GREEN TURTLE OIL

BY
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The chemical literature contains very little on the subject of turtle oil. Lewkowitsch gives only a few values on several species. The following data should therefore prove interesting as representing marketed oils, freshly rendered with low fatty acidity and iodine values far below those given in the text.

The green turtle belongs to the genus Chelonia, family Chelonidae and species Chelonia Mydas. It is a sea-going animal, said to feed exclusively on sea-weed. For this reason, the iodine content of the oil was determined.

The samples analyzed by the writer were received from the Canal Zone* and represent bulk shipments sold here. The turtles slaughtered varied in live weight from 80 to over 300 pounds. The fatty parts only were removed, hashed fine and boiled in open kettles with water and steam.

The color of the oil thus obtained is a golden to an orange yellow; odor of fish nil, rather of mild tallow odor and not unpleasant. It is peculiarly sweet. The consistency of course depends on the temperature, here being semi-liquid to almost solid fat, with considerable stearine graining out on standing. Light bleaches it very easily to a snow-white color. While the original oil turned rancid rather quickly under ordinary conditions, the refined and bleached oil kept very well. Only a trace of moisture and impurities were present in the samples as received. The oil is at present in great demand in cosmetics, of uncertain and restricted supply and high-priced.

Samples	1934	1933
Specific Gravity @ 15.5° C....	0.9205	0.9211
Rise per degree C. 0.00071 gm.		
Iodine Value (Wijs).....	61.5	61.1
Saponification Value 213.5		211.7
Free Fatty Acids (oleic).....	0.28%	0.32%
Acetyl Value (double sap. method)	1.9	2.4
Hehner Value (insoluble acids)	94.54%	94.36%
Unsaponifiable Matter (yellow and partially crystalline).....	0.45%	0.39%
Ether Insoluble Bromides.....	2.57%	2.60%
Content of Iodine (Parts per million.)	None	2.5
Solidifying Point	16.7° C	18.4° C
Titer of the Fatty Acids.....	27.1° C	27.3° C
Neutralization Value Acids....217.9		216.5
Smoke Point (F.A.C.).....360° F		360° F
Flash Point (A.S.T.M.—open cup) .....600° F		605° F
Fire Point (A.S.T.M.—open cup) .....665° F		670° F
Color of Original Oil (Lovibond —5¼ inch column).....	35 Yellow 7 Red	35 Yellow 7.3 Red
Color of Refined Oil.....	35 Yellow	35 Yellow
Color of Bleached Oil (6% earth)	5.2 Red 50 Yellow 1.9 Red	5.4 Red 50 Yellow 2.1 Red
Refining Loss (12 Bé lye).....	2.0%	2.2%

Unusual Features: low iodine and insoluble bromide values.

Two other samples incompletely analyzed had iodine values 58.5 and 60.6, saponification values 211.5 and 212.2 and free fatty acidity 0.60% and 4.04% respectively.

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MAGNOLIA SEED OIL

By C. E. COATES
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The magnolia of the south is the magnolia grandiflora, which grows many places in Louisiana, Mississippi, Alabama, Georgia and other southern states, sometimes in groves, but ordinarily in groups of five or six trees. The beauty and fragrance of the flower have made it of more than ordinary sentimental value, and it is the state flower of both Louisiana and Mississippi. When the fruit ripens in the early fall the seeds fall to the ground and are eagerly devoured by birds and small animals.

It was with this in mind that Mr. A. V. Bird, a prominent planter of Sicily Island, Louisiana, sent us a couple of years ago about a gallon of magnolia seed with the request that we let him know what the oil was good for.

About twenty years ago a planter in south Louisiana undertook to market a preparation, the receipt of which had been handed down in his family for several generations. This receipt was presumably of Indian and negro origin, and the preparation was supposed to be good for the hair and blemishes of the skin. We understood that it was made from the seed, fruit and smaller leaves of the magnolia, but we are not absolutely certain, as the process was presumably a secret. The verture was not a financial success, although we are told that the preparaton was really good.

With these two men in mind we undertook to make a short investigation of the magnolia seed properties. The only reference to magnolia seed oil we could find was an article by So Uchida, of Japan, in the Journal of the Society of Chemical Industry, Vol. 35, pp. 1092-3. Uchida worked on the magnolia hypoleuca, which is rather different from the grandiflora. The seed kernel of the grandiflora is white, while that of the Japanese variety is black. Uchida gave the constants for the fruit oil, flesh oil and seed oil.

In our investigation we found that the moisture content of the seeds was 6.94%. These seeds were dried and crushed for extraction. The whole seed was crushed and extracted three times with CCl_4 since the amount of seed available was too meager to justify pressing in a large press. The CCl_4 was removed from the oil by careful heating on a water bath accompanied by agitation. Prolonged heating will cause oxidation of the oil, as will bubbling air through the liquid.

The oil so obtained was dark brown in color and possessed the characteristic odor of the magnolia. It was viscous, but did not deposit any solids upon standing for four months. In this it did not resemble the oil from the Japanese tree.

Starting with 886 grams of seeds, 351 grams of the oil were obtained (by CCl_4 extraction), or a yield of 39.62%. Upon extraction with ether a yield of 46.23% was received. These represent yields higher than those found by Uchida, but may contain extracted matter not present in the expressed product.

The iodine absorption number, 102.4, gives evidence