Thus, as in many animal tissues, the acid DNase seems also linked to the process of growth in pea roots. Of course, many syntheses are going on at a high rate in the meristem, for example RNA, protein and DNA syntheses[11], but the metabolism with which the DNase is more probably connected is the DNA metabolism. It is known, however, from ref. 12 that DNA synthesis goes on in the older cells above the meristem and that there is up to four times more DNA per cell during elongation, without mitosis. This fact has been confirmed on *Vicia faba* roots[13]; it was observed by autoradiography that ^{3}H-thymidine was incorporated into the nuclei up to 7 mm. behind the meristem, with decreasing intensity.

Therefore, the decreased activity of acid DNase in the upper part may be a mere reflexion of a lower rate of DNA synthesis, or may indicate that DNase is also connected with the mitotic process and markedly decreases because the mitotic activity shows a dramatic drop above the meristematic part of the root.

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Enterohepatic Circulation of Bilirubin

The enterohepatic circulation of bile pigment has been the subject of protracted debate. Recirculation of bilirubin, and its bacterial reduction products, the urobilinoids, has been postulated and denied[1]. The availability of bilirubin labelled with carbon-14 in this Laboratory[2] has obviated many of the problems previously inherent in the study of bilirubin metabolism. The following is a preliminary report of investigations of the enterohepatic circulation of bilirubin.

Radioactive crystalline (unconjugated) bilirubin was prepared by methods described previously[2]. Radioactive conjugated bilirubin (in bile) was prepared by infusing crystalline labelled bilirubin intravenously into rats with an external bile fistula. Essentially all the injected label was excreted in bile as conjugated labelled bilirubin during the ensuing 3-hr. period.

For work on intestinal absorption, crystalline labelled bilirubin was dissolved in aqueous taurocholate, human albumin solution, or normal rat bile prior to administration, while conjugated labelled bilirubin was administered in bile. The labelled bile pigments were infused through a transoral duodenal feeding tube into each of 9 rats with an external bile fistula. The rats were allowed to recover from anæsthesia, and maintained, thereafter, in restraining cages permitting complete separation and recovery of excreta. After infusing the labelled pigments into the duodenum, collections of bile, urine, and fæces were made at regular intervals for determination of total radioactivity. Bilirubin was crystallized[2] from selected pooled samples of bile and the specific activity determined. At the termination of each experiment animals were autopsied to ascertain the absence of operative complications and the persistence of the bile duct catheter *in situ*.

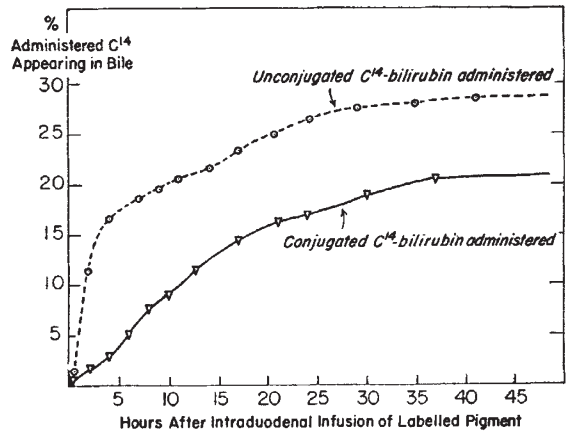

Fig. 1. Appearance of radioactivity in bile following intraduodenal infusion of either conjugated bilirubin (▽——▽) or unconjugated bilirubin (⊙ – – – ⊙) labelled with carbon-14

Table 1. Radioactivity recovered after Intraduodenal Administration of Conjugated and Unconjugated Bilirubin labelled with Carbon-14

	Infused radioactivity recovered in excreta (per cent)	
	Conjugated ^{14}C-bilirubin	Unconjugated ^{14}C-bilirubin
Bile	21	28
Urine	2	trace
Fæces	40	32
Total	63	60

Data based on radioactivity recovered in two rats during the 72-hr. period following intraduodenal administration of either 0·13 μc. conjugated labelled bilirubin or 0·25 μc. unconjugated bilirubin in a final volume of 2 ml. at similar bilirubin concentrations.

Representative results are given in Fig. 1 and Table 1. In all instances, significant intestinal absorption and biliary excretion of the carbon-14 label were evident. After the intraduodenal administration of both unconjugated labelled bilirubin and conjugated labelled bilirubin, much of the demonstrable absorbed radioactivity appeared in the bile as conjugated labelled bilirubin. The initial phase of absorption was more rapid for unconjugated bilirubin than for conjugated bilirubin and the total absorption of the former appeared somewhat greater. Little radioactivity was recovered in urine.

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