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## Editorial

C. Leslie Mitchell

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## EDITORIAL

The internal structure of bone and the factors influencing it have presented intriguing and challenging problems for many years. Even today the exact chemical composition of bone is not known. Men such as Haller, Havers, Goodsir, Ollier, McEwen, Hunter, and countless others have shed much light on the problems of bone structure and bone physiology. In the past half century, more attention has been paid to the role of bone as a mineral reservoir and the important part that it plays in the equilibrium of calcium and phosphorus metabolism. Many factors are still not clearly understood in the interrelationship of bone metabolism to various metabolic and endocrine disturbances. A careful study of the bone structure itself in normal and abnormal states would seem to be of paramount importance in the interpretation of various anabolic and catabolic bone conditions. Dr. Frost has been interested for some years in the study of microscopic bone structure, utilizing a method personally developed of studying fresh undecalcified bone. As a result of his study of countless numbers of normal and abnormal bones using special stain techniques, he has been able to develop criteria differentiating such bone conditions as osteoporosis and osteomalacia, and has noted other peculiarities of bone not hitherto recognized, such as "feathering," "micropetrosis," and early fatigue fractures. Much of this material has already been published.

The present edition of the Bulletin is devoted to a series of additional papers on the subject by Dr. Frost. These papers include studies pertinent to the following fields:

1. The mechanism of function of the skeleton as a depot for calcium phosphorus, other electrolytes, and buffers.
2. Measurement of osteoblastic activity in human bone.
3. Measurement of osteoclastic activity in human bone.
4. Further studies on bone feathering and bone structure.
5. Changes in bone affecting its role as a structural material.

Dr. Frost's fertile and inquiring mind has been challenging many of our previous concepts of bone structure and metabolism, and although he is free to admit that many of his findings are as yet inexplicable, it is unquestionably true that many of his facts are incontrovertible and far reaching in importance. Many of the studies are yet in their infancy and each new finding opens up new avenues of research. It might well be prophesied that as a result of Dr. Frost's work on this subject, we will have to change many of our concepts of bone metabolism and physiology, and in addition the clinical application of his findings will be of immeasurable value to the patient and to the physician.

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