When this valuable and productive tree becomes more generally known, and planted in quantities to be of commercial importance, it will offer a very valuable product in the way of oil, oil cake and a table nut that cannot be excelled in richness and delicacy of flavor.

It has an oil content of 76.5%, about 5% higher than the Pecan, containing the highest oil contents (71%) known in table nuts. The next highest of the commoner varieties are the Hickory and Brazil nuts with about 67%, the Filbert with about 65%, Walnut 64%, Almond 54% and Peanut 45%.

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THE COMPOSITION OF MOWRAH-SEED OIL[1]

BY AUGUSTUS H. GILL AND CHAMPAK C. SHAH

Mowrah-seed oil or Mowrah butter is derived from the seeds of the Bassia latifolia, a tree widely distributed in India. It is an important food stuff in the northwest provinces of India: it is also used for candle and soap making, and medicinally as an ointment. The seeds contain about fifty per cent of oil. The oil is decidedly yellow, but not from carotin, and soon begins to bleach and finally becomes colorless in contact with the air.

The ground press cake of the seeds resembles powdered cocoa and is poisonous owing to its saponin content. It is used in India as a fertilizer and an emetic, in this country it is employed in insecticide powders on account of its poisonous properties.

No definite information regarding the composition of the oil is found in the literature. Menon,[2] found widely varying results: from 13–25 per cent of stearic acid and no arachidic acid: Lewkowitsch[3] found palmitic acid.

The oil used in this investigation was imported from Gujarat, a part of the Bombay Presidency, India, in the autumn of 1922 and was examined in 1923–1924. It was found to contain considerable free fatty acid which

TABLE I

MOWRAH-SEED OIL—CHEMICAL CHARACTERISTICS

Saponification value	206.5
Iodine number (Hanus)	57.9
Reichert-Meissl value	0.7
Polenske number	0.9
Acetyl value	3.3
Acid value	14.15
Unsaponifiable matter	0.8

[1] Contribution No. 87 from the Technical Analysis Laboratory of Mass. Inst. of Technology.

[2] *J. S. C. I.* **29**, 1429.

[3] *Oils, Fats and Waxes*, 5th ed., **II**, 518.

is usually the case. It was not of sufficiently good quality to be used for edible purposes.

The characteristics of the oil are shown in Table I.

The amounts of soluble or volatile fatty acids are negligible, as shown by the low Reichert-Meissl and Polenske numbers: the same is true of the hydroxy acids or mono- or diglycerides—as shown by the low acetyl value: a similar statement can be made regarding high unsaturated acids—indicated by the iodine value.

The various acids were determined in the oil by the Gusseron-Varrentrapp lead-salt-ether method as used by Baughman and Jamieson[4] in their work on Soya Bean and Sunflower-seed oil, which enables the separation of the saturated and unsaturated fatty acids. The nature of the latter was determined by their bromine addition derivatives. The nature of the saturated acids was determined by their methyl esters, their molecular weights and their melting points, also as detailed by the above-mentioned authors. The method has been now so thoroughly worked out by them that detailed figures seem a waste of space. From our investigations, the chemical composition of Mowrah-seed oil would seem to indicate the glycerides of the following acids:

	%
Clupanodonic	trace
Linolic	13.3
Oleic	40.2
Stearic	2.0
Palmitic	26.6
Myristic	16.1
Unsaponifiable matter	0.8

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FUTURE TRADING AS INSURANCE IN THE COTTON SEED OIL INDUSTRY

BY CARL L. ALSBERG

The manufacturer who faces violent fluctuations in the price of his raw materials may be ruined by such fluctuations, be he ever so efficient in manufacturing. The greatest conceivable manufacturing efficiency and skill may be unavailing if fluctuations in price of raw materials unforeseen by the manufacturer occur. To keep out of the bankruptcy courts he must be a shrewd buyer, often virtually a gambler in raw material as well as a legitimate manufacturer. If he manufactures to order for future delivery a sharp rise in raw material may ruin him. If he manufactures for sale on the open market, a drop in price of raw materials coming after

[4] *J. Am. Chem. Soc.*, **44**, 2947–2957 (1922).