

program could lead to greater quantities of tapioca for export—probably at a better price and of better quality—and conceivably with considerable impact on the sturdy, but still relatively small, waxy maize industry in this country.

Research Liaison

Regain of loss to synthetics is stimulated by agriculture's liaison with protective coatings industry

WITH FARM PRODUCTS losing to synthetics in the race to supply the protective coatings industry, interested industries and USDA have moved to reverse the trend. About 65% of the 1.1 billion pounds of vehicle solids going annually into protective coatings still comes from the farm, but the percentage is falling. Industry and agriculture both have a big stake in better coatings. Industry can do applications research. USDA's Agricultural Research Service can supply basic data and ideas. There has been effective liaison for many years, but interested parties in both camps have seen opportunity for improvement. Positive action came in mid-1953 with the formation of the Informal Industry Committee on Protective Coatings. Leaders in this action now believe it is paying off.

The automatic countercurrent distribution instrument recently installed at the Northern Utilization Research Branch, USDA, is making a contribution to the use of agricultural products in protective coatings



The committee has no official ties with USDA. Nor is it officially tied to the National Paint, Varnish and Lacquer Association, whose assistant technical director, Francis Scofield, is presently committee chairman. Besides Scofield, the committee includes five representatives from the paint industry, three from fats and oils processors, and one each from the synthetic resins, floor coverings, and printing inks industries.

The group has met three times, once each at the Northern, Eastern, and Southern Utilization Research Branches of ARS. Each meeting has featured brief, formal papers on pertinent work afoot in ARS and in industry. The December 1954 gathering at the Southern Branch in New Orleans is typical. ARS scientists told of progress in fat-derived plasticizers and in application of countercurrent distribution techniques to linseed oil research. They discussed also new rosin derivatives and Diels-Alder reactions of tung oil. Industry speakers in turn dealt with fundamental colloid and emulsion theory as applied to protective coatings and with recent developments in acrylonitrile type coatings.

Such formal exchanges are perhaps more useful than one might suppose. G. F. Hilbert, director of utilization research of ARS, remarks that he has been surprised at times by the lack of industrial familiarity with ARS work in progress and, in fact, with results already in print. Committee chairman Scofield has noted the same situation. Scofield believes also, however, that improved personal relationships and mutual under-

standing developed in committee meetings are equally as important as formal exchanges of data.

While concrete results cannot be expected from activities of this kind within the short space of a year and a half, some progress can be reported. Scofield believes that copolymers of vinyl stearate and vinyl acetate are much closer to industrial acceptance than they would have been without committee activity. These polymers, developed at the Eastern Branch, are proposed as internal plasticizers for polyvinyl acetate films.

Linseed oil research may yield another early return. The Northern Branch recently obtained an H. O. Post automatic, 200-tube, countercurrent distribution apparatus. Such equipment had not been used to any extent in fats and oils research, a field to which it seemed well adapted. A number of problems were at hand. One was glyceride distribution in linseed oil, an important component in many protective coatings. The Post apparatus was put to work first on linseed oil. The choice was based in part on the importance attached to this problem by the committee. The other contributing factor was the need, in the first experiment, for a suitably complex system with which to assess the resolving power of the new equipment.

Results of this study to date were reviewed by J. C. Cowan of the Northern Branch at the November 1954 meeting of the Federation of Paint and Varnish Production Clubs. Cowan spoke at the committee's invitation. During the past few years, he said, some investigators have questioned the long-held theory that linseed fatty acids are distributed evenly on the glyceryl radical. The Northern Branch work confirms that distribution is not even. It appears rather to approach a random pattern. While the specific value of such data to the coatings industry remains to be seen, Cowan believes that a bigger pool of such basic information on linseed and other oils is quite likely to increase their usefulness to and consumption by that industry.

Industry has definite ideas about USDA research. It is firmly opposed to USDA's doing applications research, feels instead that it should be a source of basic data and ideas. As it happens, USDA has followed this line of its own accord and to good effect. Some polyamide resins, one of many USDA sparked developments, are now used in "gelled" paints and enamels, in glossy coatings for paper, and in heat-sealing resins. Epoxidized oils and esters, used to plasticize vinyl chloride polymer, came out of basic USDA research; they are currently giving dioctyl phthalates a battle. Acetoglycerides, already used in cosmetics, are on the verge of commercial use as edible protective coatings.