

transition into the *isonitro* form. The final and conclusive argument in favour of the formula  $C(NO_2)_4$  and against the proposed revision is provided by the fact that tetranitromethane has a very small dipole moment<sup>2</sup>.

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<sup>1</sup> C. Krauz and J. N. Stěpánek, *Chem. Obzor.*, **11**, 153 and 177 (1936).

<sup>2</sup> J. W. Williams, *Phys. Z.*, **29**, 204 (1928); E. Bretscher, *Helv. phys. Acta*, **1**, 355 (1928); A. Weissberger and R. Sängewald, *Ber.*, **65**, 701 (1932).

### Nicotine Inhibition of Oxidation and Fermentation

IN a recent letter to NATURE<sup>1</sup>, I have reported some observations on the more powerful inhibition of various oxidations in micro-organisms by *dl*-nicotine as compared with the *l*-form. Such results are regularly obtained when *dl*-nicotine prepared according to the method of Pictet and Rotschy is used; this preparation is relatively more efficient than the

natural form. But optically pure *d*-nicotine later prepared by us lacked these properties. It was therefore concluded that some active principle always present in the racemic preparation is responsible for the observed effect. This principle has been isolated and identified as hydronicotine. Further, when we hydrogenized nicotine in two different ways and tested these preparations, we actually observed much stronger inhibition of oxidation in micro-organisms, as compared with nicotine, but no specific effect on fermentation processes. It is therefore concluded that hydronicotine and not the *d*-form is responsible for the biological effects described in my previous communication. Investigations along this line are in progress.

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<sup>1</sup> NATURE, **138**, 245 (1936).

### Points from Foregoing Letters

To explain the mechanism of certain thermal reactions in gaseous organic compounds, Prof. M. W. Travers assumes a series of transformations: molecules  $\rightarrow$  activated state  $\rightarrow$  complex  $\rightarrow$  unstable intermediates  $\rightarrow$  paired products, and states that the rate of reaction usually measured is determined by the transformation complex  $\rightarrow$  unstable intermediates. He discusses the thermal decomposition of ethane and of ethane-ethylene-hydrogen equilibrium mixtures, and refers to the thermal decomposition of acetaldehyde, methyl nitrite and methylamine.

From the interchangeability of lactic dehydrogenase from heart muscle with alcohol dehydrogenase from yeast, in reactions involving reduction of pyruvic to lactic acid and of acetaldehyde to alcohol *in the presence of co-enzyme*, E. Adler, Prof. H. v. Euler and H. Hellström conclude that co-enzyme is the active co-enzyme for both those specific oxidation-reduction agents.

From an examination of the cast of the Taungus ape in the British Museum (Natural History) and of the photographs of the skull and diagrams of the teeth of the Sterckfontein ape recently described by Dr. R. Broom, Dr. E. Schwarz concludes that the animals to which they belonged were not in the direct ancestral line of man but were more nearly related to the gorilla.

Preliminary results of an investigation into the nature of the protein by Dr. Geo. Pincus in the enamel of teeth indicate that it contains no sulphur, though it has hitherto been believed to be a keratin. Its X-ray picture also differs from that of some keratins, and it appears to contain tyrosin.

Graphs showing temperature gradients in the north basin of Windermere during calm and in windy weather, in spring and summer, are submitted by P. Ulyyott and P. Holmes. Unlike the conditions described by other investigators for lakes in the temperate zone, the authors find no *permanent* region of sharp temperature change (thermocline) separating an upper warm layer from a lower cool one; they find the thermocline only during windy weather, and then it may occur at any depth down to 15 metres.

Following an inquiry into the split-drill method of testing cereal varieties applied to data obtained by Wiebe on the yields of wheat, Barbacki and Fisher concluded that "the arrangements randomizing either pairs or sandwiches of half-drill strips give smaller errors than the systematic arrangement" advocated by "Student". Commenting upon this, "Student" considers the criticism unwarranted and states that although Barbacki and Fisher's arrangement is a fair example of half-drill experiment, their method of calculating the error was one which he had expressly rejected in 1923.

A group of leading workers in experimental biology discusses the teaching of genetics in the universities, and advocates greater co-ordination of genetics and cytology on the botanical and zoological sides than at present exists.

Prof. F. G. Gregory and O. N. Purvis report that they have successfully 'vernalized' winter rye by keeping the ears of the rye at a low temperature ( $1^{\circ}$ - $1.5^{\circ}$  C.) for twenty-four days during the ripening of the parent plants.

The sparking potential of mercury vapour is found by Dr. F. Llewellyn Jones and W. R. Galloway to be almost directly proportional to the 'spark parameter' (pressure  $\times$  distance), over a wide range of vapour densities. The authors give the minimum sparking potential at different cathode surfaces (nickel and steel, clean and mercury coated) and discuss the process of formation of ions.

A simple apparatus for the demonstration of phosphorescence is described by H. Warren. It consists of a rotating cylinder coated with the phosphorescent substance and exposed on one side to exciting radiation.

As a correction to some of their previous findings, Prof. J. F. Spencer and Dr. V. C. G. Trew state that they have redetermined the magnetic susceptibilities of mixtures of acetone-chloroform, acetone-trichloroethylene, and chloroform ether and find that the maximum deviations from the mixture law is about 4 per cent.