INTRODUCTION

Chronic fluoride intoxication, as manifested by mottled enamel (dental fluorosis) and diffuse osteosclerosis of the skeleton (skeletal fluorosis) has been observed in areas where the drinking water contained fluoride in concentrations higher than one part per million. The condition of mottled enamel, though much more widely prevalent than skeletal fluorosis may be regarded as comparatively minor disorder. The skeletal fluorosis is the major counterpart of the malady and causes untold misery. (Despite the importance of the problem and the great advances made in recent years, the biochemical studies in fluorosis remain a fertile field for further inquiry.)

A critical factor in fluoride intoxication is the concentration of this element in water. Fluoride in small amounts has been reported to be beneficial for dental health, but an increased amount produces deleterious effects. This aspect of fluoride metabolism has aroused world wide interest due to the public health scheme of water fluoridation. The ingested fluoride continues to accumulate in the calcified tissue and beyond a certain limit is considered to cause fluorosis. It is of interest to know whether bone fluoride concentration alone is responsible for the disease.

The concentration of fluoride in water which is not considered to be a physiological hazard in America may result in the development of crippling fluorosis in India.
Obviously, there appears to be some additional factors besides concentration of fluoride incriminated in the causation of greater percentage and severity of the disease in India. Largent's suggestion (1961) that a significant amount of silt may be ingested with Indian waters, thereby increasing the fluoride intake may not be correct. A rather hot climate of India and hard manual labour may be some plausible factors. But the most striking difference between America and India is the nutritional status of the people. The role of vitamin C in the reduction of fluoride toxicity has often been considered, but further studies are required in this field.

With aforesaid considerations in view, the present work was undertaken to study the concentration of some organic and inorganic constituents of blood, bone, and urine. The work was extended to experimental animals to confirm some of the changes observed in fluorotic patients.