

in these cases; and where the containers used by our factors have been imperfectly closed, more or less loss of moisture occurs during storage in the interval between collection and analysis. Indeed many of the samples, as packed by the manufacturer, showed clearly that loss of water had occurred through imperfect sealing. Some of these, put up in tin containers, showed the tin rusted quite through, and the contents dry. This was particularly the case with sample 54148. In spite of these imperfections, a sufficient number of samples, (more than 30) were received in such good condition as to justify the conclusion that, so far as content of solid matter is concerned, the manufacturers of Arsenate of Lead endeavour to meet the requirements of the legal definition.

Water soluble arsenic varies considerably, but in no case does it reach anything like the permitted limit.

With regard to the content of Arsenate of Lead in Arsenic Acid and Oxide of Lead, which are the active ingredients of this insecticide, the following work reported by the New Jersey Experiment Station (Bulletin No. 222) is important. "Arsenate of Lead is prepared by the action of Lead Acetate or Lead Nitrate on Di-Sodium Arsenate. Using pure chemicals the product prepared from the Acetate contains theoretically 74.40 per cent of Oxide of Lead and 25.60 per cent of Arsenic Anhydride. At a conference of manufacturers and entomologists a standard agreed upon was that Lead Arsenate should contain not over 50 per cent water, and not less than 12.5 per cent. Arsenic Anhydride. Fifteen samples of the commercial article gave the following results, calculated to a dry basis:—

Arsenic Anhydride.....	17.94 to 33.30 per cent.
Lead Oxide.....	62.48 to 70.63 "

The great difference noted between theoretical composition and the composition of the manufactured article is due to the formation of basic salts whose amount and character vary with the method of manufacture, the mixtures of salts at different stages of the process determining (along with temperature and other conditions) the establishing of equilibria, which change with every change in the conditioning. It will be noted that the Canadian article, shows a greater uniformity and a nearer approximation to theoretical requirements than the samples analyzed at the New Jersey Station.

The results now placed on record indicate that this article, as offered for sale in Canada, is of very satisfactory character.

I beg to recommend publication of this report as Bulletin No. 234.

I have the honour to be, Sir,
Your obedient servant,

A. MCGILL,
Chief Analyst.