

NOTE ON HENRY C. FREY'S METHOD OF ESTIMATING PETROLEUM IN TURPENTINE.

By HERBERT S. SHREWSBURY, F.I.C.

(Read at the Meeting, March 1, 1911.)

IN Frey's method (*J. Amer. Chem. Soc.*, 1908, **30**, 420), 10 c.c. of the sample are mixed with 30 c.c. of aniline, the mixture shaken vigorously for five minutes, and allowed to stand. The petroleum is then measured.

With a preliminary experiment the method appeared so satisfactory that I made the following test experiment with prepared mixtures of turpentine and petroleum :

| Per Cent. by Volume of Kerosene. | Per Cent. of Kerosene measured after— | | |
|--|---------------------------------------|-----------------|--------------|
| | Five Minutes. | Thirty Minutes. | Forty Hours. |
| 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 |
| 30 | 30 | 30 | 37 |
| 50 | 44 | 54 | 55 |
| 70 | 68 | 70 | 72 |
| 90 | 80 | 80 | 84 |
| 95 | 85 | 84 | 84 |
| 99 | 84 | 84 | 84 |

Apparently the method is only applicable when the percentage of kerosene is between 30 and 70, and the result then obtained is probably due to a happy compensation of errors.

Thirty minutes seems to be the maximum time necessary to leave the mixture to settle. The kerosene experimented with was the ordinary pitch oil used in Trinidad for illuminating purposes, with a Zeiss butyro-refractometer figure of 16 at 25° C., and an initial boiling-point of 160° C. The temperature at which the experiments were carried out was 28° C.

DISCUSSION.

Mr. L. M. NASH said that some time previously he tried this method—using, however, ordinary aniline, not anhydrous—but had obtained erratic results. Later on he had repeated his experiments, using anhydrous aniline as recommended by Frey, but had found that this made no difference. He noticed that Mr. Shrewsbury's experiments were made with kerosene, but kerosene was never used for adulterating turpentine. Petroleum spirit was what was used.

Mr. J. H. Coste wrote :

“ A method based on the behaviour, when mixed, of three liquids of which only one is a chemical entity, the other two being mixtures of variable composition, does not appear hopeful.

“ I think Mr. Shrewsbury has done useful work in showing the unsoundness of this method. It is much to be regretted that such enticingly simple processes based on very slender grounds, either *a priori* or empirical, should be brought forward only to mislead. I find that the method is inapplicable to ordinary turpentine substitutes.”

