Other solvents (chloroform, cyclohexane, and iso-octane) were also tried. They either fail to extract the insecticides completely, or also extract most of the interfering lipoid material. Acetonitrile has been previously used (*1*, *4*) as the eluting solvent to separate insecticides from plant lipoid extractives by an alumina-wax or alumina-polyethylene column without loss of toxicant.

Results and Discussion

This technique has given apparently quantitative extraction of microgram quantities of DDT, DDE, Systox, Isosystox, Thimet, and Sevin. Precise recovery data cannot be presented, because precise quantitative analysis of quantities of the order of 1 γ is difficult. Comparison of the areas under peaks recorded by a scanner for radioactive spots on chromatograms indicates that at least 90% of the insecticide is extracted by acetonitrile, and no residual insecticide (radioactivity) can be detected. With some very polar insecticide metabolites such as the sulfoxide of the oxygen analog of Systox, or naphthoquinones formed by oxidation of 1-naphthol, recoveries seem to be less than quantitative, especially when quantities of less than 1 γ are involved. However, the chromatography and identification of very polar compounds are difficult, and no definite conclusions are possible.

The success of the method rests on the fact that acetonitrile extracts the insecticides, but not the bulk of the tissue extractives. Table I shows data on the amount of tissue extractives before and after purification of extracts from three insect species. The number of insects is that used in experiments on insecticide metabolism. The fresh weight is a few hundred milligrams, and the extracted fat weighs 2 to 4 mg. Acetonitrile extracts from 20 to 30% of this fatty material together with the insecticides, but the acetonitrile-soluble material does not cause much interference on paper chromatograms.

Figure 2 shows an example of acetonitrile purification taken from work on the metabolism of organic phosphates. The reference curve on the left shows the separation of a mixture of carbon-14–labeled Systox, Isosystox, and two possible metabolites, the sulfoxide of Systox and its oxygen analog sulfoxide. The radiogram at the upper right is of the same mixture added to an extract from five male German roaches before chromatography. The radiogram at the lower right shows the effect of acetonitrile purification of the section of the upper strip between dotted lines. The large smeared spot is now clearly resolved into three peaks. The R_f values of these peaks are lower than those of the reference radiogram at the left. This is an effect of the heavy load (about 0.6 mg.) of acetonitrile-soluble roach lipoid not separated from the insecticides by the purification procedure. This effect can be compensated for by adding a set of four dyes to the original spot. According to the unpublished procedure of Gordon (*2*, *3*), the position of the insecticide spots relative to that of the reference dyes—shown as dotted circles in Figure 2—is constant, even when R_f values show large variations.

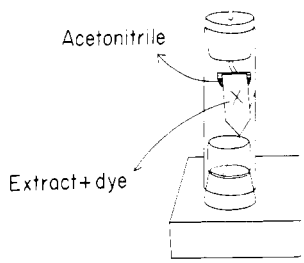

Figure 1. Method of downward-washing purification by acetonitrile extraction on filter paper strip

Literature Cited

(1) Erwin, W. R., Schiller, Dora, Hoskins, W. M., J. AGR. FOOD CHEM. **3,** 676–9 (1955).
(2) Gordon, H. T., University of California, Berkeley, Calif., unpublished data, 1959.
(3) Gordon, H. T., Huraux, M. J., Hoskins, W. M., Abstracts, p. 23A, 133rd Meeting, ACS, San Francisco, Calif., April 1958.

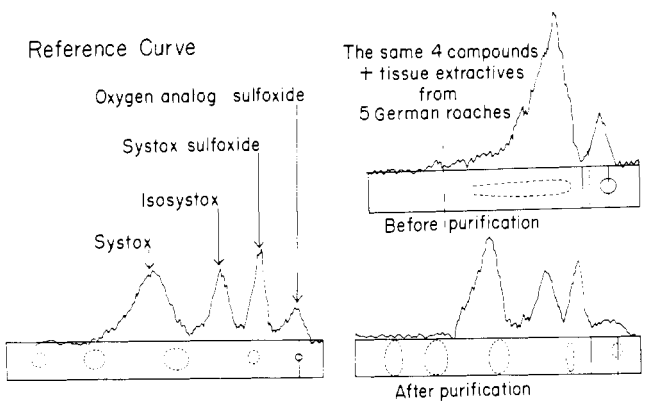

Figure 2. Example of improved paper chromatogram of carbon-14 Systox and related organic phosphates following acetonitrile purification

Table I. Degree of Purification of Tissue Extract from Three Insect Species Following Wash with 100% Acetonitrile for 0.5 Hour

Insects	Tissue Extractive Wt., Mg. Total	Tissue Extractive Wt., Mg. Extracted by solvent	Extractives not Separated from Insecticide, %
5 male German roaches	1.8	0.4	21
	2.4	0.8	33
100 mosquito larvae	2.8	0.6	21
	2.2	0.8	27
25 houseflies	3.8	1.0	26
	4.2	1.2	28

(4) Hoskins, W. M., Erwin, W. R., Miskus, R. P., Thornburg, W. W., Werum, L. N., J. AGR. FOOD CHEM. **6,** 914–16 (1958).
(5) Menn, J. J., Ph. D. thesis, University of California, Berkeley, Calif., 1958.

Received for review June 11, 1959. Accepted October 5, 1959.

Corrections

Mechanism of Liquid Seed Treatment

In the article on "Mechanism of Liquid Seed Treatment" [Olle Lindström, J. AGR. FOOD CHEM. **6,** 283 (1958)] the following corrections should be made:

Page 285, Equation 1. $dn/(dt \times G)$

Page 285, second column, the second and third lines from the bottom of the page should read: accordingly the concentration gradient may be put equal to c_s/l.

In the subcaption to Figure 3: ● P_3B_1, ○ P_3B_2, ◓ P_1B_1

In the first column of page 293 the equation should read:

$$1 - \frac{X_m(E_i)}{X_m(E_1)}$$

where E_i is E_2, E_3, or E_4

Toxicology of Butoxypolypropylene Glycol 800

In the article on "Toxicology of Butoxypolypropylene Glycol 800" [C. P. Carpenter, C. S. Weil, P. E. Palm, M. D. Woodside, and H. F. Smyth, Jr., J. AGR. FOOD CHEM. *7*, 763 (1959)] the next to the last sentence of the abstract should read: It is not stored in the bodies of animals, and 50% or more of a single dose may be found in the feces unchanged.