ference, and the discussion by participants following each paper, are included in the text, and Dawson, Bering, and Welch have submitted supplementary papers on the formation, circulation, and drainage of the CSF and on the transport of materials by the choroid plexus.

The keynote of the opening remarks was a word of appreciation for Hans Winterstein who originally expressed the possible interrelation of the hydrogen ion of the CSF on respiratory ventilation. More than 50 years have elapsed since the formulation of his reaction theory embodying this concept (1911), and this symposium stressed that the complete stimulus to respiration is still not understood. The editors reflected that all authorities invited to the conference concluded that the state, composition, and nature of the CSF affected ventilatory functions. However, certain authors still held the classical concepts of peripheral and central ventilatory controlling devices as the key factor and could not accept the hydrogen ion of the CSF as the sole driving mechanism. Much new and refreshing interest in the CSF was engendered, and an interesting thesis was submitted—that the brain cell environment is the important factor in determining ventilatory reactions and the control of respiration is entirely secondary to affording a brain cell its proper chemical environment. Great interest was centered about the role of the chemoreceptor cells, which are either close to or interconnected with the CSF. Pappenheimer expressed this well in the following statement: "With regard to surface receptors, this I think is at the heart of our symposium and is extremely important to it." Studies on individual factors in the CSF—such as electromagnetic force, ion exchange, and change of constituents from its source to the surface of the brain cell —are needed for the basic understanding of the CSF; perhaps it is more truly the *milieu interieur* than ever before understood. I was surprised to learn that most authors now believe ion exchange from blood to brain or CSF and vice versa is more rapid than was previously believed.

This volume is of great importance to all respiratory physiologists and also a much needed text for those interested in the basic roles of the CSF.

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Market Economics of Maize in Tropical Africa

Maize ranks after cassava and the millets (*Sorghum* and *Pennisetum*) as a food source in tropical Africa, but owing to its palatability and the ease with which it may be transported, its commercial ramifications are more widespread than those of either of its rivals. A book on the subject therefore needs no apology, but the choice of title for this one, **Maize in Tropical Africa** (University of Wisconsin Press, Madison, 1966. 345 pp., $7.50), by Marvin P. Miracle, is most unfortunate. It is a surprise to find that agricultural and ecological matters are dealt with in the most superficial manner, and a more explicitly worded title would have indicated that the book is in fact a treatise on market economics. Indeed maize is barely mentioned in the first 80 pages, which are devoted to a miscellany of introductory topics concerned with farming, marketing, and levels of living in Africa necessary to set the economic scene for the newcomer to the continent. This is followed by detailed quantitative studies of maize production. The pan-African scope of this survey renders it rather indigestible fare for the agricultural reader, for the discussion lacks the depth necessary to expose the agronomic problems of the different territories. Among these are the ability to maintain soil fertility under increased production of a demanding crop like maize, and the economic consequences of extending production into climatic regions where statistical studies of rainfall reliability can predict a proportion of crop failures due to drought.

The last three chapters—on economic determinants of production, efficiency of production, and marketing—are of more interest to the agriculturalist, for they suggest future trends in the production and consumption of maize, and how they are likely to be influenced by innovations. An increasing preference for maize as a food has led to a striking rise in consumption during the last few decades, but a nascent taste for wheaten bread may raise an uncomfortable question mark over the future of all indigenous staples. It is perhaps worth remembering that under the British colonial policy of concentrating on export crops, maize was usually the only staple given serious attention by agricultural departments. With independence has come a belated awareness of the importance of subsistence crops, and the consequent improvement programs may well restore the balance in favor of millets and other indigenous staples.

To sum up: an interesting sourcebook of statistics, but heavy going and flying false colors.

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Ecological and Behavioral Studies of Social Insects

Social Insect Populations (Academic Press, New York, 1966. 143 pp., $6), by M. V. Brian, is an attempt to synthesize and review the abundant recent literature pertaining to ecological and behavioral studies of bees, ants, wasps, and, to a lesser extent, termites and the honeybee. It is the first such review published since 1937, and it covers the literature since that time. The author's intentions are to " . . . bring together a large number of disconnected observations on populations of social insects and to encourage a comparative approach in the future." The extensive literature survey accomplishes his first goal. More than 425 papers are cited in the 18-page reference list and are referred to extensively throughout the text. The comparative approach is evidenced by the arrangement of the book. Each topic is discussed in relation to each social insect group.

Emphasis is placed on those factors that are peculiar to social insects, and these are reviewed in the manner by which they may affect the population of the colony. The chapters are "Numbers and density," "Reproduction," "Brood periodicity," "Age structure," "Dynamics: Worker turnover," "Geometric growth," "Intrinsic limits," "Maturation," "Dynamics: Queen turnover," "Structural limitations," "Food supply," "Intraspecific competition," "Interspecific competition," "Intergeneric competition," "Predators and parasites," and "Population regulation." Foraging, feeding behavior, and caste determination have been omitted since they have been the subject of other, more recent reviews. A numerical approach is used in many cases,