

GROUP IV (CIRRHOSIS).—The urea N is slightly de- [330]
creased. The amino N is invariably increased to more than
0.5 gm. according to v. Frey. This he considers of tremen-
dous importance, since only rarely is so high an amino acid
N output found in other diseases of the liver. The ammonia
N is also constantly increased.

There is found in severe liver involvement, therefore, in-
crease in the amino acid, peptid and NH_3N at the expense
of urea N.*

UROBILINOGEN.

As early as 1892 the presence of urobilinogen in the urine
was considered as indicative of disease of the liver by v.
Jaksch.²⁹ The test consists simply in the qualitative deter-
mination of the presence of urobilinogen in the urine. Since
Neubauer's³⁰ demonstration that Ehrlich's³¹ p. dimethyl-
amino-benzaldehyde test given by the urine in certain dis-
eases is really a test for urobilinogen, this test is utilized.
A few crystals of p. dimethyl-amino-benzaldehyd are added
to a few cubic centimeters of urine, the mixture is shaken,
and made definitely acid with HCl or acetic acid, whereupon
an intense red color develops if urobilinogen be present.

Urobilinogen does not occur in health, the cycle in relation
to bile pigments being as follows: Bile pigments are con-
verted in the intestine into urobilinogen, which is absorbed,
carried to the liver, and re-converted into ordinary bile pig-
ments. The diseased liver cells having lost, to a greater or
less extent, the capacity for reconversion, the urobilinogen,
after absorption, continues to circulate and eventually finds
its way into the urine. Urobilinogenuria, therefore, indi-
cates functional incapacity of liver cells.

Münzer³² states that urobilinogen appears in the urine in
atrophic cirrhosis; Münzer and Bloch,³³ and also Fischer,³⁴
find that it appears in acute catarrhal jaundice prior to the
appearance of the icterus, and in acute diseases associated
with liver involvement (typhoid and pneumonia with acute

* Excellent reviews of this whole subject are given by v. Frey¹⁹
and by Falk and Saxl.³⁴