CHEMISTRY

Fats Can Be Tailored

Chemists can duplicate any of the oils affected by war shortages by using any of the common fats we happen to have. Commercial production stage reached.

➤ WAR-CAUSED SHORTAGE in such oils as coconut, palm, China-wood and perilla need not worry us much in the future, as soon as general use begins to be made of a method for "tailoring" any kind of oil we want out of any kind of domestically-produced vegetable oil or animal fat we happen to have. The method was described before the meeting of the American Chemical Society in Buffalo, N. Y., by Dr. Stephen E. Freeman, paint chemist of the Pittsburgh Plate Glass Company's Laboratory in Milwaukee.

The new method, Dr. Freeman announced, has already passed through the critical pilot-plant stage into the beginnings of commercial production.

It depends on the fact that any given natural oil is really a mixture of several different oils. All commonly used food and industrial oils have been thoroughly analyzed, so that we know pretty well what they are made of. It is possible to separate these oils into their respective fractions by using solvents that will take out certain fractions and leave others. Then the fractions can be recombined in any way desired.

Thus, it has been possible to split common linseed oil into two fractions, one of which resembles China-wood oil while the other is like soybean oil. Soybean oil in turn can be split into fractions resembling linseed and cottonseed oils, and so on, with all the natural oils and fats.

Science News Letter, September 19, 1942

Keeps Fats From Spoiling

➤ OTHER CHEMISTS have been at work on the problem of keeping oily and fatty foods from spoiling. The problem is basically one of keeping oxygen away from the fats, because they become rancid by oxidizing. A good anti-oxidant has been found by Dr. H. S. Mitchell and Dr. H. C. Black of Swift and Company's research laboratories, in a well-known product of tropical American trees, gum guaiac. Two years of large-scale testing have shown it to be highly successful in the preservation of lard and on wrappings for other oily foods. It was suggested as a possible solution for the still unlicked problem of preserving dehydrated pork products.

Science News Letter, September 19, 1942

New Packages Save Tin

➤ GLASS CONTAINERS for foods and other commodities formerly packed in tins were cited as a war-time solution of two scarcities problems by Dr. A. H. Warth of the Crown Cork and Seal Company. From the same quantity of tin-coated steel that goes to make only 265 quart cans, 14,400 closures for quart glass containers can be made, he pointed out.

Thirty-pound cans of eggs, used by bakeries and restaurants, are being replaced by equal-sized packages of frozen eggs enclosed first in cellophane, then in cardboard. Each such package releases a whole pound of tinned steel sheet.

The only place where glass cannot compete with tin is in packing goods for Army and Navy use. Glass is too breakable for the rough handling that stores often get at sea or in the field. But civilians at home can do their share by accepting glass-packaged commodities, so that the canned goods may go up to the fighting fronts.

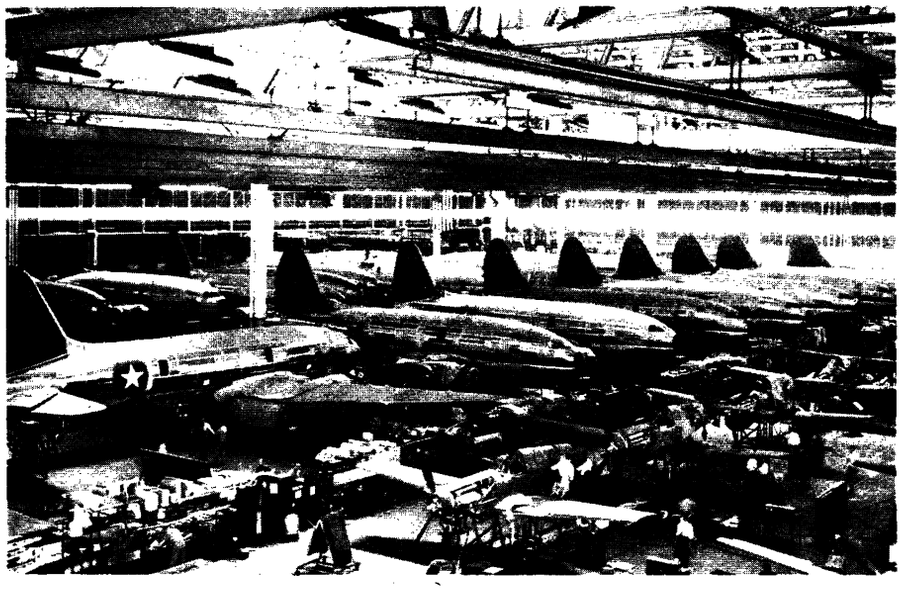
Science News Letter, September 19, 1942

CHEMISTRY

Oil Breakdown Cause Found

➤ DISCOVERED: what makes lubricating oil break down in auto engines. It is the tiny black powdery particles that flow in all long used oil. The deterioration of lubricating oil, shortening both the life of the oil and the life of the motors, was explained by R. G. Larsen and F. A. Armfield of the Shell Development Company, Emeryville, Calif., to the American Chemical Society.

Several things have been blamed for oil breakdown, they stated, including the heated metal of the engine, unburned gasoline, oxidation products of the oil itself, etc. The two researchers found the real culprits to be the tiny black powdery particles that float in all long-used oil. These act as catalysts, aiding the oil to contract an undesirable union with oxygen and then deteriorate. The black particles themselves are of



CARGO CARRIERS AND FIGHTER PLANES, turned out in increasing numbers at Curtiss-Wright, has won the company the joint Army-Navy "E" award for efficient production. Curtiss Commando military transports are shown in the background, while Kittyhawk and Warhawk fighters are seen being assembled in the foreground.

diverse origin: microscopic bits of metal worn off the engine parts, dust from the air, and especially the chlorides of iron and bromine, which arise from the use of leaded gasoline.

Practical moral of the story is the importance of having a good oil filter and seeing that it is always in good working order.

Bad though these black particles are, they mustn't be permitted to accumulate on piston or cylinder walls, another Shell Development Company research showed. This work, carried on by Mr. Larsen with S. K. Talley, showed the relative values of various kinds of chemicals added to lubricants in keeping engine parts clean.

Food for men as well as machines came in for due attention on the part of the chemists.

Science News Letter, September 19, 1942

PHARMACY

Totaquine Ready for Use

Precious cinchona trees, from which quinine has been obtained, now are also source of additional drug now listed officially as weapon against malaria.

➤ "JESUIT'S BARK" from precious cinchona trees, long a source of quinine, will now supply us with another drug for the treatment of deadly malarial fever.

A yellowish-brown potent powder, totaquine, is in the new official book of drugs, the U. S. Pharmacopoeia XII, which will be adopted in November. But because of the urgent need for antimalarials, standards have already been published in a supplement.

Formerly the delicate white crystals of quinine were extracted from the bark and the rest was usually thrown away. Now with our major supply of quinine in the hands of the Japs, other active medicinal substances in the bark will also be extracted, and the mixture used for the same purposes as quinine.

Under present governmental restrictions, it can be used—like quinine—only for treatment of malaria. Totaquine is intended for use by the public, it has been reported, which will free additional supplies of quinine for our men fighting in the malaria-infested regions of the world—Africa, parts of the Mediterranean area, Australia, Java, India, South America, and other tropical climes. Malaria, a periodic disabling fever transmitted by certain mosquitoes, is also prevalent in southern United States and will require much of the new totaquine to keep it under control.

Eight hundred millions of people on our globe are plagued by the fever, authorities estimate, even in peace time. During war many more persons are exposed to the disease-causing, microscopic parasites which hitch-hike from one person's blood to another via the mosquito.

When less than 1/15 ounce of totaquine, the antimalarial mixture, is administered each day for a few days, the symptoms usually clear up and the disease-causing organisms seem to disappear from the blood. But studies have shown that some forms of the organism can fight off the action of totaquine and lurk in the victim's body to flare up when resistance becomes low.

This state of affairs cannot be held against totaquine, however, as quinine itself also misses some of the malarial parasites. In general, scientists believe that totaquine will probably be just as effective as quinine. Nor are any additional undesirable side-actions expected.

Like quinine, most persons can take quite a large dose without harmful effects. Ringing in the ears is the warning alarm that a dangerous over-dosage is near. This is accompanied by impaired vision and headache.

Although the ingredients of totaquine have been known for many years, they have not been widely used. Results of their increased use in the Philippines and India have been reported as satisfactory.

The principal disadvantage encountered in India and the British Empire, as reported in an official memorandum on tropical diseases from the British War Office, is due to wide variation in the strength of the anti-malaria mixture.

But a standardized preparation has been recommended by the Malarial Commission of the League of Nations which overcomes this difficulty. The preparation which will be official in the United States must contain at least 70% of active ingredients from the cinchona bark, called cinchonidine, cinchonine, quinidine, and including at least 10% of the old standby, quinine. There are also many other requirements which insure that a standard, high-quality preparation will be marketed.

A plan is now under consideration to lower the requirement of quinine content, since the quinine content of the South American cinchona bark is lower than that in the Eastern barks which were commonly in use when the standards for totaquine were first considered. Investigations are going forward to increase our knowledge of the drug, as medical men are not yet in complete agreement as to how it compares with the action of other antimalarials.

A recent OPA conference held in Washington indicates that totaquine will sell for less than quinine. This will be important to many persons who have neglected treatment in the past because of the expense.

As our stockpile of quinine continues to dwindle and physicians become more familiar with the use of totaquine, it may well be that the armed forces will also use the preparation to supplement their use of other antimalarials.

In badly infested areas, troops may also be given totaquine, or quinine alone, each day to prevent the soldiers from contracting malaria. This is only effective as long as administration is continued, however. The British War Office believes this is not worthwhile except in those areas in which the disablement of large numbers of troops would be likely. Otherwise, the cases are treated as they arise.

Science News Letter, September 19, 1942

NUTRITION

Leaves Tested for Use As Part of Human Diet

➤ VALUE OF green leaves as a source of proteins and vitamins for humans and other non-ruminants, has been investigated by the British Society of Chemical Industry. Experimental results show that there are variations in the amounts of the principal vitamins in grass, depending on climate, soil, variety of grass, and other factors.

Not even an enthusiast could get all his vitamin requirements from grass. Between two and four pounds of whole grass must be eaten daily to supply the necessary amount of vitamin B, for example. But it is believed that if the grass were processed for extraction of protein, certain vitamins might be recovered as a by-product.

Science News Letter, September 19, 1942