

FLUORINE AND TEETH [III]

(Written for "The Listener" by DR. MURIEL BELL, Nutritionist to the Health Department).

IN the last article we saw that fluorine in excess causes two diseases in man — "mottled enamel," and also a disease of the bones. Though the former occurs with relatively small excess of fluorine in the drinking water, the latter usually occurs with greater amounts. Yet there are some anomalies showing that there are other factors to be taken into account; for in the Madras Presidency, the severe bone disease occurs when there are three parts of fluorine per million parts of water, whereas in one area in South Africa only the teeth are affected, even though the amount of fluorine in the water is 11 parts per million. You will remember that the critical level—at least in U.S.A., where most of these studies have been made — is one part per million; above that, there is a tendency to dental fluorosis.

However, there is another side to this question. Some 20 years ago, experiments showed that where rats were fed on diets containing additional small amounts of fluorine they developed teeth that were harder than usual. Rats have teeth that are different from ours—the teeth in a rat's lower jaw keep on growing, and as the rat keeps on chewing his hard food the tooth is worn away at the top. Now, these teeth were harder than usual, and they failed to get worn away in the normal manner. Consequently, they grew long, and since the greatest growth is on the anterior aspect, they grew in a curved fashion. I remember telling my dentistry class about this a long time ago, and saying, with less care than I have just taken in the description, that the rats "developed curly teeth." You can imagine what kinds of illustration they drew in their notebooks! The suggestion made at the time that it would repay them to study fluorine in relation to dental caries, was not put into effect, firstly, because methods for fluorine estimation were very difficult, secondly, the attention of the world of dentistry was taken up by the mottled enamel or over-dosage aspect of their work.

Meantime, the observation had been made that human teeth in areas where people suffered from a mild degree of mottled enamel were actually more resistant to dental decay. This has resulted in a great deal of investigation on the part of scientists, to see whether fluorine really plays a part in the prevention of dental caries, and if so, by what mechanism it can do so.

The correlation is illustrated by the fact that two cities in Illinois with domestic water supplies containing 1.8 parts fluoride per million showed only one-half to one-third the dental caries rate that was found in two nearby towns where the water supply contained 0.1 to 0.2 parts per million. Again, North and South Shields, on opposite sides of the Tyne, with 0.25 and 1.4 parts per million in their respective water supplies, show a dental caries incidence of two to one in 12-year-old children.

(To be continued)



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