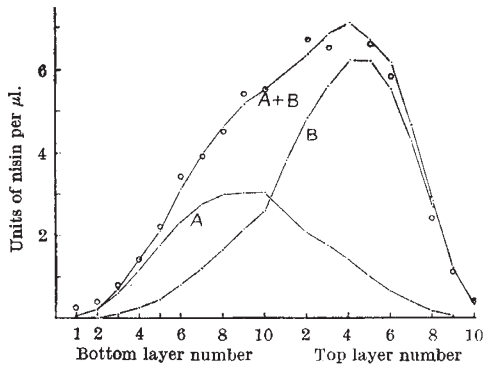

Fig. 2. Distribution of nisins in batch 138
– · – ·, Theoretical curves for two single components and a mixture of them; 30,000 units of *A* and 50,000 units of *B*; ○, experimental points

coefficients were not sufficiently constant to permit a confident analysis of the curve. The solvents were made by adding 40 ml. of glacial acetic acid and 5·44 gm. sodium chloride to 320 ml. of distilled water, adjusting the *p*H to about 3·0 with 10 *N* sodium hydroxide, and adding to this buffer solution 40 ml. of methanol and 200 ml. *n*-butanol. The partition coefficients of the nisins depended upon the *p*H of the buffer.

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Suggested Use of a Bismuth Mercaptoimidazole Compound as a Specific Colour Reagent for Iodides

The reaction of bismuth salts with certain organic thio-compounds, for example, thiourea and dimercaptothiodiazole, to form coloured complexes of the metal is a well-known analytical procedure. Other workers (cf. Naiman[1]) have reported on the detection of bismuth with a mixture of 2-methylbenzothiazole and potassium iodide, which results in the formation of a coloured complex iodide. However, the use of such a reaction for the detection of iodides does not appear to have been reported, probably on the basis of specificity. In certain work on the colorimetric detection of mercaptoimidazoles, I found[2] that the yellow metallic complex, formed by the interaction of bismuth sulphate (acid) and 1-methyl-2-mercaptoimidazole, reacted with iodide ions to form an intensely coloured complex iodide. Since the reaction has been found to be specific for iodides, the use of such a reagent for their detection is suggested.

The colour reagent is prepared by adding 50 mgm. of bismuth sulphate (acid) and 1 ml. of *N* sulphuric acid to 10 ml. of a 0·1 per cent aqueous solution of 1-methyl-2-mercaptoimidazole. After mixing, the undissolved bismuth sulphate is allowed to settle, and the yellow-coloured supernatant fluid used for the test.

The addition of one or two drops of the reagent to a small crystal of an iodide results in the formation of a red coloration, which upon standing or upon agitation forms a red micro-crystalline precipitate. The sensitivity of the reaction is in the region of 100 μgm. Free iodine reacts similarly; but the colour disappears on standing. Iodates and periodates do not react, nor do other metals and radicals. Metals which form insoluble sulphates give a white precipitate. The complex iodide formed in the reaction is practically insoluble in water and dilute mineral acids. As would be expected, oxidizing agents, for example, hydrogen peroxide, liberate iodine from it. When it is prepared in bulk, the red complex exhibits some degree of fluorescence, which is quenched upon shaking the reaction mixture with ethyl acetate, the resulting solution having a yellow colour.

The mercaptoimidazole ring is essential for colour formation. Other thio-compounds such as thiourea do not give the reaction. It would appear that isolation of the yellow bismuth mercaptoimidazole compound would give a much more sensitive reagent, but this has not been carried out here. Other mercaptoimidazoles were examined in this connexion. The 2-mercaptoimidazole, upon reaction with bismuth salts, did not give as sensitive a colour reagent for iodides. Likewise, the 4-aminomethyl-2-mercaptoimidazole reacted with bismuth to give a yellow compound, but this would not react with iodides.

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A New Method for the Degradation of Peptides

The main problem in working out the structure of peptides is to establish their amino-acid sequence. An essential part of this task consists in determining the amino-terminal and carboxyl-terminal amino-acid residues of the peptide chain (the *amino*-acid and the amino-*acid*)[1]. Many methods are dealing with this problem[2].

We wish to report a new method, which makes it possible to determine the two terminal amino-acid residues at the amino end (the *amino*-acid and the neighbouring residue) in one procedure. This method is based on former investigations of one of us (F. W.)[3], showing that, on alkali-treatment of N-carbethoxy-dipeptides, a rearrangement takes place leading to the formation of carbonyl-*bis*-amino-acids.

The following scheme pictures the new degradation procedure using a tripeptide as an example.

The peptide is converted into a carbalkoxy-compound (I, $R=CH_3$, C_2H_5 or $C_6H_5CH_2$), which on heating with two moles of dilute alkali gives rise to the urea derivative (III), the hydantoin (II) being probably formed as an intermediate. After treatment with hydrochloric acid, the amino-acids (1) and (2) are easily split off in the form of the hydantoin (IV, V), which may be separated from amino-acid (3)—and the following amino-acids in the case of higher peptides—by means of extraction with ether.

After hydrolysis of the hydantoin (IV, V) the constituent amino-acids (1) and (2) can be identified by paper chromatography. Conversion of the hydantoin (IV) to the acid chloride, reduction of the