

Contributed and Selected

A DISTURBING FACTOR IN OPIUM ASSAYS.

CHAS. H. LA WALL.

The present official method for assaying opium with its safeguard of the lime water correction has been looked upon as giving results as nearly correct as our present scientific knowledge could expect, considering the variable character of the substance assayed, but I have recently been confronted by a condition which is alarming in its possibilities.

A sample of high assaying opium (about 21% morphine) which had been largely diluted with milk sugar, was submitted for assay, together with some of the original material, the directions being to assay by the U. S. P. method and report results.

Of course, the use of 10 Gm. of an opium assaying over 20 per cent. of morphine would yield an amount of morphine far in excess of that contemplated by the assay process given in the U. S. P. and trouble was looked for in this direction. While some difficulty was encountered in getting a pure morphine on account of the large bulk of the precipitate, closely agreeing duplicates were obtained, which were probably very close to the truth. In the assay of the sample, however, in which 5 Gm. of milk sugar had been added to 5 Gm. of the opium (10 Gm. being directed to be taken) most astonishing results were obtained, which upon examination the conditions could be easily explained.

The duplicates showed results varying from 1.240 Gm. to 1.765 Gm. of crude morphine (corresponding to nearly 40% of morphine in the original opium in the higher figure), and the lime water correction factor being practically unweighable, the results would naturally have been reported as pure morphine had it not been for their extreme abnormality. Upon titrating the residues with tenth normal acid, correct results were obtained and further investigation showed that milk sugar, when present in such an abnormal proportion as that above given, separates with the morphine in the assay process and being soluble in lime water is liable to be reported as morphine unless the additional safeguard of titrating the residue is employed.

The results are somewhat irregular in that the milk sugar does not always precipitate (owing probably to varying temperature conditions, as lower temperatures give higher apparent results), nor does it always precipitate to the same extent in duplicate assays, but since it does sometimes interfere, as is shown by the foregoing results, it would seem necessary to take the possibility into account in the next official assay process.

ANALYTICAL LABORATORY OF C. H. LA WALL, PHILADELPHIA.