

seemed almost unknown. Atta of a kind can be got, and the servants managed to supply their wants.

Cigarettes are scarce except in the large places such as Sarahan and Rampur, and at one small out of the way shop kept by an Ambala family at Saldang, not far from Taranda.

I regretted not being able to get into Buddhist country beyond Chini, but another week or ten days would have been necessary to reach the Tibet border at Shipki. That must remain for another time.

Current Literature.

WÜHRER, J. Zur gesundheitlichen Beurteilung des Aluminiums, insbesondere im Aluminiums-Ess-Trink- und Kochgeschirr. [The Harmlessness of Aluminium especially with Regard to its Use for Eating, Drinking and Cooking Utensils.] *Arch. f. Hyg. u. Bakt.* 1934, v. 112, 198-216. [Refs. in footnotes.]

Aluminium combined with silicic acid is very widely distributed and forms 7 to 8 per cent of the earth's crust. It is found normally in minute quantities in plants, animals and the human body. A number of investigations by various workers extending over many years are quoted to show that the use of aluminium cooking vessels is not injurious to health. It is, however, agreed that aluminium containers are not suitable for keeping foodstuffs containing acid fruit juice. Thus 400 grammes of apple were cooked in 250 cubic centimetres of water in an aluminium vessel for three-quarters of an hour and allowed to stand in it for two days, after which 20·8 milligrammes were found in the content. On the other hand 400 cubic centimetres of potato starch paste were cooked for a quarter of an hour in a similar vessel and left to stand in it for three days when the quantity of aluminium in the content was found to be only 0·7 milligramme.

Feeding experiments on animals have shown that aluminium salts only pass through the mucous membrane of the alimentary canal to a very slight extent, and that practically all the aluminium given by the mouth is recovered in the fæces. When animals are given acid-reacting aluminium salts with their food in high concentration they lose their appetites and show considerable loss of weight, but such a high concentration of acid aluminium salts is out of the question under the conditions in which human food is prepared.

Aluminium combined with silicic acid occurs in the clay used for making earthenware vessels and no injurious effects to health have been attributed to their use.

No diminution in the vitamin content of food cooked or preserved in aluminium vessels has been found.

A. J. COLLIS.

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BERTRAND, G., AND SERBESCU, P. L'ingestion journalière de petites quantités d'aluminium favorise-t-elle le cancer? [**Does Daily Ingestion of Aluminium encourage Cancer?**] *Ann. Inst. Pasteur.* 1934, v. 53, 10-22.

The authors used rabbits in two groups. One group received tar treatment known to induce cancer but no aluminium, the second group the same treatment, but also daily doses of aluminium sulphate introduced directly into the stomach. The total dose was 20 milligrammes of aluminium per kilo weight.

Of 48 rabbits in the first group, considering only those which survived for over forty days, the percentage suffering from tar cancer was 78.3. Of 68 rabbits also receiving aluminium, and considering survivors over forty days, the percentage suffering from tar cancer was 50. There was no difference in the lesions of the two groups. Rabbits can support without harm very considerable doses of aluminium. The author considers that the harmfulness of aluminium has been very greatly exaggerated and that there is no evidence in favour of the suggestion that its continued ingestion causes cancer.

W. G. SAVAGE.

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FAIRLEY, A., LINTON, E. C., and WILD, F. E. **The Toxicity to Animals of 1 : 4 Dioxan.** *The Journal of Hygiene.* 1935, v. 34, No. 4, pp. 486-501.

1 : 4 Dioxan, a glycol derivative, is used in industry as a solvent of fats and resins. Its toxic properties were reported on by the United States Public Health Authorities in 1930, when it was concluded that the results of prolonged exposure to the vapour were cedema of the lungs and hyperæmia of the brain preceded by irritation of the eyes and nose, severe enough to alarm and warn those who were exposed to its effects.

In their present paper the workers at Porton describe further investigations, the outstanding results of which have been the severe lesions found in the kidneys and livers of the animals employed, such lesions following on inhalation, intravenous injection, oral administration or by application to the skin.

The respiratory tract was only found to be affected when high concentrations were inhaled, and human observers subjected to short exposures of nominal concentrations of as much as 1 : 500 found none of the lachrymatory or other signs of irritation previously stated to occur.

SÜPFLE, K. Zur Frage der chronischen Kohlenoxydvergiftung. [**Chronic Poisoning by Carbon Monoxide.**] *Deut. med. Woch.* 1934, v. 60, 1263-7.

For several years the author and his co-workers have carried out a number of experiments on dogs to determine the effect of the inhalation of

small quantities of CO for several hours a day for about four months. Dogs were found more suitable than rabbits, guinea-pigs or mice. They were kept in large glass chambers for six hours a day (three hours only on Saturdays and not on Sundays) and fresh air containing definite proportions of CO was introduced by a small electric fan on one side of the chamber and allowed to escape by an outlet on the other. Five hundred litres of the air mixture was introduced for each animal per hour, and great care was taken by periodical analyses to insure that the desired strength of CO was maintained in the chamber. When the dogs were not in the chambers they were free in a large garden. The inhalation of low strengths of CO, viz. 50 to 100 volumes of CO per million volumes of air (vol. mill.), caused no apparent ill-effects after fifteen weeks, and the dogs remained in perfect condition and all put on weight. With a strength of 200 vol. mill. the animals became restless and irritable, and the pitch of their bark was raised.

A dog which had not been used for previous CO experiments was given a strength of 600 vol. mill., and after about five hours lay panting and apathetic on the floor of the chamber and vomited frequently. Next day it was not put in the chamber and recovered: on the following day, when it was put in the chamber and given the same strength of CO, it was found there was not so much disturbance, and after two weeks of inhaling this strength there was no disturbance at all, so that the animal was as fresh and lively after six hours as when it was put into the chamber. This was confirmed with two other dogs and shows clearly that they became accustomed to large doses.

In all the dogs the leucocyte count during the first week showed a small but definite increase which lessened after a few weeks. However, with the strength of 600 vol. mill. the increase continued till the end of the experiment. There was an increase in the number of red blood-corpuscles and also in the quantity of hæmoglobin, even with such a low strength as 50 vol. mill., when there was an average increase of 15 per cent of hæmoglobin. It was found that the greater the strength of CO the greater the increase in the number of red blood-corpuscles. There is a similarity in this respect with the changes which occur in the blood of men who climb high mountains where there is a deficiency of O, and these changes may be regarded as compensatory.

In Dresden the illuminating gas contains an average of 15·8 per cent CO. When this was mixed with air so as to give a CO content of about 50 vol. mill. the smell of the illuminating gas could not be detected, but could be distinctly when the content of CO was 150 vol. mill. There is some danger of chronic CO poisoning in the use of gas cookers, from the unavoidable escape of gas which occurs after turning on the tap and lighting the gas.

A. J. COLLIS.

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