Foreword

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This system of crop-logging was developed by Dr. Clements for ascertaining and providing the optimum irrigational and fertiliser requirements of the sugarcane crop with a view to maintaining a high rate of growth and ensuring a maximum production of cane and sugar from a unit area of land, within the framework of a given combination of varying but uncontrollable environmental conditions. In its approach to the problem of crop production, it represents a radical departure from the conventional method of assessing the fertiliser requirements of crop plants by analyses of the soil. It seeks to employ the plant itself as the indicator of its nutritional status and of its deficiencies, and, through a system of sampling appropriate tissues and analysing them, to provide the deficiencies of elements indicated therein, the aim being to maintain the plant at the most efficient possible rate of its vital functions, so that the maximum outturn of produce can be ensured. The crux of the system has been the selection of the indicator tissues and the assessment of the degree of their reliability as indicators. For providing this basis, an enormous amount of spadework has been done for a period over 30 years by Dr. Clements

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and his colleagues in selecting the tissues, evolving their index values, and correlating the variation in these with changes in environmental factors, so that a correct assessment of the nutritional level of the plant can be obtained at all stages of the plant's growth. The volume now brought out gives the background of this work, explains the approach to the problem, discusses the results of experiments which led to the formulation of the system of crop-logging in respect of each essential element, and presents the reader with an account of the manner in which the system is to be applied in practice.

Dr. Clements' system of crop-logging represents one of the major advances in the application of the principles of plant physiology in the production of crops. While, in principle, it should be adaptable to all crop plants, it is particularly applicable to sugarcane and has been extensively adopted in many of the sugarcane plantations of Hawaii, where it now forms the basis of crop management. It has aroused much interest outside Hawaii, too. While the system is bound to undergo some modification on minor points both in and outside Hawaii, as a system, it has undoubtedly come to stay, and will probably influence the trend of scientific agriculture in an increasingly wider field of crop production in the coming decade.

The volume now brought out is as well suited to the needs of students and research workers as to those of the sugar estate superintendents and agricultural chemists. Dr. Clements is by profession not merely a scientist, but also a teacher, and has had as much experience in the practical work of sugarcane growing as any plantation manager in Hawaii. His abilities in each of these professional roles are discernible in the contents of the book. . . . The scientist sees a logical exposition of the system, the statistical basis of its evolution being particularly convincing to him. The estate manager finds a ready-

made system complete with charts and indexes for his guidance and analytical methods for his immediate adoption in the laboratory. In a lucid . . . style Dr. Clements has unfolded his system to his readers, rational in its approach, firm in its basis, progressive in its development and solid in its achievement.

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