It is probable that following the exposure, the tissue oxygen tensions are altered to a higher level than the normal. This increase in the tissue tensions may be partly responsible for the anemia.

7336 P

Comparative Chronic Toxicities of Fluorine Compounds.*

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The minimal dose capable of producing chronic intoxication in the albino rat has been determined for sodium fluoride, sodium fluosilicate, barium fluosilicate, and sodium aluminum fluoride (natural cryolite). Male rats ranging in weight from 30 to 60 gm. were placed on a basic diet consisting of corn meal 73 gm., linseed oil cake meal 10 gm., alfalfa 2 gm., casein 10 gm., codliver oil 3 gm., bone ash 1½ gm., sodium chloride ½ gm. For each compound studied 6 control rats were placed on this diet, and for each dosage level 6 rats were placed on the same diet to which a weighed amount of the fluorine compound had been added and evenly distributed by means of a mechanical mixer. Analyses showed even distribution of the toxic agent throughout the basic diet. For each compound a series of dosage levels was employed, each dose being one-half the preceding dose.

The criterion of toxic action was bleaching of the upper and lower, especially the lower, incisor teeth. Table I summarizes the data. In the case of each compound, the dosage level indicated means that bleaching was present in all of the rats on that dosage, but absent when one-half of that dose was administered.

When the fluorine content of the molecule is taken into consider-

TABLE I.

Compound	Solubility per 100 parts water	Parts of Fluorine per	
		% in diet	million parts food
Sodium Fluoride	4.000	0.0025	12
Sodium Fluosilicate	0.650	0.0025	15
Barium Fluosilicate	0.026	0.0050	13.7
Sodium Aluminum Fluoride	0.060	0.0050	24.3

* Food Research Division Contribution No. 221.

ation it is seen that despite a marked variation in water solubility the chronic toxicity of the compounds, expressed as parts of fluorine per million parts of food, is remarkably constant. For all practical purposes, it may be stated that in the compounds studied fluorine is capable of producing chronic intoxication, as indicated by bleaching of the rat incisors, in concentrations as low as 14 to 16 parts per million regardless of the solubility of the compound containing the fluorine. Depending upon the amount of food consumed by the albino rat, this means that from one-half to 1 mg. of fluorine per day per kilo of body weight is capable of producing definite signs of injury to the rat incisors.

Since 2, and possibly one, part of fluorine per million of drinking water is capable of producing mottled enamel in children, and since the average water intake is approximately one liter, it is evident that an intake of one to 2 mg. of fluorine per diem is toxic to a child. Accordingly, human subjects appear to be more susceptible to fluorine poisoning than do rats, and the data obtained on rats become all the more significant from the public health standpoint.

7337 C

Acute Toxicity of Trypan Blue, Gentian Violet and Brilliant Green.*

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Difficulties encountered in administering sufficient amounts of the usual chaulmoogra oil derivatives uniformly to effect a cure in leprous subjects have led to the attempted application of other forms of therapy. Thus, recent clinical developments[1, 2] again have aroused interest in the efficacy of certain non-chaulmoogryl drugs, synthetic dyes in particular, against leprosy. In the course of examining the possible antileprotic activity of certain such compounds

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1 Ryrie, G. A., *Trans. Roy. Soc. Trop. Med. and Hyg.*, 1933, **27**, 85.

2 Ryles, C. S., *Leprosy Review*, 1933, **4**, 90.