of the two lines indicate that if the effect is genuine it corresponds to a *defect* of specific heat.

A. R. MILLER

Royal Society Mond Laboratory,
Cambridge. Dec. 15.

[1] Sydoriak, S. G., Grilly, E. R., and Hammel, E. F., *Phys. Rev.*, **75**, 303 (1949); I acknowledge my indebtedness for receiving a copy of this paper in advance of publication.
[2] For example, see Keesom, W. H., *Leiden Comm. Supp.*, 71, *d* (1929). Bleaney, B., and Simon, F., *Trans. Farad. Soc.*, **35**, 1205 (1939).
[3] Keesom, W. H., "Helium", 188 and Fig. 4.01 (Elsevier, 1940).
[4] London, F., Report of the Physical Society Conference at Cambridge, 1946, 2. 1 (1947).
[5] Compare Dingle, R. B., *Proc. Camb. Phil. Soc.* (in the press).

Crystal Structure of Strontium Laurate

STRONTIUM soaps of even-*n* fatty acids from caproic to stearic were examined by X-rays; they exhibit several crystallographic forms. Form *A* is obtained by precipitation from an aqueous solution of a sodium soap; the long spacings follow a law, $d = 5{\cdot}879 + 2{\cdot}475\,N$, where N is the number of carbon atoms in the corresponding fatty acid. Form *B* follows a law, $d = 3{\cdot}95 + 2{\cdot}447\,N$; it can generally be obtained by heating *A*. The forms show a certain amount of variability of their powder patterns, the causes of which are not yet known. The increment of their long spacings indicates that in both forms the hydrocarbon-chain axes are perpendicular or nearly perpendicular to the ionic sheet planes; they differ in the structure of the ionic sheet or arrangement of the CH_3 end-groups rather than in their angle of tilt. Strontium caproate and one sample of myristate gave patterns indicating the existence of further forms.

Single crystals of the form *A* of strontium laurate were grown from alcoholic solution. They are long thin plates; a twinned crystal was also found. Rotation photographs, zero and higher layer Weissenberg photographs were taken about the *a* and *c* axes using nickel-filtered copper $K\alpha$ radiation. The crystals are monoclinic and the cell dimensions are: $a = 7{\cdot}803$ kX., $b = 70{\cdot}86$ kX., $c = 4{\cdot}75$ kX., $\beta = 102°\ 36'$; density (meas.) 1·27 gm./c.c., (calc.) 1·25 gm./c.c. (assuming four molecules $Sr(C_{12}H_{23}O_2)_2$ per unit cell).

There are many absent reflexions, including $(0k0)$ absent when k is odd and $(h0l)$ absent when $h + l$ is odd. The space group is thus probably $C^5_{2h} - P2_1/n$. Further absences can be explained by assuming that for each atom at x, y, z, there is another atom at $\pm x \pm \frac{1}{2}, y + \frac{1}{2}, z$. This limits the position of the strontium atom to certain special positions. The chains are oriented along the *b*-axis, which roughly corresponds to the length of four fatty-acid chains.

The intensities of the reflexions were estimated by eye. The y co-ordinates of the atoms were approximately determined by a modified Booth method of steepest descents. The calculations were made on our mechanical structure-factor calculating machine. Probable signs of the $(0kl)$ reflexions were then obtained from the position of the strontium atom, and a Fourier projection on the *bc* face was prepared by trial and error. The average distance between two alternate carbon atoms in the undistorted part of the chain is 2·605 kX. This compares well with the distance 2·593 kX. found by us in potassium caprate.

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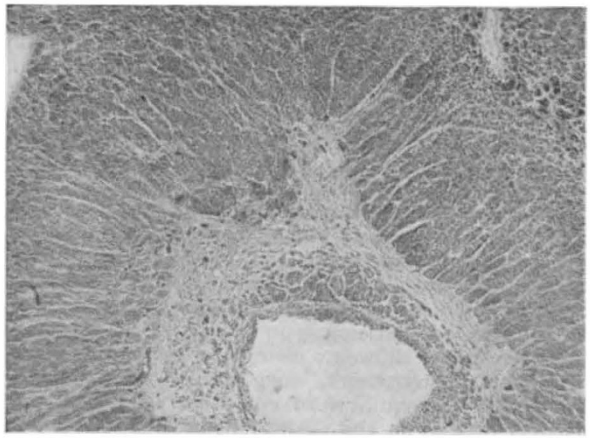
Histochemical Demonstration of Ketosteroids in the Adrenal Cortex

VARIOUS attempts have been made to develop a histochemical method for demonstrating the presence of ketosteroids within the cells of the adrenal cortex[1-7]. These have depended on the formation of coloured hydrazones of the ketosteroids. The low staining intensity of the hydrazones and the minute quantities of the ketosteroids present in the cells have rendered it difficult to locate with accuracy the chromogenic material except in relatively thick sections. Coloured compounds of much greater intensity can be produced if the aryl-hydrazones of the ketosteroids are coupled with diazonium salts. Any degree of solubility can be conferred on the final coupled compound by selecting the most suitable diazonium salt. This permits of the staining of blocks of fixed tissues, the use of paraffin embedding, counterstaining of the sections and clearing and mounting by the usual techniques.

An example of the use of this method is as follows. Formalin-fixed tissue, thoroughly washed in running water, is sectioned on the freezing microtome. The sections (5 μ) are allowed to remain overnight in a saturated aqueous solution of 2-hydroxy-3-naphthoic acid hydrazide[8] and washed in $N/100$ hydrochloric acid and then in distilled water to remove excess reagent, immersed in a solution of 0·4 per cent sodium hydroxide and transferred to a dilute solution of the diazonium salt. This may be prepared from a stabilized diazonium salt, or the following method may be used: 1 m. equiv. of the primary aromatic amine is dissolved in 2·5 ml. N hydrochloric acid (2·5 m. equiv.), and 70 mgm. sodium nitrite (1 m. equiv.) dissolved in 1 ml. distilled water is added to bring about diazotization. Excess nitrous acid would lead to rupture of the hydrazone linkage[9] and is disposed of by the use of sulphamic acid. Approximately 0·5 ml. of the diazonium salt solution added to 250 ml. of distilled water provides a suitable concentration for coupling. If the diazonium salt solution is too strong, staining tends to be patchy. The sections may then be counterstained, cleared and mounted in the usual way. The intensity of the reaction is improved if, before coupling, the sections are put into distilled water to which tincture of iodine is added until a faint straw colour is obtained. After five minutes, 1 per cent sodium thiosulphate solution is added, drop by drop, until the solution is cleared. The distribution of the coloured material in otherwise



Section of human adrenal gland, stained with 2-hydroxy-3-naphthoic acid hydrazide coupled to tetrazotized benzidene. (× 40)