Chapters concerned with the origin and identification of procambium and with the differentiation and recognition of primary xylem and phloem point out the technical difficulties of critical observation, noting on one hand the variability in patterns of procambial origin vis-à-vis the apex and on the other, in contrast, the rather consistent pattern of differentiation of protoxylem and protophloem within the procambial strands. Effects of surgical operations on growing apices are briefly reviewed, though the author's opinions of their bearing on the origins of vascularization may differ from those of the original investigators to whose experiments she refers. Her main point here, as in the past, is, in general terms, that the anatomical evidence is commonly inadequate to allow of their unequivocal interpretation.

Prof. Esau also draws our attention to tissue-culture studies of vascularization. Groups of freely suspended parenchymatous cells, derivatives of undifferentiated callus, may produce vascular elements, organized in varying degree, within themselves—the forerunners of the formation of roots and ultimately, under appropriate conditions, of whole plants. The existence of environmental gradients of some kind between the surface and the interior of the group has been postulated as a critical factor in this initial differentiation. In other experiments, vascular differentiation in callus has been induced by bud grafting, or by the application of auxin and sugars, which may substitute for the buds. The inductive effects of grafted buds are thus interpreted as arising from the auxin secreted by their leaves, so leaving open the question of whether the apices *sensu strictu* might have a determining role. This and other evidence for hormonal participation in vascular differentiation cannot but maintain our wonder and excite our curiosity about the increasing variety of specific cellular responses to auxin. It may also remind us that the recognition of auxin as an instrument in these responses does not lay bare their fundamentals.

The book is illustrated by diagrams and photomicrographs exemplifying points at issue and includes some 250 references to recent literature. It is a welcome statement of some current problems of a classical botanical discipline.

K. WILSON

VEG. AND TWO VEG.

Plantes Alimentaires de l'Ouest Africain

Etude Botanique, Biologique et Chimique. Par F. Busson, avec la collaboration technique de P. Jaeger, P. Lunven et M. Pinta. Pp. 568. (Marseille: Laboratoires de Recherche du Service de Santé des Troupes de Marine, 1965.) n.p.

IT will be some time before the majority of West Africans go to work on an egg—or even a high protein biscuit. And while the ingenuity and efforts of those who devise supplements to tropical diets from processed surplus products from temperate regions must be admired, improvement in nutritional standards is more likely to be achieved quickly and economically by more effective use of indigenous foods. Unfortunately, the nutritional composition of indigenous tropical food plants is not known in sufficient detail to allow fuller exploitation. More knowledge is therefore essential if nutritional standards are to be improved.

The value of *Plantes Alimentaires de l'Ouest Africain* lies in the detailed information it presents on the chemical composition of vegetable foods of West Africa. The author has chosen to set this material against a general biological background which includes an account of the physical environment as well as the vegetational cover and human population of the area, but it is doubtful if this effort has been worth while. Much of this information is easily available from other sources, often in a more generally suitable form. For example, some lesser known "indices" are used to describe various climatic parameters, including the "pluviometric index" of Weisse[1]. This index is mapped only for the ex-French West African territories, thus excluding Nigeria, Togo, Ghana, Liberia, Sierra Leone and Portuguese Guinea. While this may have been acceptable in 1950 when the index was first published, it seems a pity that a book on West Africa should give continued currency, in 1965, to outdated colonial boundaries. A similar bias has crept into the account of human populations.

In the main body of the work the arrangement is a taxonomic one. A brief description of each family of plants is followed by a short description of its edible members, often enhanced by photographs and drawings. Finally, there are tables of the chemical composition of the edible parts. Little attention seems to have been paid to the age of the parts analysed and, because analyses are mostly confined to single samples, there is no indication of the variability of the chemical components within similar material of a single species. This may be excusable in the present state of knowledge, for in spite of the importance of having estimates of variability this book does contain much valuable information, particularly on amino-acid content, for a wide range of tropical plants.

In the concluding sections of the book, the analytical results are discussed in terms of the general composition of leaves and other parts and the main chemical components. Only passing reference is made to the possibility of discerning various compositional patterns and affinities in species within a family. This part of the book is surprisingly poorly developed in view of the rigorous taxonomic arrangement adopted throughout. A cursory examination suggests that quite interesting systematic trends might have been revealed.

The material in this work will be of some use in devising cheap balanced diets from indigenous foods in West Africa, but the main contribution is in the attention it draws to the potential of indigenous plants in improving standards of nutrition. For fuller benefit to be derived from these plants, however, more will have to be known of the variability in chemical composition within species.

M. J. CHADWICK

[1] Weisse, H., *Première Conf. Intern. des Africanistes de l'Ouest*, 175 (Institut Français d'Afrique Noire, Dakar, 1950).

DOWNWARPS

Geosynclines

By Jean Aubouin. (Developments in Geotectonics, 1.) Pp. xv+335. (Amsterdam, London and New York: Elsevier Publishing Company, 1965.) 110*s*.

THE ever increasing flood of literature on the sedimentology, stratigraphy and structural evolution of geosynclines makes an attempt to produce a single volume entitled *Geosynclines* a formidable task. Prof. Aubouin has the standing experience and has succeeded beyond any reasonable expectation in covering the field in both space and time. In Part 1 the birth and development of the term "geosyncline" to denote a thick pile of sediments accumulating on a subsiding trough, that was later subject to orogenesis, is traced through Hall, Dana and Haug. The independence of downwarp and sedimentation was clearly brought out by Haug's recognition of a deep water exial region and emphasized in Britain by O. T. Jones's classic synthesis of the Caledonian geosyncline.

Aubouin rejects the attempts at complex classifications by adjectival prefixes made by Schuckert (1923), Stille (1913–40) and Marshall Kay (1947). He prefers an integrated evolutionary approach somewhat recalling the simple grouping of the Russians Peyve and Sinitzyn (1950) into primary, secondary and residual geosynclines. The eu- and mio-geosyncline combination of the orthogeosyncline of Stille and Kay is accepted as the primary geosyncline