acid, and the inorganic phosphate was precipitated from the extracts and filtered off for estimation of its contained phosphorus-32.

In both lithium- and sodium-treated embryos, at blastula and gastrula stages, only about 40 per cent of the phosphorus-32 was still present as inorganic phosphate at the end of the three-hour incubation period. In the control blastulae the proportion of inorganic phosphate was about the same, but in the control gastrulae rather more of the phosphorus-32 was bound organically.

The phosphorus-32 remaining in the embryos after two extractions with trichloroacetic acid was measured. This fraction probably consisted mainly of radio-phosphorus incorporated into nucleoprotein, since phospholipids and phosphoproteins are not built up rapidly in early amphibian development². In control blastulae and gastrulae, 14.2 and 31.7 per cent respectively of the total phosphorus-32 taken up remained in the residue, but the values for those treated with sodium chloride were 2.5 and 4.2 per cent and for those treated with lithium chloride 1.3 and 2.6 per cent respectively.

These results suggest some deficiency in the nucleoprotein synthesis or in metabolite transport in the embryos treated with lithium chloride compared with those treated with sodium chloride. This conclusion is consistent with work recently published showing interference of lithium with the phosphate metabolism in both *Amphibia*³ and sea-urchins⁴.

Further details of this work will be published elsewhere.

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Uroporphyrin from Turacin: a Simplified Method

TURACIN, the uroporphyrin copper complex from the flight feathers of *Musophagidae*, contains uroporphyrin I according to Fischer and Hilger¹; but Rimington^{2,3} found coproporphyrin III on decarboxylation. Watson and Berg⁴, however, could not confirm Rimington's findings.

As the technique of preparation of uroporphyrin from turacin is complicated^{2,3}, the following simplified procedure may be of interest. The red parts of the feathers are treated with a measured amount of concentrated sulphuric acid sufficient to wet them thoroughly. An hour later sufficient absolute methanol to produce a mixture containing 5 per cent v/v sulphuric acid is added cautiously. After thorough mixing and standing overnight, the mixture is neutralized with saturated aqueous sodium acetate, and chloroform and water are added to extract the ester. The chloroform solution is washed. The phase separations are remarkably clear and rapid.

Then follow chromatographic separation and purification as described by Nicholas and Rimington³, whose findings were confirmed with the exception that no non-porphyrin material occurred. The uroporphyrin (turaco A) ester melted at 260° and after recrystallization at 265°. Lutidine chromatography⁵

showed an 8-carboxyl porphyrin and decarboxylation⁶ gave coproporphyrin crystallizing in fine needles radiating from a centre which softened at 120° and melted at 140°. The uroporphyrin ester crystallized much more slowly and less completely from chloroform-methanol than uroporphyrin I ester. The red parts of the turaco feathers contained about 5 per cent porphyrin and are thus the richest known natural source of porphyrin; and, by this simplified method, also the most easy to handle.

Part of the turaco uro ester was sent to Rimington in London, who carried out decarboxylation of 370 µgm. (3 hr. with 1 per cent hydrochloric acid at 180–183°), transferred the coproporphyrin to ether, evaporated and esterified and found a yield of 141.8 µgm. (51 per cent of theory). The ester crystallized from chloroform in rosettes of prisms with melting point 146–48°, solidifying on cooling and remelting at 172–74°. Lutidine chromatography showed a very strong spot of coproporphyrin III, no coproporphyrin I and a fairly strong spot of triacboxyl porphyrin. Lutidine chromatography of the uroporphyrin itself showed 8-carboxyl porphyrin (two spots as usual) and a very faint spot of 7-carboxyporphyrin. Dioxan chromatography of the ester showed uroporphyrin III with some tailing.

Thus, it seems established that the uroporphyrin of turacin is really uroporphyrin III.

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Zone Electrophoresis of Mammalian Sera in Starch Gels

SMITHIES¹ has described the electrophoresis of human serum proteins in starch gels. This procedure gives a better resolution of serum proteins than that obtained on paper or in agar gels. The resolution of the serum proteins of cow, pig, horse and dog has been investigated by this method, and it has been found that the pattern obtained is a characteristic of the species.

The procedure and apparatus employed are similar to those of Smithies. The electrophoresis is carried out in boric buffer at 7 V./cm. for 16 hr., the voltage drop being measured between two points 10 cm. apart in the gel. The rear edge of the albumin zone moves 7–9 cm. in this time. If the concentrations of the buffer and bridge solution and the potential are kept constant, the magnitude of the movement is largely governed by the concentration of starch in the gel and the degree of hydrolysis of the starch; these two factors are varied to allow for batch differences in the starch.