LETTERS TO THE EDITORS

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Nitrogenous Substances Synthesized by Moulds

DURING investigations on nitrogen-containing materials synthesized by moulds, we have isolated, in high yield, from the mycelium of *Penicillium puberulum* Bain., a hitherto undescribed organic substance. This substance, which exists in white and yellow forms, is photosensitive, analyses as $C_{17}H_{12}N_2O_2$, and melts with decomposition at 220°. Two enolic hydroxyl groups appear to be present, since reaction with diazomethane gives a dimethyl derivative, m.p. 181° (decomp.), which contains no N-methyl groups. This material crystallizes in two interconvertible forms, either as yellow needles or as bronze-brown plates, from acetone. Acetylation of the original substance with acetic anhydride and pyridine yields a diacetyl derivative, m.p. 226° (decomp.). On heating, the original substance yields phenol, and oxidation gives *p*-hydroxy-benzoic acid. Oxidation of the dimethyl derivative with permanganate yields hydrogen cyanide, anisic acid and other unidentified products, and heating with sodium methoxide in methyl alcoholic solution gives ammonia, anisic acid and other products.

Both the original substance and its acetyl and methyl derivatives give blue-violet fluorescent solutions and possess characteristic absorption bands. The original substance shows bands at 243 mμ and 374 mμ with log $\varepsilon_{max.}$ 4·08 and 4·60 respectively in ethyl alcohol. The dimethyl derivative possesses very similar absorption spectra with bands at 240 mμ and 371 mμ, with log $\varepsilon_{max.}$ at 4·12 and 4·54 respectively in the same solvent. The acetyl derivative has absorption bands at 232 mμ and 334 mμ, with log $\varepsilon_{max.}$ 3·79 and 3·84 respectively. In alcoholic alkaline solution the spectrum of the dimethyl derivative is unchanged, but the original substance now possesses bands at 436 mμ, 398 mμ and 252 mμ with log $\varepsilon_{max.}$ 4·59, 3·98 and 4·09 respectively.

The original substance has antibiotic properties, and does not appear in the mycelium until incubation has proceeded for five weeks. This aspect is receiving further attention, and other moulds are being examined for the presence of complex nitrogenous substances.

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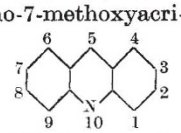
M. E. FOSS. J. K. N. JONES.
The University, Bristol. Dec. 5.

Optical Activity of Excreted Mepacrine

THE antimalarial drug mepacrine—2-chloro-5 (δ-diethylamino-α-methylbutyl)amino-7-methoxyacridine, acridine being numbered



—has been resolved by Cholintsev and Osetrova[1], who obtained $[\alpha]_D = \pm 195°$ for the free base and $[\alpha]_D = \pm 357°$ for the dihydrochloride.

In co-operation with the Army Malaria Research Unit in Oxford, we have recovered mepacrine from human urine and find that the excreted drug is apparently entirely the lævo isomer. Thus we obtain, for the free base in methyl alcohol, $[\alpha]_D = -150°$ and $-207°$ (mean $[\alpha]_D = -179°$), the specimens having been separated chromatographically directly from urine on alumina. For the dihydrochloride, extracted from alkaline urine with ligroin, followed by chromatographic separation and elution with hydrochloric acid, values of $[\alpha]_D = -364°$ and $-372°$ (mean $[\alpha]_D = -368°$) were obtained.

We take this opportunity to correct the naming of the degradation product of mepacrine previously reported[2] as sometimes occurring in human urines; the substance should be described as 2-chloro-5-amino-7-hydroxyacridine.

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W. E. CHAMBERS.
Dyson Perrins Laboratory,
Oxford. Dec. 23.

[1] *J. Gen. Chem. U.S.S.R.*, 1928 (1940).
[2] *Nature*, **154**, 461 (1944).

Hydrolysis of Thioesters

THE alkaline hydrolysis of triphenylmethyl thiobenzoate or α-benzoylbenzhydryl thiobenzoate[1] in alcoholic sodium hydroxide gave the corresponding thiol and benzoic acid,

$$Ph.COSR + NaOH \rightarrow Ph.COONa + R.SH.$$

But the acid hydrolysis of triphenylmethyl thiobenzoate (1·2 gm. in 200 c.c. alcohol and 30 c.c. conc. hydrochloric acid and boiled for 15 minutes) gave triphenylmethyl carbinol and thiobenzoic acid (separated and identified by oxidation to the disulphide):

$$Ph.CO.S.CPh_3 + H_2O \xrightarrow[15\ min.]{HCl} Ph.COSH + Ph_3COH.$$

The same procedure with α-benzoylbenzhydryl thiobenzoate but with a prolonged heating for two hours gave benzoic acid and the thiol:

$$Ph.CO.S.CPh_2.COPh + H_2O \xrightarrow[2\ hr.]{HCl} Ph.COOH + Ph.CO.CPh_2.SH.$$

The mechanism suggested by Davies and Evans[2], if applied here, should give benzoic acid and the thiol in both cases. This result also shows that in acid hydrolysis of esters the OH of water does not necessarily appear in the acid molecule[3]; its position seems to depend on the anionic and cationic natures of the two radicals of the ester.

Further work is being continued by Iskander and Fateen.

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[1] Schönberg and Iskander, *J. Chem. Soc.*, 92 (1942).
[2] *J. Chem. Soc.*, 444 (1940).
[3] Cf. *Annual Report Chem. Soc.*, 229 (1940).

Structure of Colchicine

IN view of the remarkable physiological properties of colchicine its chemical nature is of some interest. Until recently, the structure (I) proposed by Windaus[1] has been generally accepted, although the stability of colchicine did not suggest a 9-amino-9 : 10-dihydrophenanthrene system, and although the salicylaldehyde enol structure of ring *C* appeared fantastic. Cohen, Cook and Roe[2] have now provided evidence that ring *B* must be 7-membered, but the exact