

here and, year after year, sing the same old tune. It is just as full of discord this year as it was last year and the year before that. To the question "How much potash?" working upon identically the same sample, New Hampshire says 12.13 per cent., New Jersey 12.76, New York and Maine 12.94, and North Carolina 13.08 per cent. and 13.22 per cent. Now here is a difference of considerably more than one per cent. in the same material, and that too, scattered along the whole gamut of rising estimates. Can these be considered "fairly accurate results?"

If we turn to our German friends, we find more unanimity but by no means complete agreement. Their answers to the same questions range from 13.10 per cent. to 13.44 per cent. Now who in this "confusion" of chemical tongues, has given us the right answer? Even on the face of it, is there not enough to suggest that there may be something wrong with the chemistry, as well as the chemists?

Notwithstanding the views and tabulated determinations above given, your reporter has no changes in existing methods to suggest. He only desires that the investigations he has outlined shall be submitted to careful re-examination, especially the "occlusion" of potash salts in precipitates, and that the relation of this as yet obscure phenomenon, to potash determination (a source of the error to which, so far as he is aware, the writer has now for the first time directed attention), should be made the subject of thorough investigation and review. If his conclusions are confirmed, changes are sure to come. Until then it seems the wiser course to adhere to existing methods.

[CONTRIBUTIONS FROM THE ANALYTICAL LABORATORIES OF THE SCHOOL OF MINES, COLUMBIA COLLEGE.—No. 4.]

GANTTER'S PROCESS FOR DETERMINING THE IODINE FIGURE OF FATS.

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F. Gantter, (*Ztschr. anal. Chem.*, **32**, 178 and 181) proposes a new method of determining the iodine figure of fats and oils in which he uses carbon tetrachloride as a solvent for both the fat and iodine and uses no mercuric chloride as in the Hübl pro-

cess. He states that the figures obtained when mercuric chloride is used depend upon the amount used. The results which he obtained and from which he draws these conclusions are as follows:

| Substance. | Amount iodine used. | Amount HgCl ₂ used. | Iodine figure. |
|----------------------------|---------------------|--------------------------------|----------------|
| 0.100 gram linseed-oil.... | 0.100 gram. | 0.050 gram. | 83.5 |
| " " " " | 0.600 " | 0.000 " | 85.3 |
| " " " " | 0.150 " | 0.250 " | 141.0 |
| " " " " | 0.150 " | 0.500 " | 148.0 |
| " " " " | 0.600 " | 0.250 " | 156.4 |
| " " " " | 0.600 " | 0.500 " | 173.6 |
| " " " " | 0.600 " | 1.000 " | 188.4 |
| " " lard | 0.500 " | 0.000 " | 25.0 |
| " " " | 0.500 " | 0.250 " | 61.0 |
| " " " | 0.500 " | 0.500 " | 63.0 |
| " " " | 0.500 " | 1.000 " | 85.1 |

His results prove that the amount of mercuric chloride present influences the results and that a very large excess of Hübl's reagent would give a higher figure for linseed-oil than a moderate excess, but they certainly do not justify the conclusion which he draws from them that the use of mercuric chloride is unnecessary, and it is on this assumption that the accuracy of his process depends.

To ascertain whether fats would absorb from a solution of iodine alone in any suitable solvent as much iodine as would be necessary to convert them into saturated bodies, portions of a sample of oleic acid were treated with measured quantities of solutions of iodine in alcohol, carbon disulphide, and carbon tetrachloride. All these solvents dissolve both the oleic acid and iodine.

The results were as follows:

| Solvent. | Amount of oleic acid. | Excess of iodine in cc. $\frac{N}{10}$ thio-sulphate. | Iodine figure. |
|-----------------------|-----------------------|---|----------------|
| Alcohol..... | 0.9947 gram. | 43.4 | 30.4 |
| " | 1.1445 grams. | 43.5 | 26.1 |
| Carbon disulphide ... | 0.9791 gram. | 58.9 | 52.7 |
| " " ... | 1.0044 grams. | 59.0 | 51.3 |
| Carbon tetrachloride. | 0.1171 gram. | 27.9 | 27.6 |
| " " | 0.1186 gram. | 28.2 | 24.1 |

The iodine figure of the sample as determined by the Hübl process was 80.0.

These results show that iodine alone will not saturate fats and if it is used for this purpose its action must be assisted by mercuric chloride. Gantter's process, therefore, does not determine the iodine figure but an arbitrary figure which is not comparable with the results obtained by any other process.

THE CHEMICAL AND PHYSICAL EXAMINATION OF PORTLAND CEMENT.

(Concluded from Page 372.)

BY THOMAS B. STILLMAN, PH.D.

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