(4) Nuclei appear to be the principal exciting cause of crystal formation when other conditions are favorable. These nuclei are soap crystals or particles and possibly other substances. Experiments are now in progress in regard to this point.

(5) Not too great viscosity or this may overcome the crystallizing forces. Rapid desiccation may entirely prevent crystal formation.

(6) Shock produced by blows or pressure act favorably on crystal formation in many cases.

In conclusion, crystal formation, while it does not reduce in any degree the detergent power of a soap, renders it more or less unsalable to a public which buys according to the appearance of goods. The experimental work detailed above was undertaken in order to examine systematically the causes of crystal formation in transparent soap and to provide a remedy.

CHEMICAL LABORATORIES OF SWIFT & CO.,
CHICAGO.

NOTES.

Rapid Determination of Petroleum Naphtha in Turpentine.—To determine the amount of petroleum naphtha in a suspected sample of turpentine, 10 cc. are carefully measured into a 50 cc. carbon tube, which is graduated into tenths of a cubic centimeter.

Thirty cubic centimeters of aniline are now added and the mixture violently shaken for five minutes, and left to settle until the liquid has become perfectly clear, when, if there is any petroleum naphtha present in the turpentine, it will be thrown out of solution and float in a layer on top, and the percentage can be readily ascertained. I get excellent results from this method, but care must be exercised that the aniline does not contain any water. HENRY C. FREY.

2521 REYNOLDS ST.,
BRIDESBURG, PHILADELPHIA, PA.

Determination of Sodium and Potassium in Silicates.—We have found the following method of determining sodium and potassium in clay and silicates which can be decomposed by sulphuric and hydrofluoric acids, rapid and satisfactory.

One gram of clay is decomposed by means of sulphuric and hydrofluoric acids, and the excess of sulphuric acid expelled in a hot air bath. The residue is then dissolved in water and powdered barium hydroxide added to the boiling liquid to alkaline reaction. The solution is decanted and filtered and the residue boiled again with water and thoroughly washed. Carbon dioxide is passed into the filtrate in excess, the solution evaporated to 50 cc., 25 cc. of alcohol (96 per cent.) added, and the solution filtered and the residue washed with 50 per cent. alcohol. A measured excess of *N*/10 hydrochloric acid is then added to the filtrate and the solution boiled to expel the carbon dioxide, litmus being used as an indicator and more acid being added if necessary, to give a permanent acid reaction after boiling. The titration is then finished with *N*/10 sodium hydroxide. The solution is evaporated to dryness in platinum, dried at 110° and finally at very faint redness and the residue of potassium and sodium chlorides weighed. The amount of each metal can be calculated on the following principle:

Let a = No. of cc. of *N*/10 HCl used less the No. of cc. of *N*/10 NaOH.
b = a × A 0.00585 = weight of NaCl equivalent to sum of NaCl + KCl.
c = weight of NaCl + KCl formed less the weight of NaCl corresponding to the weight of NaOH used.
x = weight of Na.
y = weight of K.

$$\text{Then } b = \frac{58.5}{23.05}x + \frac{58.5}{39.15}y.$$

$$c = \frac{58.5}{23.05}x + \frac{74.6}{39.15}y.$$

$$y = 2.432\,(c-b).$$

$$x = \frac{23.05}{58.5}\left(c - \frac{74.6}{39.15}y\right) = 0.3937\,c - 0.75\,y.$$

Three samples of clay gave by the above method:

	By Lawrence Smith's method.		By the above method.	
	K.	Na.	K.	Na.
A........	0.76	0.14	0.77	0.14
B........	0.33	0.53	0.33	0.45
C........	0.18	1.39	0 14	1 42

J. E. THOMSEN.

LABORATORY OF JOSEPH DIXON CRUCIBLE CO.,
JERSEY CITY, N. J.

The Determination of Total Nitrogen Including Nitrates in the Presence of Chlorides.—Asboth, Jodlbauer and Scovell have modified the Kjeldahl nitrogen method with the view of making possible the determination of nitric nitrogen simultaneously with organic nitrogen. In the presence of common salt, however, these modifications, and also the method of the Official Agricultural Chemists (which is essentially Scovell's) are inapplicable; for the sulphuric acid used in the method acts upon chlorides and nitrates producing hydrochloric and nitric acids and before the latter is reduced to ammonia by the reducing agents present, the following reaction occurs:

$$HNO_3 + 3HCl \rightarrow 2H_2O + Cl_2 + NOCl.$$