Fig. 2. Distribution of radioactivities in organs after the injection of the tritiated DNA (400γ).

newly formed nucleic acid. The persistent radioactivity of liver was not more than 1 per cent of the total count dose given to the animal. On the other hand, in heart and lung the radioactivities found at 10 min after the injection decreased rapidly and it seemed to be due to residual blood in organs.

The results presented here shows that the externally introduced DNA into animal disappeared rapidly from the blood circulation and was excreted through the kidney. It is of interest that a very small amount of DNA was trapped in liver tissue, the biological significance of which is not yet certain.

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Photodecomposition of *N*-alkyl-*N*-nitroso-urethanes

In the course of investigations of the carcinogenic action of *N*-methyl-*N*-nitroso-urethane (NMU)¹ it was observed that dilute solutions of this compound in aqueous ethanol, when left in direct sunshine, became decolorized and deposited colourless crystals. Solutions kept in the dark remained yellowish and free from crystalline deposit. This observation was confirmed by exposing 1 per cent solutions of NMU in 10 per cent aqueous ethanol to direct sunshine, or to the light from a mercury-vapour lamp. The solutions became decolorized in the

course of several hours or days with deposition of colourless crystals. Red, green, yellow or orange filters, but not blue ones, protected the NMU solutions from this type of decomposition, indicating that the effect is due to the light near the ultra-violet range.

The collected crystals represented about 10 per cent of the decomposed NMU. Recrystallized from aqueous ethanol they formed rhombic needles, m.p. 129°–130° C, subliming about 180° C, without decomposition under atmospheric pressure. Found: C, 41.6, 41.4; H, 7.1, 6.9; N, 24.1 per cent; calculated for C₈H₁₆N₄O₄: C, 41.3; H, 7.1; N, 24.1 per cent.

A product of the same composition and properties has been obtained on reduction of NMU with zinc and acetic acid by Klobbie², who ascribed to it the structure of diethyl ester of dimethyltetrazodicarboxylic acid: CH₃—N(COOC₂H₅)—N=N—N(COOC₂H₅)—CH₃. The photodecomposition of ethanolic solutions of NMU leads evidently to its partial reduction to the foregoing tetrazone-compound and in part to the formation of strongly acidic products, which have not yet been identified.

N-Ethyl-*N*-nitroso-urethane, which proved to exert similar carcinogenic action as NMU³, undergoes analogous photodecomposition. Its 1 per cent solutions in 30 per cent aqueous ethanol become decolorized in direct sunshine or in ultra-violet light and depose fine colourless crystals. Recrystallized from aqueous ethanol, the product, presumably diethyl ester of diethyltetrazodicarboxylic acid: C₂H₅—N(COOC₂H₅)—N=N—N(COOC₂H₅)—C₂H₅, had m.p. 57°–58° C (found, C, 45.8; H, 7.6; N, 21.6 per cent; C₁₀H₂₀N₄O₄ requires: C, 46.1; H, 7.7; N, 21.5 per cent).

These observations on the ready photodecomposition of *N*-alkyl-*N*-nitroso-urethanes are reported at this stage as a warning to workers interested in the biological action of these alkylating agents.

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Oxidative Products of Hexoses in Thermally Treated Tobacco

Shmuk¹, Frankenburg², and Dixon³ have reported that the content of various acidic substances in tobacco increases during the fermentation and ageing processes. During fermentation of cigar tobaccos substantial amounts of formic acid are being formed in the leaf^{1,2}. It was observed³ that a small amount of formic acid is also formed during the natural ageing of flue-cured tobacco.

Our investigation established that similar changes take place during the exposure of flue-cured, bright tobacco, to heat. It is probable that, in flue-cured tobacco, the conversions which result in the formation of formic acid are purely chemical. The increase in the formic acid content is proportional to the temperature of the treatment. Evidence indicates that the acid is being formed as the partial oxidation and degradation product of glucose and fructose.

0-78X and GHD bright, flue-cured, unaged tobaccos sprayed with glucose uniformly labelled with carbon-14 (0.66 μc/g tobacco) and fructose uniformly labelled with carbon-14 (0.98 μc/g tobacco), and identical untreated samples were used in the investigation. The samples were subjected to a 9-day thermal treatment at 38°, 49° and 60° C as described previously⁴. The presence of formic acid in the individual samples was established by isolating the *p*-bromophenacyl ester of the acid⁵. The *p*-bromophenacyl ¹⁴C-formate isolated from the