combination. The synthetic oil had only a slight tack after 24 hours whereas the soybean oil film had a marked tack one week after application.

The preferential neutralization process was also applied to mixed fish oil fatty acids. The fish oil fatty acids were obtained from Varnish Grade Fish Oil by saponifying with an excess of alcoholic potassium hydroxide and splitting the soaps with hydrochloric acid. The acids were not distilled, but they were dried by filtering through anhydrous sodium sulfate. They had an acid number of 186 and an iodine number of 206.2.

A series of neutralizations of these acids with mixed sodium and barium hydroxide was carried out similar to those described with soybean acids. No alcohol was used. Neutralization was carried out at about 200°F.; filtration was at room temperature. The data for the unsaturated acid fractions are shown in Table VI.

TABLE VI

Preferential Neutralization of Fish Oil Fatty Acids
(Iodine Number of Original Acids 206.2)

Equiv. % of NaOH	Equiv. % of Ba $(OH)_2$	% Yield of Acids from Sol. Soaps	I.V. of Sol. Acids	Calcd. I.V. of Insol. Acids
20	80	4	292.8	202.2
30	70	18	291.2	188
40	60	28	283.7	176
50	50	39	284.3	156
60	40	50	283.1	129.4
70	30	59	247.2	147
80	20	88	240.5 (?)	

The extremely high iodine number of 292.8 was very interesting, but the yield was so low that the product of 283.1 iodine number, obtained in a yield of 50% by neutralizing with 60% sodium hydroxide and 40% barium hydroxide was considered more important. Some of thees acids were esterified with glycerol to a synthetic drying oil of 2.19 acid number, 258.3 iodine number, and 182.8 saponification number. With .5% lead and .05% cobalt this oil dried in 1½ hours as measured by the Sanderson method. The film was completely tack-free overnight whereas fish oil films normally remain rather sticky for several days.

Summary

It has been shown that soybean fatty acids neutralized with a mixture of 40% of sodium hydroxide and 60% of barium hydroxide (on equivalent basis) form about 35% soluble soaps, which after separating from the insoluble soaps and splitting with sulfuric acid, form fatty acids of about 165 iodine number. From these acids a synthetic drying oil was prepared by esterification with glycerol which formed films almost as good as those of linseed oil.

It was also shown that the same process applied to fish oil fatty acids, but using in this case 60% of sodium hydroxide and 40% of barium hydroxide, resulted in a yield of about 50% of fatty acids of about 283 iodine number, which when esterified with glycerol gave a very fast drying synthetic drying oil forming tack-free films.

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Correction

An error in the April issue of the Journal, page 161, Vol. 26, which appeared in Table II, should be corrected by reference to the following table, as supplied by the author, Harold Wittcoff, for his paper "Drying Oils From 2,2,6,6-Tetramethylolcyclohexanol and Linseed Fatty Acids":

TABLE II

Drying Times for the Linseed Acid Esters of Polyhydric Alcohols

	Drier	Time (hours)			
		Initial Set	Set to Touch	Lint-free	Dried Hard
Linseed Acid Ester of:					
Glycerol	.03% cobalt + .25% lead	1.2	3.5	5.0	7.0
Pentaerythritol	.03% cobalt + .25% lead	.80	1.9	2.3	4.0
TMC	.03% cobalt + .25% lead	.66	1.3	2.0	4.0
Glycerol	.03% cobalt + .03% manganese	4.0	6.0	9.0	11.0
Pentaerythritol	.03% cobalt + .03% manganese	3.0	4.5	6.0	8.0
TMC	.03% cobalt + .03% manganese	3.0	4.0	4.5	8.0
Glycerol	.03% cobalt + .25% calcium	1.2	2.8	3.8	7.0
Pentaerythritol	.03% cobalt + .25% calcium	.90	1.8	2.3	5.0
TMC	.03% cobalt + .25% calcium	.80	1.5	2.0	5.0