

2. 20 c.c. leucine + NH_4Cl < 180 c.c.; 50 c.c. final filtrate, titration 2.7, theory 2.77.
3. Mixture of urea, $(\text{NH}_4)_2\text{SO}_4$, uric acid, alanin, glycocoll, glutamic acid (all tested substances), containing 0.144 gm. amino-acid nitrogen, yielded by new method 0.132, 0.148, 0.143 gm.

B. Pure Substances added to urines.

1. 200 c.c. normal urine; 100 c.c. final filtrate, titration 9.6 c.c. *N*/10 NaOH.
200 c.c. normal urine + 20 c.c. *N*/20 leucin; 100 c.c. filtrate, titration 11.8 NaOH
Difference 2.2 c.c., theory 2.5 c.c.
2. 200 c.c. urine of puerperient woman; 100 c.c. filtrate, titration 9.7 *N*/10 NaOH.
200 c.c. urine of puerperient woman + 20 c.c. *N*/10 alanin, titration 14.7 *N*/10 NaOH.
Difference 5.0 c.c. *N*/10 NaOH, theory 5.0 c.c.

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Picrolonates of the monoamino acids.¹

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Picrolonic acid, used by Steudel to precipitate the hexone bases, and later shown by Mayeda to form salts with the aromatic amino acids tryptophane and phenylalanine, also forms crystalline salts of normal composition with the other monoamino acids obtained on hydrolysis of proteins. The salts are made by dissolving molecular proportions of amino acid and picrolonic acid in a minimum amount of boiling water. The picrolonates crystallize from the cooling solutions, usually while they are still warm. In cold water many of them are very insoluble. In alcohol they are all more soluble than in water. Following is a list of the amino acids of

¹ After this title had been sent to the secretary an article by Abderhalden and Weil appeared describing picrolonates of glycocoll; d-alanine, and dl-leucine (*Ztschr. physiol. Chem.*, 78, 150). They were formed in alcoholic solution, which yielded products of abnormal composition in the cases of glycocoll and alanine.

which picrolonates were prepared, after each being given the solubility of the picrolonate in grams per 100 c.c. of water at 20°–23°, and the melting point. The picrolonates are arranged in order of solubility. *Dl-phenyl-alanine*, 0.12, 212° (decomp.); *Tyrosine*, 0.29, blackens at 260°; *l-phenyl-alanine*, 0.34, 208°; *dl-leucine*, 0.53, indefinite above 140°; *l-leucine*, 0.55, indefinite at about 150°; *d-isoleucine*, 0.58, 170°; *dl-valine*, 0.81, indefinite above 150°; *dl-serine*, 0.98, decomposed 265°; *glycocoll*, 0.99, 214°; *dl-alanine*, 1.01, 216°; *d-valine*, 1.20, 180°; *d-alanine*, 1.61, 214°; *dl-aspartic acid*, 1.69, blackens at 130°; *dl-glutaminic acid*, 2.37, 194°.

Nearly all the picrolonates decompose more or less on melting, and the melting points are not sharp. L-Phenyl-alanine picrolonate is much more soluble in alcohol than the racemic salt, and can be separated from most of the racemic substance by solution in alcohol. The optically active compound has a sp. rotation in absolute alcohol of + 30°. The specific rotation of d-isoleucine picrolonate in alcohol is + 33.3°. Phenyl-alanine can be separated from glutaminic or aspartic acid by dissolving the mixture with enough picrolonic acid to combine with the phenyl-alanine only. The picrolonate of the latter crystallizes pure. It is probable that other amino acids can be separated by similar use of picrolonic acid. The pyrrolidine acids, proline and oxyproline, do not readily yield picrolonates when treated as described above.

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An improved apparatus for gasometric determination of amino nitrogen.

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The apparatus differs from that reported at the meeting of this society in December, 1909, in that: (1) The desamidizing bottle with stopper holding the 10 c.c. burette and tubes is replaced by a bulb into which the tubes and burette are sealed; (2) the Hempel absorption pipette is modified so that it can be suspended from hooks; (3) both absorption pipette and desamidizing bulb are so arranged that they can be shaken by a motor. The apparatus,