

2. When introduced by way of the hepatic artery or portal vein the dosage may be so adjusted as to produce vigorous constriction within the liver without having any effect on the general blood pressure.

3. Finally, very small doses by way of the femoral or portal veins may produce dilation of the liver with or without a fall in the general blood pressure.

II. Pituitrin, one-fifth cc. or more (Parke-Davis, obstetrical) produces about the same decrease in liver volume whether introduced by way of the femoral or portal veins or hepatic artery.

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### Urobilinogen Concentration in Urine Specimens Containing Bilirubin.

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Gmelin's test for bile pigments was carried out on all specimens of urine submitted to the laboratory during a period of a little more than 2 years. Approximately 50,000 specimens were examined during this time, and a positive test was obtained in 476 specimens from 308 subjects. Most of the patients treated in this institution are suffering from chronic diseases and are of fairly advanced age. Since daily specimens were obtained from diabetic patients and urine from those on the surgical service was examined routinely 3 times a week these 2 groups have an undue prominence in the series. The approximate concentration of urobilinogen in the specimens giving a positive Gmelin test was determined by the method of Wallace and Diamond.<sup>1</sup> Normal urines show a positive test by this method when diluted 1 to 10 or 1 to 20 with water, but give no color when dilution is greater. In our series 142 specimens, or less than a third of the total, fell into this range. There were 54 specimens from 18 patients which gave a negative Wallace and Diamond reaction, and it seemed probable that these could be adequately explained by failure of bile to enter the intestine, as the diagnoses indicated the certainty or the possibility of the presence of lesions obstructing the bile ducts in most cases. Only 24 specimens from 22 patients showed a positive reaction which became negative when the urine

<sup>1</sup> Wallace and Diamond, *Arch. Int. Med.*, 1925, xxxv, 698.

was diluted with 9 parts of water. Over half of the analyses (256 specimens) gave results which were high, and such figures were obtained at some time or other upon 198 patients, or approximately two-thirds of the entire series. In general the diagnoses on these patients offered no adequate explanation of the findings. Too fine an interpretation should not be placed upon such results based upon clinical pathological tests, but certain tentative conclusions can nevertheless be drawn from the figures. At the beginning of our study is seemed probable to us that most increases in the bilirubin content of such urines as we were examining arose from a decrease in the efficiency of the excretory power of the liver. Such a change might be either primary or secondary to the general circulatory disturbances which are not infrequently seen among older patients who are suffering from chronic diseases. The results suggest that bile is entering the intestinal canal in fairly large amounts, so this explanation is perhaps incorrect. If, however, the liver ordinarily removes both pigments from the blood stream,<sup>2</sup> increases in both should be expected not infrequently. This idea seems to explain satisfactorily the simultaneous excretion in the urine of increased amounts of both urobilin and bilirubin.

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<sup>2</sup> Wilbur and Addis, *Arch. Int. Med.*, 1914, xiii, 235.