

known as *Topfen* and cream as *Obers*; in France, *blé* may signify wheat as well as other cereals, and corn or maize might be translated as *mats* or *blé de Turquie*. If the present translations of 'hunk of bread' were used, there would certainly be disappointment in a recipient led to believe he would receive a *tartine* or a *Butterbrod*.

If it must be admitted that the perfect relief worker, like the poet, is born and not made, it may also be admitted that less perfect specimens might be brought appreciably nearer in quality to the ideal, after a careful study of the information and advice contained in this unpretentious but valuable little book.

H. C.

THE HUB OF THE FUTURE WORLD

The Geography of World Air Transport

By J. Parker Van Zandt. (America Faces the Air Age, Vol. 1.) Pp. viii+67. (Washington, D.C.: Brookings Institution; London: Faber and Faber, Ltd., 1944.) 5s. net.

THE Brookings Institution was established in 1927 with the twin objects of "aiding constructively in the development of sound national policies and . . . to offer training of a super-graduate character to students of the social sciences". In pursuance of these objects, it initiated in 1943 a programme of economic research in aviation under the direction of Dr. J. Parker Van Zandt. The director has now prepared the introductory volume to a promised series, and he limits himself to outlining the basic setting of the world air transport problem.

The author points out the many erroneous ideas of the space relationships of the countries of the world which have arisen from the still all too common use of Mercator's projection for wall maps and atlas maps of the world. Curiously enough, much that he has to say may be novel to the American public, but is actually what has been taught in British schools for the past four decades. Americans may be shocked to find that Chicago is nearer to Istanbul than to Buenos Aires, and that Los Angeles is nearer Moscow than to Rio. "Most of the world that matters lies in one hemisphere . . . 94 per cent of all the people and 98 per cent of the world's industry", and the centre of that hemisphere is in western Europe. Actually London is used as the centre of what is called the "Principal Hemisphere". Of the eight major "trade areas", four dominate the world—Greater Europe, North America, U.S.S.R., and Asia—and the conclusion is reached that the future will confirm rather than reverse this position. It is thus regarded as a basic fact with respect purely to world air transport operations that the favoured position is at the hub of the hemisphere. While the disadvantages of America's peripheral position are partly offset by her gigantic industrial development and purchasing power, it is argued that more efficient operation and lower costs through greater volume will be needed to counter the handicap of longer average distance to world markets.

Attention is directed to the immensely strong position which could be held if only the countries of Greater Europe acted in unison. Despite the focal position of the British Isles, and the importance, above all others, of the difficult North Atlantic route, the suggestion is made that the limited land areas

available in Britain will be a handicap. Despite the war-time use of Goose Bay in Labrador, the author holds that the importance of trans-polar and high-latitude routes has been much exaggerated.

That the main result of this frank American survey should be to affirm that "geography is still a controlling factor" and that Britain automatically becomes the centre of the future air-age world should give us in Britain food for serious thought. Forty years have passed since Sir Halford Mackinder wrote "Britain and the British Seas", yet technical progress and inventions have but underlined his concept of the importance of Britain's world position.

L. DUDLEY STAMP.

BIOLOGY OF FLIGHT

The Biology of Flight

By Prof. Frederick L. Fitzpatrick and Karl A. Stiles. Pp. vi+162. (London: George Allen and Unwin, Ltd., 1944.) 8s. 6d. net.

THIS book attempts to cover a very wide field indeed, ranging from the flight of insects and birds, to aviation medicine, and the control of disease that may be spread by air travel. It gives a very lucid if somewhat superficial description of these matters in a form which assumes no previous knowledge of the subject.

However, there is no need for simple treatment of a scientific subject to be inaccurate; unfortunately, a number of inaccuracies suggest that the authors have little practical knowledge of, or very close contact with, some of the matters which they describe. For example, "from the practical standpoint it is considered unsafe for the average person to fly much above 20,000 ft. because of the limits of present oxygen equipment". This is done almost every day by many thousands of pilots and aircrews. Discussing Donati's altitude record of 47,358 ft. (corrected), it is clear that the authors have overlooked the difference between corrected altitude and pressure altitude. Again, "a descent of 10,000 to 15,000ft. without ventilation of the middle ears will usually cause rupture of the ear drums". The factor causing rupture of the ear drums is the differential pressure to which they are subjected. This cannot be expressed in thousands of feet unless the absolute height is stated. Descent from 45,000 ft. to 30,000 ft. will not cause rupture.

The use of the word 'probably' in connexion with statements giving numerical data is out of place. The figures should be checked.

Some of the photographs are official British pictures from the Ministry of Information. The line illustrations are clear, but some do not seem to present any fact of interest; for example, Fig. 33. Fig. 17, purporting to show the burning of a candle at various altitudes, bears little relation to the truth. It would have been better if the accurate photographic plate in Ruff and Strughold's "Atlas der Luftfahrtmedizin" could have been copied. Had the authors tried this simple experiment themselves with a candle, ventilated bell jar, and filter pump, they would have found a candle still burns dimly at the pressure corresponding to 40,000 ft.

There is a paucity of collected work on the biology of flight and a very definite place for an accurate simple treatise on the subject. It is a pity that the present book is marred by loose writing and misstatement.

B. H. C. MATTHEWS.