known during the seventeenth century that parts of the body were fibrous in nature, the name 'connective tissue' was actually proposed by Johan Muller in 1830, and later Kolliker suggested as an alternative term, 'sustentacular tissue'. Reichert organized the existing knowledge on this tissue in 1845, and Virchow demonstrated its importance in pathology in his famous work published in 1858. That the sole function of connective tissue in the normal animal was to act as scaffolding was the accepted view at the time of publication of Frey's work. The English translation (1874), in fact, says "Connective substance takes but little part in physiological occurrences of the mature and healthy body".

This view continued to be generally accepted until relatively recent times. However, since the time of Virchow and the recognition of a variety of cells in connective tissue, it became obvious that it played an important part in inflammatory processes, and microscopical studies of wound healing demonstrated its essential role in the formation of scar tissue; but the problem remained—what part does it play in the normal functioning of the body?

Its mechanical function is obvious; the supporting nature of the deep fascia in the preservation of form and contour and the facilitation of muscular attachment and movement are known to every student of anatomy. Modern techniques have added substantially to our knowledge of connective tissue. The complex cross-striation of collagen fibres is well known and so too are the presence of hyaluronic acid and chondroitin sulphuric acid in the ground substance. The water-binding ability of the ground substance and its role in oedema are also recognized.

The ground substance is the link between the blood vessels carrying oxygen and nutriment and the organs and tissues which require them. Its molecular organization appears to be adapted to facilitate the rapid diffusion of such substances. The adventitia of many blood vessels is, in fact, impregnated with phosphatases, suggesting that it may be acting as a broad membrane with selective control of the substances which pass through it—a suggestion which is supported by the presence of phosphatases in the endothelial cells of the capillaries. In 1924, Höjer demonstrated the dependence of the connective tissues upon adequate supplies of vitamin C; this in the following twenty-five years resulted in a series of papers emphasizing the importance of this vitamin in fibre production and the development of scar tissue in wound healing.

More recently, in 1949, Hench and his colleagues showed that the pituitary, acting through the adrenal, by the medium of adrenocorticotrophic hormone exercised control over connective tissue. Cortisone, in fact, was found to depress fibre production in inflammatory conditions. This work has stimulated further interest in a tissue which was already gathering in importance, and as the full battery of modern techniques becomes turned upon it, may be expected to yield still more of its secrets and to demonstrate still further its fundamental functions in health and disease.

In Asboe Hansen's "Connective Tissue" we have a series of chapters by experts which deal with a wide variety of aspects of the subject. They are, as the editor says, pioneers of modern connective tissue research and their contributions are worth reading from this point of view alone. The subjects covered range from morphology and chemistry of the collagen fibres and the ground substance, through the effects

of hormones, disease and ageing upon connective tissue in general, to a consideration of its relation to collagen diseases, arthritis, arteriosclerosis, ophthalmology, and cancer. There are many gaps; for example, there is no proper consideration of the elastic fibres although they are referred to in a more or less desultory fashion in some of the chapters. The effects of cortisone and of vitamin C deficiency also receive a cursory treatment. There is no doubt that everyone who has an interest in connective tissue must read this book; but it must be appreciated that it is not a comprehensive work, and the individual chapters do not deal exhaustively with the subjects they discuss. The book is, in fact, fundamentally a collection of essays on selected topics related to connective tissue. Its value, however, is greatly reduced by the unforgivable lack of an index.

G. H. BOURNE

GEOLOGICAL HISTORY OF CALIFORNIA

Earth Song

A Prologue to History. By Charles L. Camp. Pp. xi+127. (Berkeley and Los Angeles: University of California Press; London: Cambridge University Press, 1952.) 37s. 6d. net.

THE title of this book gives at the first glance little indication of its merit or, indeed, of its scope, and only those who know the author or his other works will realize the import of the song. This is, in fact, a geological history of the State of California with a general account of the life and the reconstructed appearance of some of its former inhabitants during some five hundred million years.

It may therefore be thought that it is just another American palaeontological book. In some ways it is, with all the wealth of illustration and of interest that such books present. But California has a separate history, and at least one of its geological deposits, that of Rancho la Brea with its asphalt trap, is unique. Dr. Camp gives an account of the Californian rocks and deals, period by period, with the life of the early sea, the conquest of the land, and the rise of amphibians and reptiles, leading to the ampler record of the mammals. The whole is embellished by a fine series of pencil drawings by William Gordon Huff, and these are worthy of inspection for their intrinsic interest as well as for the fact that new and authoritative reconstructions of vertebrate fossils always have a great appeal. The book also deals with the rise of man in a general way, since there is a regrettable deficiency of fossil men in this Golden State, but goes on to the description of the early Red men and the Folsom implements. There are excellent maps and charts from the pen of Owen J. Poe and a number of the charts deal with the chronology. Some of these are of considerable value, since the correlation of the delightful-sounding Californian formational and later chronological names with European counterparts or quasi-equivalents is difficult. The book contains a glossary, a very useful list of references, and an index. There are introductory passages to the chapters in a rather poetic American style; but on the whole the text is excellent and informative and the book should certainly find a place in major reference and university libraries.

W. E. SWINTON