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Chemistry. — “*On the abnormal reduction of an aromatic nitro-compound with tin and hydrochloric acid and an interesting case of dimorphism*”. By Dr. OTTO DE VRIES. (Communicated by Prof. A. P. N. FRANCHIMONT).

(Communicated in the meeting of September 25, 1909).

In the synthesis of isocresole, one of the methyl esters of homopyrocatechol, 3-amino-4-methoxytoluene had to be prepared by reduction of the corresponding nitro-compound. It appeared that this reduction proceeds very neatly and quantitatively when carried out with iron and acetic acid; if, however, tin and hydrochloric acid is used, a mixture of amino-compounds is formed from which a second, chlorinated, substance could be isolated in addition to the normal product of the reaction.

The formation of amino-compounds chlorinated in the nucleus, in the reduction of aromatic nitro-compounds with tin and hydrochloric acid, has been observed several times, and it was, therefore, interesting to determine which place the chlorine atom had occupied in this case.

This could be ascertained by substituting the amino-group by chlorine. The dichloro-4-methoxytoluene formed appeared to be identical with 3-6-dichloro-4-methoxytoluene, which had been prepared synthetically by substituting in LIMPACH'S 3-amino-4-methoxy-6-nitrotoluene first the amino-group in 3 by chlorine, then the nitro-group in 6 by NH_2 and subsequently also by chlorine. From this it appears that, as might be expected from analogous cases, the chlorine atom had occupied the para-position in regard to the amino-group.

The 3-6-dichloro-4-methoxytoluene just mentioned exhibited a peculiar case of dimorphism. In the various preparations, partly described, it was always obtained in the form of needles melting at 29° , which always behaved as a perfectly stable substance. At the close of the investigations, however, another form occurred, namely, flat crystals melting at 44° and from that moment, the needles melting at 29° were no longer stable; they fell to powder and then exhibited the melting point 44° . The labile form (29°) may be easily regenerated by cooling a fused mass, or by recrystallisation from dilute alcohol. After the appearance of the stable form (44°) it was, at first, impossible to isolate the needles so obtained, for as soon as they were exposed to the air of the laboratory, conversion set in. Even the precautionary measures taken by LIEBERMANN and BILLMANN in their investigations of the cinnamic acids proved inadequate. Only by heating the substance for some length of time above 44°

in a sealed tube, disinfecting this completely by immersing it in alcohol and carrying on the further manipulations in another laboratory, the needles melting at 29° could be isolated. Afterwards, when the form (44°) had not been used for some weeks, the infection seemed to have practically vanished, and, with the usual precautions, the needles melting at 29° were stable in the air.

The conversion of the two forms into each other is readily accomplished; the fused mass yields, on cooling, the form melting at 29° which by inoculation or in an infected region passes spontaneously into the stable form 44° with generation of heat.

From this it is quite evident that we are dealing with a case of dimorphism and more in particular with a case of monotropism where the one form is always labile towards the other.

This research will be communicated in detail in the "Recueil des travaux chimiques".

Botany. — "*Contribution to the knowledge of watersecretion in plants.*" By Dr. W. BURCK.

(Communicated in the meeting of September 25, 1909.)

In a previous paper "*On the biological significance of the secretion of nectar in the flower*"¹⁾ I pointed out the correspondence between the secretion of nectar in the flowering period and of water or mucilaginous fluid in the closed flower-bud. On continuing the investigation there arose a doubt in my mind as to the truth of prevailing views on water-secretion at the surface of the plant.

This induced me to make some observations, the results of which will be communicated here, which give a different view of what is to be understood by water-secretion.

I propose to show later that these modified views on water-secretion are not without significance for our conception of floral and extrafloral nectar-secretion.

The phenomenon that in many herbaceous plants and shrubs drops of water are secreted during the night and the early morning hours at the tips and margins of the leaves (guttation) is ascribed to the power of the roots for forcing up considerable quantities of water under favourable conditions; when the air cools down and approaches the dew-point this water is forced out in the form of

¹⁾ These Proceedings, Nov. 28, 1908.