FATS AND PROTEINS
RESEARCH FOUNDATION, INC.
3150 DES PLAINES AVENUE • DES PLAINES, ILLINOIS 60018
(5 MINUTES FROM CHICAGO'S O'HARE AIRPORT)
TELEPHONE AREA CODE 312 827-0139

"THE DIRECTOR'S DIGEST"
D. M. Doty
Technical Director

October 26, 1965
No. 16

FPRF MEETINGS

As announced in the August issue of "The Director's Digest" the Annual Meeting of the Members of FPRF will be held in The Water Tower Inn, Chicago, Illinois, November 23, 1965 beginning at 9:00 A.M. The Board of Directors will meet immediately after the Annual Meeting of the Members and the Research Committee will meet November 22 beginning at 9:30 A.M. Appropriate materials relating to all these meetings will be mailed to FPRF Members and to members of the Research Committee and members of the Board of Directors within the next few days.

BATTELLE MEMORIAL INSTITUTE RESEARCH REPORT

We have just received from Battelle Memorial Institute a detailed report covering research results for the past three years on the project "Investigation of New Processes, Uses, and Products Based On Inedible Animal Fats". A resume of the more significant findings follows.

A great many derivatives of inedible animal fats and a wide variety of potential uses were considered during the three year period. Several were judged on the basis of theoretical, technical and economic criteria to be promising enough for laboratory screening and, in some cases, for more intensive evaluation studies.

One of the more promising areas involves the use of a silicon derivative of tallow in the waterproofing of concrete. Concrete slabs coated with this material absorbed substantially less water than untreated slabs or slabs coated with other waterproofing agents.

For example, treated slabs after 230 days immersion in water had absorbed less water than the untreated control after immersion for one day. Superior water resistance was also shown by the treated slabs when exposed to accelerated and natural weathering conditions for three months. These conditions included exposure in an alternately wet and dry fog room, exposure in a continuous fog room, burial in wet soil and exposure to roof top weather. Under all conditions evaluated the tallow derivative was far more effective in waterproofing concrete than was a commercial silicone-resin preparation.

A preliminary estimate of the potential market for this tallow derived compound in concrete waterproofing formulations is about 40 million pounds per year at $1 per pound. In addition to its use in concrete waterproofing formulations, the compound shows some promise as a coating agent for asbestos used as a reinforcing agent for polymers(premix molding compounds and laminates). Additional research will be required to confirm its value for this application.

Several fat derived compounds were evaluated as air-entraining agents for concrete. One of these, 9-carboxy stearic acid, was found to be very effective. It compared favorably with presently used air-entraining agents and the concentration required to produce a concrete mix with a given air content was not critical. In 9-carboxy stearic acid air-entrained concretes the air bubbles were much smaller and more closely spaced(both desirable characteristics)than in air-entrained concretes made with a commercial agent. 9-carboxy stearic air-entrained concretes were superior in resistance to salt scaling to concretes using other air-entrainment agents.

A rough estimate of the potential market for 9-carboxy stearic acid at a price of 25 cents per pound, in Portland cement, is about $4 to $5 million per year.

Several derivatives of inedible animal fats were screened for potential utility as curing agents for epoxy resins. One derivative showed some promise for this application and some modifications in the preparation procedure should improve the technical and economic potential of inedible animal fats for this use.

As for all research studies, a number of other potential applications were found to lack promise. These included fat derivatives for paper sizing, modifiers for alkyd resins, textile treating agents, slip additives for polyethylene films and materials to improve the adherence of non-polar coatings to metals.

A copy of the report from Battelle is enclosed for your information and study.