would have been helpful.

The two chapters on air-spora of enclosed spaces and on inhaled microbes are of importance to hygienists and allergologists. Two coloured plates (1000 times enlarged) with fungal and other microbial spores, and one in black and white with pollen grains illustrate the subject nicely, but should not be used with too much confidence for identification. In a concluding chapter entitled 'Aerobiology', the author reviews the various aspects, pointing out some uncertainties and suggesting that a fresh study of aerobiology would need simultaneous work in different parts of the world by similar methods.

W. Gams