

Briefly stated the results of the investigation are :

1. The quantity of nitrogenous material is inversely proportioned to the quantity of sugar present.

2. To a certain limit the increase of sugar is accompanied by a decided increase in the quantity of fat.

At ten per cent. sugar the most favorable conditions for fat production appear to be overstepped.

3. Matter soluble in alcohol increases constantly with the increasing per cent. of sugar.

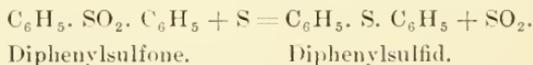
A NEW METHOD FOR THE PREPARATION OF PHENYL-COMPOUNDS WITH SULPHUR, SELENIUM AND TELLURIUM. BY ROBERT E. LYONS.

The very great similarity between the compounds of sulphur, selenium and tellurium was observed by Frederick Woehler and other chemists of his time.

To trace this similarity further I was led to attempt preparing certain bodies to fill up the gaps between the known compounds of the organic radicals, methyl, ethyl and phenyl, with sulphur, selenium and tellurium.

C. Chabrie* gives the results of several years' study of aromatic compounds of selenium prepared after the Friedel-Crafts' reaction, but this method in my hands did not lead to satisfactory results.

On the other hand, the method proposed by Drs. F. Krafft and W. Vorster,† *i. e.*, the replacement of the SO₂ group in the sulfone by sulphur or selenium :



was easily carried out and afforded 60-70 per cent. of the theoretical amount.

As excellent as this method is for the preparation of sulphur and selenium compounds, it was nevertheless found, that the sulfohenzid, even after prolonged heating with powdered tellurium, remained unchanged.

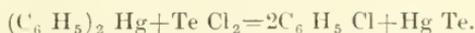
Tellurium dichloride, Te Cl₂, was next prepared in the hope that through its action upon mercury diphenyl, Hg (C₆H₅)₂, the diphenyltelluride would be obtained according to the following reaction :



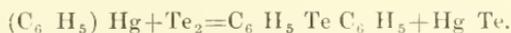
*Ann. de Chemie et de Physique, **VI** serie t. **XX**, p. 202-286 (1890); also, Compt. rend. **109**, 182 et 568 (1889).

† Berichte der Deutschen Chem. Gesell. 26, 2813.

However, the reaction did not take place according to the above equation, but the tellurium and the mercury combined in the final reaction, with the formation of monochlorbenzene.



From this change I was led to expect the formation of the desired body, Diphenyltellurid, by the double decomposition of Diphenyl-mercury, by means of metallic tellurium alone—and the expectation was happily confirmed by experiment.



If tellurium and mercury-diphenyl in the proportions by weight indicated by the equation be heated together in a sealed tube filled with CO_2 gas, 4-5 hours, at a temperature of 200° Cent., there results a grayish black crystalline mass, saturated with a thick, heavy oil.

This oil, by extraction with ether and purification by rectification, was found to be Diphenyltellurid, 78 per cent. of the theoretical quantity.

Thus I succeeded in preparing the, till then unknown, diphenyltellurid.

The method is a general one.

Dreher and Otto* studied the action of sulphur upon mercury-diphenyl and were of the opinion that diphenyl-sulphide was formed only at a *red heat*.

However, the corresponding sulphides and tellurides may be obtained with the greatest ease by heating mercury-diphenyl with sulphur or selenium to 200° C. under the conditions given.

CAMPHORIC ACID. BY W. A. NOYES.

In a paper presented to the Academy last year two acids, which were called *cis-campholytic acid* and *cis-transcampholytic acid* were described. The *cis-campholytic acid* has now been reduced and a dihydro acid obtained from which the α -brom derivative has been prepared. This, on treatment with alcoholic potash yields the *cis-campholytic acid* again, thus proving conclusively that the double union in the latter is in the β position.

Xylylic acid, $C_6 H_3$ $\left\{ \begin{array}{l} CH_3 \quad 1. \\ CH_3 \quad 3. \\ CO_2 H \quad 4. \end{array} \right.$ has been reduced by means of amyl alcohol

and sodium and the α -brom derivative of the hexahydro acid obtained, was prepared. The latter, on treatment with alcoholic potash, does not give either of the

* Berichte der Deutschen Chems., Gesell., 2. 543.