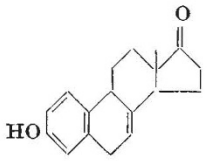
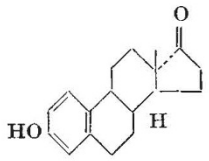


VI



VII

It is, however, very probable that (+)-œstrone has the 'normal' *trans C/D* ring union as shown in VII.

I have studied the molecular rotations of the doisynolic and marrianolic acids and of their bis-dehydroderivatives[4,5,17] in the hope of obtaining some evidence as to their configurations. The results give no indication in favour of any of the possibilities discussed by Shoppee[2] or by Heer and Miescher[4,5], and show the need for restraint in applying the method of molecular rotation differences, valuable though it is in dealing with certain groups of closely related substances. However, the evidence for a *trans C/D* ring union in (+)-œstrone and (+)-equilenin given in Shoppee's letter[3] and the present communication strongly supports the scheme outlined by Heer and Miescher[5] (at p. 553).

I am indebted to Dr. C. W. Shoppee for sending me a copy of his letter[3] before publication.

W. KLYNE

Biochemistry Department,
University of Edinburgh.
Oct. 24.
Present address:
Postgraduate Medical School,
London, W.12.

[1] Barton, D. H. R., *J. Chem. Soc.*, 813 (1945); 512, 1116 (1946).
[2] Shoppee, C. W., *Nature*, **160**, 64 (1947). Full references to previous work are given here.
[3] Shoppee, C. W., [*Nature*, **161**, 207 (1948)].
[4] Heer, J., and Miescher, K., *Helv. Chim. Acta*, **29**, 1895 (1946).
[5] Heer, J., and Miescher, K., *Helv. Chim. Acta*, **30**, 550 (1947).
[6] Butenandt, A., Wolff, A., and Karlson, P., *Ber.*, **74**, 1308 (1941). Butenandt, A., Friedrich, W., and Poschmann, L., *Ber.*, **75**, 1931 (1942). Butenandt, A., and Poschmann, L., *Ber.*, **77**, 392 (1944).
[7] Butenandt, A., and Poschmann, L., *Ber.*, **77**, 394 (1944).
[8] Ruzicka, L., Goldberg, W. M., Meyer, J., Brüngger, H., and Eichenberger, E., *Helv. Chim. Acta*, **17**, 1395 (1934).
[9] Girard, A., Sandulesco, G., Fridenson, A., and Rutgers, J. J., *C.R. Acad. Sci. Paris*, **194**, 909 (1932).
[10] Marrian, G. F., and Haslewood, G. A. D., *Biochem. J.*, **26**, 25 (1932).
[11] Plattner, Pl. A., Ruzicka, L., Heusser, H., Pataki, J., and Meier, Kd., *Helv. Chim. Acta*, **29**, 942, 949 (1946); **30**, 1342 (1947).
[12] von Euw, J., and Reichstein, T., *Helv. Chim. Acta*, **27**, 1851 (1944).
[13] Meyer, K., *Helv. Chim. Acta*, **29**, 718 (1946).
[14] Bachmann, W. E., Cole, W., and Wilds, A. L., *J. Amer. Chem. Soc.*, **62**, 824 (1940).
[15] Dirscherl, W., and Hanusch, F., *Z. physiol. Chem.*, **236**, 131 (1935)
[16] Hirschmann, H., and Wintersteiner, O., *J. Biol. Chem.*, **126**, 737 (1938).
[17] Miescher, K., Billeter, K., Heer, J., and Rometsch, C., *Helv. Chim. Acta*, **28**, 156, 991 (1945); **29**, 1231 (1946); **30**, 786 (1947).

p-Aminosalicylic Acid in the Treatment of Tuberculosis

THE preliminary communication of Lehmann[1] on the treatment of human tuberculosis with *p*-aminosalicylic acid led us to undertake a detailed study of this acid. *p*-Aminosalicylic acid[2] is obtained by the reduction of *p*-nitrosalicylic acid, which itself can be prepared by a variety of methods[3]. These methods are uniformly laborious and we have consequently investigated alternative methods for its preparation. We find that direct carboxylation of *m*-aminophenol, using modified Kolbe conditions, gives *p*-aminosalicylic acid and not *p*-hydroxyanthranilic acid[4].

Clinical experience with the acid, which will be described in detail elsewhere, has amply confirmed and extended Lehmann's findings and has shown that the acid, which is well tolerated by man, is markedly effective in the treatment of pulmonary tuberculosis and of tubercular empyæma. A series of functional derivatives of the acid has been prepared, some of which are extremely active *in vitro* against the $H_{37}RV$ strain of *M. tuberculosis*.

D. D. MARTIN
F. S. SPRING
Royal Technical College,
Glasgow.
T. G. DEMPSEY
Grove Park L.C.C. Hospital,
London, S.E.12.
C. L. GOODACRE
D. E. SEYMOUR
Herts Pharmaceuticals Limited,
Welwyn Garden City.
Nov. 27.

[1] *Lancet*, *N.Y.*, **250**, 15 (1946).
[2] Seidel and Bittner, *Monatsh.*, **23**, 423 (1902). Kondo and Nakajima, *J. Pharm. Soc. Japan*, **485**, 355 (1922).
[3] See, for example, Borsche, *Ann.*, **390**, 4 (1912). Ullmann and Wagner, *Ann.*, **355**, 360 (1907).
[4] "Beilstein's Hdb.", **14**, 592.

A Modified Technique in Filter-Paper Chromatography

VARIOUS adaptations of filter-paper to chromatography have been published[1-4]; the following technique has advantages of simplicity of apparatus, speed, reproducibility, and particular suitability for micro-analysis. (Sensitivity approximately 2 micrograms solute.)

Two parallel cuts, about 2 mm. apart, are made from the same edge up to the centre of an 11-cm. circular filter-paper, and the 'tail' so formed, after bending at the joint perpendicular to the plane of the paper, and cutting down to approximately 1½ cm., is immersed in the solution under analysis, contained in a capsule inside a Petri dish, which supports the filter-paper. A glass plate prevents evaporation.

By capillarity, the solution rises up the 'tail' and spreads circularly outwards. (Alternatively, the solution may be pipetted on.) The paper is then removed, and the 'tail' immersed in developing liquid, rate of development being controlled by tail-width and height of paper above liquid surface. Coloured solutions suitably developed give sharp separation of coloured rings.

In the case of colourless chromatograms, after development, a test sector is cut out and pressed between filter-papers impregnated with reagents giving coloured products with constituents of the chromatogram. Preparation of derivatives on the main chromatogram, which may be undesirable, is thus avoided.

Another method is based on the variation in rate of charring of the paper, caused by adsorbed substances: bands may frequently be detected by holding a test sector above a heated bunsen gauze.

After marking their positions on the main chromatogram and drying, the various bands may be cut out