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Oils and Fats

Edited by
M. M. PISKUR and MARIANNE KEATING

BRITISH PLANS FOR CULTIVATION OF PEANUTS IN AFRICA. A Maugini. *Olearia 1,* 3-8 (1947).

STATUS OF OLIVE CULTURE IN GREECE. N. D. Lychnos. *Olearia 1,* 106-7 (1947).

OLIVES IN ERITREA AND IN ETHIOPIA. A. Pajella. *Olearia 1,* 96-102 (1947). History and economics of the industry.

CULTIVATION OF SOYA IN ITALY. D. Gagnoni. *Olearia 1,* 36-9 (1947).

LIPIDE ADULTERATION WITH HYDROCARBONS. G. Issoglio (Univ. Torino). *Olearia 1,* 103-5 (1947).

OIL OF CAMELINA SATIVA. Umberto Cuppini. *Olearia 1947,* 28-30. Distribution of the plant, oil content of seeds and oil characteristics are reviewed. It is a drying oil. The common names for this oil are German sesame, dotter, and Camelina oil.

DECOLORIZING CLAYS OF NORTHERN BRAZIL. M. M. Ventura. *Rev. soc. Brasil. quim. 15,* 11-29 (1946). Efficiency test of 5 clays used in various proportions indicated their usefulness for decolorizing fatty oils.

FRUIT OF ATTALEA COMPTA. Alberto Lacerda (Bromatologico, Rio de Janeiro) *Rev. soc. Brasil. quim. 15,* 57-61 (1946). The fruit of *Attalea compta* resembles that of babassu, it weighs 101-116 g., and contains 2 or 3 kernels. The fruit comprises epicarp 20.4, mesocarp 10.4, endocarp 74.0, and kernel 4.2 g. The composition of the kernel is moisture 2.85, fat 67.10, protein 6.99, carbohydrates 1.25, and ash 2.07%. The characteristics of the oil are melting point 21.5, n^{40} 1.4487, saponification number 261.8, I number 15, R.-M. number 7.0, and Polenske number 21.8.

THE STABILIZATION OF OLIVE OIL. G. Salomone. *Olearia 1947,* 31-3. Processing procedures with regard to protection of stability are discussed.

ULTRA-SENSITIVE REACTION FOR RANCIDITY IN FATS. L. Kul'berg. *J. Anal. Chem. U.S.S.R. 1,* 263 (1946). *Priroda 36,* No. 7, 62-3. The method is based on the high sensitivity of tetramethyl-*p*-phenylene diamine to peroxides. Method: to 2 g. fat or oil add 2 cc. glacial acetic acid, 0.1 cc. of 0.01% NaCl solution and 0.5 cc. of 0.01% solution of tetramethyl-*p*-phenylene diamine in acetone. The reaction tube is placed in boiling water bath. In the presence of peroxides a bluish-violet color develops in a few seconds.

PREPARATION OF ANIMAL TISSUE FATS FOR DETERMINATION OF PEROXIDES AND FREE FATTY ACIDS. B. N. Rockwood, J. M. Ramsbottom, and V. C. Mehlenbacher (Swift & Co., Chicago). *Anal. Chem. 19,* 851-2 (1947). 80-100 g. fatty tissue cut in cubes (10 mm.) on a clean surface with a stainless steel knife are placed in a Waring blendor with 250 ml. of $CHCl_3$ and stirred 30 secs. Mixture of comminuted fat and $CHCl_3$ solution are filtered and 3 25 ml. portions are pipetted at once for analyses. One portion is evaporated on a water bath under a stream of N_2 and dried at 101° for determination of fat. To another 25 ml. extract add 10 ml. glacial HOAc, 1 ml. of saturated KI soln., and 30 ml. H_2O and titrate with 0.01 *N* $Na_2S_2O_3$ using starch as the indicator. Milliequivalents of peroxides per 1,000 g. of fat = [(ml. of $Na_2S_2O_3 \times 0.01$)/wt. of fat] × 1,000. To the other 25 ml. portion add 25 ml. of previously neutralized alcohol and 1 ml. of phenolphthalein indicator, and titrate to a permanent pink color with 0.05 *N* NaOH. The % free fat acids as oleic = (ml. of NaOH × 0.05 × 28.2)/wt. of fat. Experimental data showed that (a) comminuting with a knife to a fine pulp and then extracting was very incomplete as compared with the Waring blendor method, (b) that variations in the mixing time, in the blendor, between 20 and 240 seconds made no significant differences in the results, (c) that the method indicates the tendency for free fat acid and peroxide value to increase with increasing storage time and temperature, and (d) that the process of stirring the sample in the Waring blendor with $CHCl_3$ did not significantly affect the free fat acids and peroxide values.

NUTRITIVE VALUE OF NATURAL FATS. Y. Sakurai and Y. Aoyagi. *Bull. Inst. Phys. Chem. Research* (Tokyo) *22,* 590-2 (1943). In a feeding experiment with young white rats the fat in the balanced diet was varied in quality and the growth was compared. With the increase in weight in 8 weeks when the fat was butterfat (separated from butter by centrifuging after washing in hot water) as the standard (100%), palm-kernel oil induced 98.6, palm oil 96.9, coconut oil 93.2, chrysalis salad oil 91.8, and hydrogenated sardine oil 84.3% growth. Hence nutritionally, natural fats are superior to processed fats and almost as good as butterfat. (*Chem. Abs. 41,* 6954.)

A COLORIMETRIC PROCEDURE FOR THE DETERMINATION OF SMALL AMOUNTS OF FATTY ACID. W. R. Bloor (Univ. Rochester, N. Y.). *J. Biol. Chem. 170,* 671-4 (1947). The basis of the method is the measurement of the color change produced by the reducing action of fatty acid or cholesterol on a H_2SO_4-dichromate mixture.

THE STRUCTURE OF THE BRANCHED CHAIN FATTY ACIDS IN WOOL FAT. AN X-RAY DIFFRACTION STUDY. S. F. Valick (Washington Univ., Med. School). *J. Am. Chem. Soc. 69,* 2317-22 (1947). The long crystal spacings of the iso series of fatty acids of wool fat increase linearly with carbon content. Both the spacings and diffraction patterns provide clear evidence of homology, the same peculiar periodic sequence as the melting points. The results are discussed in terms of a spiral chain configuration.

THE SYNTHESIS OF SOME LONG-CHAIN PRIMARY ALCOHOLS AND RELATED COMPOUNDS. R. G. Jones (Lilly Res. Labs.). *J. Am. Chem. Soc. 69,* 2350-4 (1947). An improved method has been developed for the preparation of the Et esters of long-chain acids containing 28-35 carbon atoms. The Et esters of the acids and the primary alcohols containing 29, 31, 33, and 35 C atoms are described for the first time. Long chain ketones are prepared by reaction of alkyl Zn or Cd compounds with Co-carbalkoxyacyl halides and then reduced.

COMPARATIVE KINETICS OF THE ESTERIFICATION OF SOME HIGHER FATTY ACIDS BY METHANOL AND ETHANOL IN THE PRESENCE OF CATALYSTS. M. Loury and M. T. Mellier. *Bull. soc. chim. France 1947,* 349-51. The catalysts used included HCl, H_2SO_4, $PhSO_3H$, and p-$MeC_6H_4SO_3H$. An excess of alcohol, 2-15 times the theoretical amount, was used in order to increase the speed of the reactions. All esterifications were studied at 18-20°, except in the case of palmitic acid which was studied at 28-30°, because the ester formed crystallized at the lower temperatures. H_2SO_4 is not as good a catalyst as HCl or the aromatic sulfonic acids. Esterifications with MeOH were always more rapid than with EtOH. Better yields were obtained with MeOH. With an excess of alcohol equivalent to twice the theoretical amount, esterifications with MeOH are practically complete in 1 day. Yields of 90% are claimed. (*Chem. Abs. 41,* 6527.)

PHENOMENA OF TRANSESTERIFICATION BETWEEN TRIGLYCERIDES. III. DETAILED STUDY OF THE EQUILIBRIA OF TRANSESTERIFICATION. M. Naudet and P. Desnuelle (Faculte sci., Marseille). *Bull. soc. chim. France 1947,* 323-5. Equilibrium studies on the transesterification of tristearin with triolein indicate that the reaction is a true equilibrium whose location is determined by the law of probable distribution. Experimental curves for the system follow very well the theoretical curves corresponding to the equations $Y_1 = X^3$, $Y_2 = (1-X)^3$, $Y_3 = 3X\ (1-X)$, $Y_4 = 3X^2\ (1-X)$, and $Y_5 = 3X\ (1-X)^2$, where the values of Y are the molecular concentrations of trisaturated glycerides, triunsaturated, total mixed, disaturated-monounsaturated, and monosaturated-diunsaturated respectively, X is the molecular concentration of saturated acid chains and $1-X$ that of unsaturated chains. (*Chem. Abs. 41,* 6457.)

PREPARATION OF SOME POLYMERIZABLE ESTERS OF OLEIC ACID WITH UNSATURATED ALCOHOLS. D. Swern, G. N. Billen, and H. B. Knight (Eastern Reg. Res. Lab., Philadelphia 18). *J. Am. Chem. Soc. 69,* 2439-42 (1947). Eight esters of oleic acid, namely, vinyl, allyl, 2-chloroallyl, methallyl (2-methylallyl), crotyl, 3-buten-2-yl (1-methylallyl), furfuryl and oleyl oleate have been prepared in good yield from oleic acid and Me oleate, and some of their properties have been determined. They are stable, high-boiling liquids, and with the exception of oleyl oleate, which was not distilled because of its extremely high boiling point, they yield very small residues of thermopolymers on vacuum distillation (pot temperatures, 200-230°).

THE ABSORPTION OF FATS FROM THE HUMAN INTESTINE. N. G. Nhavi and V. N. Patwardhan (Seth G. S. Med. Coll., Bombay). *Indian J. Med. Research 34,* 49-58 (1946). Chylomicron counts of the blood serum after ingestion of 30 g. fat with 60 g. bread by normal fasting subjects, indicate the peaks of the absorption curves of butter, ghee, and coconut oil to occur within 2-3 hours. The peaks for ground-nut and sesame oils occur later, indicating slower absorption. Partly hydrogenated ground-nut oil is absorbed at approximately the same rate as the untreated oil. (*Chem. Abs. 41,* 6616.)

DIGESTIBILITY OF CERTAIN VEGETABLE OILS AND FATS DETERMINED BY METABOLIC EXPERIMENTS ON HUMAN BEINGS. K. P. Basu and H. P. Nath (Dacca Univ.). *Indian J. Med. Research 34,* 13-17 (1945). Supplementation of a low fat diet with 50 g. per day of the fat to be tested, was followed by increased fecal excretion of fat, amounting to 0-4 g. per day. The average absorption of mustard, sesame, ground-nut, and coconut oils, and of cow or buffalo butter-fat varied from 94-99% in 4 male subjects. Hydrogenated ground-nut oil was only 90% absorbed. THE RATE OF ABSORPTION OF DIFFERENT FATS AND OILS. *Ibid.* 19-25. Rats fasted 48 hours were given 2 cc. portions of mustard, coconut, olive, ground-nut or sesame oils, or of butter-fat, by stomach tube. Subsequent analyses at 2, 4, and 6 hours indicated significantly greater absorption of olive oil and of butterfat at the 2-hour interval, of mustard oil at the 4-hour interval, and approximate equality of absorption at 6 hours. THE EFFECT OF DIFFERENT FATS ON CALCIUM UTILIZATION IN HUMAN BEINGS. *Ibid.* 27-31. Supplementation of a low-fat, high-carbohydrate diet with 60-g. quantities of butter-fat or mustard, sesame, or ground-nut oils was followed by diminished urinary and fecal excretion of Ca and P, the net retention of these minerals becoming markedly positive in most instances. Coconut oil as a supplement consistently caused increased urinary excretion of Ca and markedly negative balances. The subjects were 4 males, aged 18-24 years. COMPARATIVE VALUE OF BUTTERFAT AND VEGETABLE OILS FOR GROWTH. *Ibid.* 33-7. The growth of young rats fed butterfat at the 6 and 9% levels is significantly greater than that with butterfat at the 3% level or with the vegetable oils at the 6% level. (*Chem. Abs. 41,* 6610.)

OLEIC ACID AND RELATED COMPOUNDS AS GROWTH FACTORS FOR LACTIC ACID BACTERIA. W. L. Williams, H. P. Broquist, and E. E. Snell (Univ. Wisconsin, Madison). *J. Biol. Chem. 170,* 619-30 (1947). Several cultures of lactic acid bacteria require oleic acid, linoleic acid, or a combined source of these materials for growth on a medium containing all of the previously recognized growth factors for these organisms. The even numbered, saturated fatty acids from C_6-C_{18} are completely inactive. For the strain of *Lactobacillus bulgaricus* tested, oleic acid, though essential for growth, is so toxic that its growth-promoting action can be observed only within a narrow range of concentrations and pH. Addition of certain water-soluble emulsifying agents and surface tension depressants, such as Tween 40, which are inactive by themselves, render oleic acid non-toxic, and greatly extend the pH range over which activity is observed. Tween 80, a water-soluble ester of oleic acid, is an excellent, non-toxic source of oleic acid for use in culture media for these organisms. Most of the lactic acid bacteria commonly used as assay organisms do not require oleic acid for growth on complete media. If biotin is omitted, however, oleic acid becomes essential for growth. The effectiveness of oleic acid in this respect is greatly enhanced by the simultaneous presence of Tween 40. Tween 80, in adequate amounts, has the same effect as Tween 40, plus oleic acid. The growth-promoting action of oleic acid under these conditions is not nullified by excess avidin, as is that of biotin.

THE CLEAVAGE OF PHOSPHOLIPIDES BY BRAIN TISSUE. W. M. Sperry (Columbia Univ., New York). *J. Biol. Chem. 170,* 675-85 (1947). Brains of young rats, in which myelination with an active lipide metabolism was going on *in vivo,* showed no more phospholipide cleavage *in vitro* than brains from adult rats. A considerable decrease in alcohol-ether-soluble phosphorus, comparable with that found in homogenates, usually occurred during incubation of minced brain suspended in carbonate buffer.

THE RELATION OF THE DIET TO THE COMPOSITION OF TISSUE PHOSPHOLIPIDES. VII. EFFECTS OF LACTOSE-containing diets. C. Artom and W. H. Fishman (Univ. Chicago). *J. Biol. Chem. 170,* 587-95 (1947). The lipide composition of the liver of rats maintained on low protein diets, in which the carbohydrate component consisted of equal parts of dextrin and sucrose, has been compared with that of the livers of rats fed similar diets except that lactose was substituted for sucrose. Smaller amounts of neutral fat were found in the livers from animals on lactose-containing diets than those of the rats on the unsubstituted diets. The effectiveness of choline supplementation in reducing the fat infiltration and in raising, under certain experimental conditions, the lecithin level in the liver appears greater in animals maintained on the lactose-containing diets.

Active substances of certain tissues and organs, acting on the fat and glycogen of the liver. G. E. Natanzon (Ukrain. Centr. Inst. Endocrinol., Khar'kov). *Byull. Eksptl. Biol. Med. 11,* 446-8 (1941). Extracts of hypophysis, liver, pancreas, adrenal cortex, and muscle, treated either by Anselmino-Hofmann, Dragstedt, or West-Campbell methods were introduced into rats. All preparations except the pancreas extract lower liver glycogen, without pronounced hyperglycemia. Relative specificity is exhibited by extracts of the pancreas and adrenal cortex. The hypophysis extracts cause a specific increase of liver fat, while the ultrafiltrate of the aqueous extract of acetonated powdered liver leads to increased liver fat, in hunger-satisfied rats only. The Dragstedt preparation of the pancreas had a hindering effect on fat infiltration of the liver. Thus, the lipotropic action of the various extracts used does not run parallel to their glycogenotropic action. (*Chem. Abs. 41,* 6614-5.)

Effect of storage and acidity on the protection of vitamin A in shark-liver oil by antioxidants. S. M. Bose (Indian Inst. Sci., Bangalore). *Current Sci.* (India) *16,* 119-20 (1947). Vitamin A in shark-liver oil was protected by the use of antioxidants. Highest protection was achieved with 0.04% isobutyl gallate and 0.02% citric acid. Stored at room temperature in dark bottles the controls lost 10% activity in one month and about 60% within 10 months, whereas the activity in protected samples was retained up to this time. However, once deterioration had started the rate of destruction was comparable to those of the controls. High free acidity in the oil accelerates destruction of vitamin A. (*Chem. Abs. 41,* 6021.)

Ground-nut oil for diesel engines. P. V. Amrute. *Australasian Engr., Mar. 1947,* 60-1. Experiments and observations made by the author at the Electric Power Station, Burhanpur, India, showed that ground-nut oil, used as substitute for mineral oil fuel in 165-b.h.p. "Deutz" Diesel engines, gave similar consumption on an average load of 64 kw. and also resulted in less black smoke from exhausts and less C deposit on piston tops and in combustion chambers. Its use has now been abandoned, in view of its higher cost, since mineral oil is again available. (*Chem. Abs. 41,* 6690.)

PATENTS

Extracting vegetable oil. E. W. Schmidt and W. F. Webber (Archer-Daniels-Midland Co.). *U. S. 2,430,535.* The method of recovering the oil from high oil-content vegetable seeds or nuts comprises pressing a soft, porous press cake having an oil content in the range of about 10-24%, granulating the resultant cake into particles about 85% of which are sufficiently small to pass through a screen having .066 inch openings and sufficiently large to be held by a screen having .012 inch openings, and thereafter solvent extracting oil from the granulated material.

Shortening. G. C. North and L. Little (Beatrice Creamery Co.). *U. S. 2,431,497.* The process of making a granular shortening having a fat core, an edible hull, an edible partial ester of glycerine, a higher fat acid, and a partial ester of sorbitol and stearic acid comprises preparing an emulsion of the said ingredients and drying to form a dry powder.

Shortening. G. C. North, A. J. Alton, and L. Little (Beatrice Creamery Co.). *U. S. 2,431,498.* The dry powdered shortenings are non-greasy, free flowing, and readily water dispersable compositions of finely divided particles of an edible fat, each provided with a coating or hull of milk solids or soya bean solids or mixtures thereof.

Stabilizing glyceride oils. A. Scharf (American Lecithin Co.). *U. S. 2,431,347.* The process of stabilizing fats and oils comprises heating the same to a temperature of 300°-420° F., and incorporating up to 1% of phosphatide at a temperature not exceeding 300° F. immediately after cooling the oil.

Simultaneous extraction of high-grade, undeteriorated fat and powdered protein from oil-bearing leguminous seeds. J. Meinl A.-G. *Belg. 449,500.* Extraction is carried out in the absence of water by means of a mixture of solvents having a low b. p., the temperature being kept below 70°. (*Chem. Abs. 41,* 6739-40.)

Breaking petroleum emulsions. M. DeGroote and B. Keiser (Petrolite Corp., Ltd.). *U. S. 2,430,002-3.* The emulsifiers are derivatives of certain phenols and fat acids.

Breaking petroleum emulsions. M. DeGroote and B. Keiser (Petrolite Corp., Ltd.). *U. S. 2,429,998-9, 2,430,004.* Certain polymerized fat acid derivatives are used as demulsifiers.

Breaking petroleum emulsions. M. DeGroote and B. Keiser (Petrolite Corp., Ltd.). *U. S. 2,429,996-7, 2,430,000-1.* Certain halogen pyridine derivatives are used as demulsifiers.

Drying Oils

Edited by
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The oil of the cotia chestnut. A new drying oil. M. da C. P. B. Cavalcanti. *Rev. quim. ind.* (Rio de Janeiro) *16,* No. 181, 16-18 (1947). Oil content by Soxhlet extraction was 72.74%. The constants were iodine number, 192.3 (Wijs); sp. gr. 0.9426; saponification number, 187.5; unsaponifiable, 1.3; n_D^{15}, 1.4966; hexabromide index, 0. The drying properties are excellent and similar to oiticica oil. (*Chem. Abs. 41,* 7771.)

Catalytic activity of linoleates and their mixtures in the drying of linseed oil. D. Pagani. *Ann. chim. applicata 37,* 12-23 (1947). As the literature on the relative reactivities of the metal linoleates shows some confusion, their activities have been redetermined. In order of decreasing activity they are classified as follows: Co, Fe^{+3}, Fe^{+2}, Mn, Pb, Ce, Cr, Ni, Zr, Be, Tl, Cd, UO$_2$, Al, Th, Ba, Ca, Mg. Various mixtures also were tried. The activity of a mixture of two metal linoleates is expressed by the formula

$$\frac{1}{1/T_1 + 1/T_2}$$

where T_1 and T_2 represent the drying times of the components. (*Chem. Abs. 41,* 7136.)

PATENTS

Drying oils. Knoll A.-G. Chemische Fabriken. *Belg. 451,264.* The pH of the reaction mixture obtained by low-temperature condensation (30-70°) of saturated or unsaturated aliphatic aldehydes containing at least 2 carbon atoms with cyclic ketones or their homologs is maintained between 5 and 7. A final heating between 100 and 300° is carried out to obtain the desired viscosity. (*Chem. Abs. 41,* 7774.)

Drying oils. Societe Anon. Cinda. Belg. *450,472.* Oils collected in benzene are debenzenated, acidified with sulfuric acid, and neutralized, and the acid residues from the washing of benzene are purified and homogenized by bubbling through them a current of hot air at 80-220°. During passage of the air traces of a heavy metal salt are added. (*Chem. Abs. 41,* 7138.)

Improvement of drying oils. I. G. Farbenind. A.-G. *Belg. 450,537.* Hydroxylated esters obtained from polyhydric alcohols and unsaturated fat acids with or without mixed esters of other mono- or dicarboxylic acids, are made to react with tri- and tetraisocyanates with or without mono- and/or diisocyanates. (*Chem. Abs. 41,* 7139.)

Soap and Perfume

Edited by
LENORE PETCHAFT

Synthetic detergents, main types, uses, properties, and prospects. John W. McCutcheon. *Chem. Ind. 61,* 811-825 (1947). A review article covering history, theory of detergency, methods of evaluation, and discussion of the main types such as the alcohol sulfates, alkyl aryl sulfonates, sulfated and sulfonated amides, esters and amines. About 400 commercial detergents are listed by trade name with a tabulation of manufacturer, class and formula, principal uses, concentration and miscellaneous information.

British synthetic soap cake. Anon. *Soap 23,* No. 11, 69 (1947). A new synthetic detergent bar called "Novosope" is claimed to be suitable for general household use.

Determination of the fatty acid content of uniform laundry soaps. Gyula Szomolanyi (Hungarian Agr. Expt. and Paprika Investigating Sta., Kalocsa, Hungary). *Kiserletugyi Kozlemenyek 45,* 106-7 (1942). During the war government decree made obligatory the production of a so-called "uniform" laundry soap contg. aluminum hydrosilicate as filling material. The presence of the latter leads to difficulties in the determination of fatty acid contents. The modified method proposed is as follows: About 2 g. soap is weighed, dissolved in hot 70% EtOH, and filtered through a dried and previously weighed filter. The filter is then washed 3 times by hot 70% EtOH and dried to constant weight. In the alcoholic solution fatty acids can be determined in the usual way after distilling off the EtOH and the hydrosilicate remaining on the filter can also be further examined if necessary. (*Chem. Abs. 41,* 7778.)

The perfuming of rif soap. M. Bollmann. *Fette u. Seifen 51,* 113-14 (1944). Among the more important compounds for such perfumes are the Me esters of anthranilic acid, benzaldehyde, benzyl acetate and alcohol, cyclamal, diphenyl ether, the Me and Et ethers of B-naphthol, phenylethyl alcohol, isobutyl ester of salicylic acid, terpineol, and cinnamaldehyde, and alcohol. By combining several of these the odors of various flowers can be produced. Usually at least 0.4% of perfume is required for perfuming Rif kaolin soap and 1% for Rif floating soap. In the latter case the perfume must not be added until after the air has been beaten in. The alkalinity should not exceed 0.05%. (*Chem. Abs. 41,* 7778.)

Invert or cation-activated soaps and their use. Victor Boyer. *Rev. prod. chim. 47,* 1-2, 17-19 (1944). A general discussion of Sapamine, Solidogene, Soromine, Velan, etc. and their use as detergents, for the impregnation of fabrics, for disinfection, for cosmetic purposes, and for the production of carotene. (*Chem. Abs. 41,* 7778.)

Carboxymethyl derivatives of cellulose and starch as soap substitutes. K. J. Nieuwenhuis (Lab. Proefstatin Wachindustrie, Delft, Netherlands). *Chem. Weekblad 43,* 510-17 (1947). Small-scale washing tests at 60° on artificially soiled cotton fabric show that a solution containing 0.6 g. fat acid as the Na soap, 0.5 g. Tylose HBR (I) (a mixture containing 30-33% Na carboxymethylcellulose of degree of substitution 0.6) and 6 g. Na_2CO_3 per l. has greater suspending power than a solution (II) containing 2 g. fat acid as soap and 6 g. Na_2CO_3 per l., while the overall washing efficiency is at least equal. Large-scale tests confirm this conclusion. A solution containing 4.5 ml. Teepol (a 22% solution of the Na salts of the monosulfates of secondary alcohols having 10-18 C atoms per molecule), 0.5 g. I and 6 g. Na_2CO_3 per l. has better suspending power and overall washing efficiency than II. Theoretical and economic considerations are given. (*Chem. Abs. 41,* 7778.)

The cleaning action of enzymic soaking agents. I. Enzymic soaking agents in household washing. O. Viertel (Staatl. Materialprufungsamt, Hauptabtl. Faserstoffe, Berlin-Dahlem, Germany). *Fette u. Seifen 51,* 145-8 (1944). The cleaning action of soaking agents on artificially soiled cotton strips was tested first by laboratory methods. Four different methods of producing the artificial soil were tested. A mixture of blood albumin, water-soluble starch, whole milk of a definite fat content, and lampblack proved most satisfactory for demonstrating the differences in cleansing action of the preparations used, since it responded equally well to both alkali and enzymes. It was possible to make a rapid evaluation of the soaking agent by determining the degree of whiteness of the artificially soiled material before and after soaking. The differences in the action of the various preparations tested were not so marked in practical soaking and washing tests as in the laboratory tests. No appreciable difference was noted between the action of the enzymic preparations and bleaching soda on normally soiled domestic laundry. On heavily soiled laundry the enzymic preparations showed a somewhat better cleaning effect (after the complete washing process) when the material being washed contained large amounts of fat- and protein-containing soil. When the materials washed were heavily soiled with blood, protein, and fat the enzymic preparations gave better results than the bleaching soda, although differences were noted between the various commercial enzymic preparations. These preparations when used with the corresponding amount of alkali can serve as water-softening agents, provided the concentration is 15-20 g. per 10 l. of water. (*Chem. Abs. 41*, 7778.)

Liquid soaps in glass containers. Herbert Kranich (Kranich Soap Co.). *Soap 23*, No. 11, 33-5 (1947). A review of the problem of preserving the clarity of liquid soap in glass containers has shown that the glass containers are the basis of this problem. Three types of glass were tested (a) chemical glassware (boro-silicate), (b) milk bottles, prescription and hand-blown soda lime glass, and (c) commercial machine-made glass bottles of soda lime glass. Liquid soap in the first two types maintained their clarity for six months or longer, while soaps in the other type showed varying degrees of cloudiness or milky or red precipitates and gelatinous sediments. It was found that season of the year, temperature of the test, and hydrated state of the precipitates (stearates and silicic acids) were factors in the turbidity of the soap. Steps taken to overcome this problem include proper formulation, water purification, mechanical refrigeration, de-stearinization, aging, specialized filtration, and the use of various chemical additives. Organic dispersing and sequestering agents such as the polyamino-carboxylic acids (Nullapon-B) were found to be efficient agents for prevention of turbidity and for clarifying existing turbid condtions. It was noted, however, that such agents do not inhibit the erosion of glass or the dissolving of salt films from the inner surface of glass containers, but rather inhibit the reaction which forms precipitates.

PATENTS

Solid, purified alkyl sulfonates. Georg Schicht A.-G. *Belg. 448,552.* The saponification products of organic sulfochlorides are cooled. The alkali chloride precipitates out and is removed by filtration along with the solid unsaponifiable matter. The filtrate is dehydrated by passing over rolls heated above 100°, and the volatile unsaponifiable matter distills off. The liquid, purified alkyl sulfonates are passed over cold rolls to convert them into flakes, ribbons, etc., suitable for use as washing agents. (*Chem. Abs. 41*, 6424.)

Saponification of organic sulfochlorides and the purification of the saponification products. Georg Schicht A.-G. *Belg. 448,551.* Alkylsulfonic acid chlorides are heated with a solution of alkali carbonate above 100° and under pressure with introduction of steam. The unsaponifiable fraction distills and is collected *in vacuo*. The aqueous solution of alkyl sulfonates is transferred from the autoclave to a heated vessel *in vacuo*, where the alkyl sulfonate is obtained in the fused state; it can also be cooled and filtered from the alkali chloride which precipitates. These alkyl sulfonates can be used as washing and cleansing agents. (*Chem. Abs. 41*, 6424.)

Cellulose soaps. Alliance Europeenne, Soc. Anon. *Belg. 451,734.* Cellulose is subjected to a preliminary treatment which converts it into basic-reacting, colloidal, hydrophilic gels. The latter are saponified with calculated amounts of foaming agents and plasticizers having acid properties. The emulsifying and binding properties of the foaming agents combined with those of the gels acting as protective colloids yield a product with the properties and characteristics of soaps made from fats. (*Chem. Abs. 41*, 7752.)

Soap-like agents for washing the skin. I. G. Farbenind. A.-G. *Belg. 451,227.* This washing agent consists of reaction products of fatty acid chlorides with oxethane sulfonates, or of the sulfonation products of compounds of high molecular weight containing sparingly soluble, finely divided salts of carboxylic acids of high molecular weight. (*Chem. Abs. 41*, 7780.)