as well as from the liners of cans used by butcher shops to collect fat and meat scraps. When these polymers enter the rendering process, they disperse in the tallow and are difficult to remove. During the subsequent use of tallow in fat splitting, the polymers are reported to accumulate in the splitting towers and present a hazard there.

Finally, we should take a quick look at uses that are made of tallow. The data for 1976 are given in Table V, and domestic use trends over the past twenty years are shown in Figure 3. It is evident that the United States exports almost as much tallow as it uses at home, and, in fact, the United States product represents about three-fourths of the world trade in tallow. At home, by far the largest single use for inedible tallow is in animal feeds, especially in formulated beef and poultry feeds and in pet foods. Fatty acids and soaps consume about equal amounts. Before petroleum-based detergents became popular in the 1950s, soap constituted the largest single use for industrial tallow. With increasing prices and decreasing availability of petroleum, the day may come again when tallow will become an important raw material base for soap-derived detergents.

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New Fatty Acids from Outer Space

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ABSTRACT

A recent space exploration has revealed that in the far reaches of outer space matter attains a state of complete weightlessness. Herman Brown, reporting on his latest spaced-out venture, indicates that weightless fatty acids obtained from the Superba Galaxy are ideally suited for the manufacture of improved food additives. What a magnificent way to provide the diet-control foodstuffs of the 21st Century!

(**Course Chairman's Note**: Fully cognizant of the results of Orson Welles' famed radio broadcast, where he promoted the idea that the Martians were engaged in a real earth invasion, we find it necessary to state unequivocally: *as far as we know, there are no fatty acids in outer space.* Furthermore, if there *is* organic matter within the meteorites that enter the earth's atmosphere, it is probably *not* in the form of fatty acids. Publication of the above abstract in our preliminary program occasioned dozens of inquiries on this subject. Mr. Brown's paper at the Short Course was a hilarious spoof on this subject as well as a few others. We include the abstract here to complete the entire story of "AOCS at Tamiment.")

Fat Splitting

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ABSTRACT

Fat splitting, particularly the continuous, high pressure, countercurrent hydrolysis of fats and oils, typified by the Colgate-Emery or modified processes, represents the technological cornerstone for today's American fatty acid industry. Internationally, other methods such as Twitchell or batch autoclave "medium-pressure" catalyzed or uncatalyzed splitting are still important. All industrial fat splitting methods have as their objectives the attainment of a high rate of hydrolysis together with a high degree of completeness. This objective is achieved, more or less, by the proper optimum balance of: (a) use of excess water; (b) selection of appropriate combination of temperature and pressure to optimize the solubility of liquid water in the fat phases with or without use of suitable "water-in-oil" emulsifiers; (c) use or nonuse of acidic catalyst (rarely basic catalysts); and (d) removal of byproduct glycerol. Significant conditions and details in fat splitting by the important commercial processes are described.

Fundamentally, fat splitting is generally represented in all the textbooks as an oversimplified reversible chemical reaction consisting of adding H_2O to a glyceride to produce glycerine and three mols of fatty acids. Fat splitting, as might be expected, is far more complex than this simple reaction. Some idea of the overall complexity may be given by a consideration of the stepwise nature of fat hydrolysis from triglyceride to diglycerides to monoglycerides to fatty acids and glycerol. For practical purposes, the following facts enable us to discover the true nature of the fat splitting reaction: (a) water is increasingly soluble in di- and monoglycerides and in fatty acids than in the starting material triglycerides; (b) higher temperatures and pressures as shown in Table I increase the rate of hydrolysis as a