a Rotap[4] for a 10-minute period. The weight percentage of the screened fractions were 37.3% on 5-mesh, 21.4% on 8-mesh, 16.3% on 16-mesh, 5.5% on 20-mesh, 9.2% on 40-mesh, and 10.3% through 40-mesh. This gives a total of 80.3% of the material coarser than 20-mesh.

Since operating conditions were the same in all the desolventization runs, the physical characteristics of the meal fed to the dryer was the principal cause of obtaining the different product although the different degree of compression obtained with the heavier material in the plug-type screw feeder may have contributed.

## Summary

1. The continuous desolventization of fine cottonseed meal has been successfully accomplished in a modified pilot-plant meal dryer of the screw-conveyor type under controlled conditions. The work should also have application in commercial solvent-extraction where a general fines problem (1) exists.

2. Free gossypol content has been reduced as much as 69% during the desolventization operation without appreciably affecting the protein solubility of the meal.

3. A meal in granular form can be obtained, provided the feed material has certain physical characteristics. This granulation, or essentially pelleting, effect should have application particularly in nutritional work where the feeding of meal in pellet form of various sizes is required. It is believed that a number of conditions contributed to the granulation. The most important was probably the high density of the material which was fed in a compressed or extruded form. It is likely that the fineness of the material, the moisture content, and the solvent content contributed to this consolidation during desolventization, but the quantitative effect of these variables has not been determined. It is thought that any material that can be made to hold together during the initial part of the desolventization will tend to produce a granulated product at the end of the drying period.

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# A Note on A Sensitive Detector for Trichloroethylene

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THERE are on the market leak detectors that are very sensitive to trichloroethylene. The instrument is designed to detect leaks in distillation equipment. One method is to spray a halogenated hydrocarbon around the suspected spot, withdraw vapors from the outlet of the still, and pass these through the detector. The vapors pass by a red hot surface, near another (cool) surface, several hundred volts D.C. being impressed across the gap. The hot surface ionizes the halogenated hydrocarbon, and the voltage drives the ions across. The current is amplified and shows on a meter.

The work reported here was done with the leak detector described in Electronics, March, 1948, page 100. A similar device is described in Chemical Processing, April, 1951, page 64.

A series of known samples containing 1,000, 100, 10, and 1 p.p.m. of trichloroethylene in oil was prepared. The samples were 250 grams and were mixed well in 500 ml. Erlenmeyer flasks, stoppered, and allowed to stand at room temperature overnight.

A test was made by lowering the instrument probe vertically within the flask to about one-half inch from the surface of the oil. The meter showed a definite deflection with the 0.01% sample and none with 0.001% at room temperature. At 85°C. this limit of detection is lowered to between 0.001 and 0.0001%. The practical limit of the modified Beilstein test now in use is 0.01% (100 p.p.m.).

The leak detector is simple and rapid in operation. A standard method of using it could be devised if the increased sensitivity obtained can justify the cost. Roughly quantitative results are possible in the range 10-100 p.p.m. trichloroethylene and perhaps lower. The instrument costs about $500.

The work was done by E. M. Sallee, who is submitting a paper on the modified Beilstein test for the same purpose.

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