injection of the drug indicate that the liver is not the main site of histamine liberation in these circumstances.

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[1] Alam, M., Anrep, G. V., Barsoum, G. S., Talaat, M., and Wieninger, E., *J. Physiol.*, **95**, 148 (1939).
[2] Schild, H. O., and Gregory, R. A., Proc. XVII Int. Physiol. Congr., 288 (1947).
[3] Feldberg, W., and Kellaway, C. H., *J. Physiol.*, **90**, 259 (1937).
[4] Kellaway, C. H., *Edin. Med. J.*, **54**, 333 (1947).
[5] Jacques, L. B., and Waters, E. T., *J. Physiol.*, **99**, 454 (1941).
[6] MacIntosh, F. C., and Paton, W. D. M., *J. Physiol.*, **109**, 140 (1949).

Quantitative Determination of Dehydro*iso*androsterone in Pure Solutions and in Urine Extracts

2 ml. of pure concentrated sulphuric acid are added drop by drop to 0·1 ml. of a solution of dehydro*iso*androsterone in ethyl alcohol or of an extract containing 5–50 γ of that substance in a test tube. The mixture is heated to 60° C. for 25 min. and then cooled in ice water. The chilling is discontinued, and 5 ml. ethyl ether (water- and peroxide-free) are added slowly while the mixture is thoroughly stirred with a glass rod.

As a result of the above procedure, dehydro*iso*androsterone gives a blue colour which, when measured in a Pulfrich photometer, has maximal absorption at 570 mμ. With an extract or an eluate, the maximal colour intensity is first obtained after an additional 2 min. heating to 100° C. The extinction values at 570 mμ for pure solutions are proportional to the concentration of dehydro*iso*androsterone up to 60–70 γ. In cases where 0·1 ml. of extract (20 ml. extract corresponds to the amount of urine excreted in 24 hr.) gives, by the method described above, a blue-violet reaction colour (E 530/E 570 < 0·95), one can say with certainty that the patient in question is suffering from some hormonal disorder which is evidenced by an increased excretion of 3β-hydroxy-17-ketosteroids.

In order to obtain a more exact determination of the amount of dehydro*iso*androsterone in urine extracts, it is necessary to carry out first a chromatographic fractionation of, for example, 2 ml. of the extract, and to work out a curve for the correction of the extinction values obtained. Such a curve has been drawn by determining known quantities of dehydro*iso*androsterone which have been added to different extracts and eluates in varying amounts (3–50 γ). Of the different quantities used (unknown to the analyst) 85–110 per cent has been found.

Determinations on many urine extracts have given values from 147 mgm. per 24 hr. (virilizing ovarian tumour with metastases) to 0·2 mgm. (normal cases) of dehydro*iso*androsterone. In a four-year-old girl with pubertas præcox, we found 7·4 mgm. dehydro-*iso*androsterone, which corresponded to 55·7 per cent of the total excretion of 17-ketosteroids. In several cases of hirsutism with hypertension and in some cases of Cushing's syndrome, we have demonstrated amounts of dehydro*iso*androsterone corresponding to 14–30 per cent of the total neutral 17-ketosteroid excretion. In two cases of adrenocortical adenoma (♀), we have found a total of approximately 20 mgm. neutral 17-ketosteroids; 22–28 per cent thereof gave the dehydro*iso*androsterone reaction. In one case of adrenocortical carcinoma (♀), 41 mgm. of 17-ketosteroids were found and 54·4 per cent was determined as dehydro-*iso*androsterone.

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Rotational Slip—a New Deformation Process in Crystals

During the past three years I have collected evidence (now being published, submitted July 1949) that a new kind of slip is common in crystals. It is proposed to call it 'rotational slip', and it can be defined as the slipping of one part of a crystal on a neighbouring part, so that the two atomic sheets which slide over one another are densely populated planes, as in translational slip, but rotationally displaced about an axis normal to their plane (with or without simultaneous translational displacement) to one of a series of definable new positions where metastable equilibrium can occur. There is then only a two-dimensionally periodic partial fitting together of the two crystal parts. Neither the occurrence nor the nature of such slip has been clearly demonstrated hitherto.

It is now shown that for rectangular plane lattices (including centred-rectangular, that is, rhombus and hexagonal) an azimuthal displacement δ corresponds to a high order of density of coincident points in the contact plane, if $\tan \delta/2 = v_1 b/u_1 a$, or $u_2 a/v_2 b$, where u_1 and v_1 or u_2 and v_2 are relatively small integers. In the first case, the $[u_1 v_1]$ and $[u_1 \bar{v}_1]$ lattice rows then coincide along the direction bisecting the two a-directions, and in the second case $[u_2 v_2]$ and $[\bar{u}_2 v_2]$ coincide along the bisector of the two b directions. If both conditions are fulfilled simultaneously, $u_1 u_2 / v_1 v_2 = b^2/a^2$. If also v_1 and u_2 are unity, the lattice of coincidence points is then similar to the plane lattice of either of the rotated sheets but enlarged in the ratio cosec $\delta/2$ and rotated by 90° relative to the directions bisecting the a- and the b-directions; otherwise it has these axes further enlarged in the ratios v_1 and u_2 respectively. The main predicted angles δ were clearly recognized in a ball-bearing model simulating atomic packing, when one layer was rotated over another, and the 'moiré' pattern of two superposed perforated zinc sheets illustrated well the variation in size of the coincidence pattern with δ.

Exactly the same set of azimuths δ corresponds to the optimum fitting of two crystals (of the same species) which are rotationally displaced about an axis c normal to the common plane (a,b), though in contact not on this plane, superposed, but on a plane $(v_1 u_1 0)$ or $(v_1 \bar{u}_1 0)$ (or alternatively $(v_2 u_2 0)$ or $(v_2 \bar{u}_2 0)$), that is, laterally adjacent crystals. Simultaneous lateral and superposed contact of two such crystals can also therefore occur. Examples of this lateral fitting are well shown in 'polycrystal' bubble-raft photographs published by Dyson[1], with the corresponding optical diffraction patterns.

From electron-diffraction photographs from cadmium iodide, graphite, copper, silver, etc., many recorded about 1936, and from others obtained in this laboratory during 1933–49 [2], and also elsewhere[3], many cases are illustrated of spot patterns from a wide variety of crystals, showing close agreement with the above δ-values between successive members