Manure salts.
Dissolved bone and potash.

(b) Additional questions which have been considered.

The following additional questions have received the consideration of the Committee.

1. Shall the Committee encourage and urge the practice of including the formula grade of fertilizer with the brand name? The Committee recommends and urges the practice of including the formula grade of fertilizer with the brand name, depending upon the section of country where the product is sold, for example, grade 4-8-4 or 8-4-4.

2. The question of a uniform plan of reporting fertilized analysis in control work. What should constitute a proper detailed analysis report? The Committee would encourage not only a study of the quantity of plant food guaranteed in any fertilizer, but also a study of any methods that might result in the improvement of the quality of said plant food, even though this was not called for in the fertilizer law.

3. Interpretation of results on Nitrogen Availability.

(c) Proposed subjects which the Committee feels could be more appropriately handled by the fertilizer referee and so recommends:

1. The consideration of grinding analytical fertilizer samples finer than through a 1 m.m. round hole sieve.

2. A suggestion that the official method for the determination of ammonia in fertilizer be interpreted as being applicable to sulfate of ammonia, and that further study be made on the determination of moisture in this salt.

3. A further investigation of the determination of total and insoluble Phosphoric Acid in vegetable meals and in mixtures containing them.

The Committee welcomes suggestions and further subjects by any one interested."

H. S. B.

A MINIATURE COCOANUT AND ITS OIL

By C. A. Lathrap, of Curtis & Tompkins, San Francisco

An interesting specimen of the Cocoanut family has recently come to our attention in the nuts of the *Jubaea chinensis,* also known as *Jubaea spectabilis,* and commonly referred to as the Chilean molasses palm. The nut is remarkable for the delicately flavored oil that it yields, as well as the manner in which this oil departs from some of the characteristics of other members of the cocoanut oil family.

This plant is a native of certain localities of western Chile, but not known from any other region. Its trunk is two or three times thicker than the tropical cocoanut palm; its height rarely exceeds thirty to thirty-seven feet, and the leaves are very similar to those of the cocoanut palm, but shorter. It grows slowly and starts to produce about six or eight years after planting. A delicious syrup, called "miel de palma", which is produced by concentrating the sap, is sold as an article of commerce on the western coast of South America.

While it is a member of the cocoanut family, it is quite distinct from the commercial variety (Cocos Nucifera), but in appearance the fruit is very like the tropical species excepting in size. The nuts grow in bunches of about fifty, and are offered for consumption in their local markets in a green state as they are prized for their delicious flavor. To remove the husk the nuts are allowed to dry out, when they are removed in the same way as with the larger species and in the husk free state are exactly alike except that the hollow interior does not contain milk.

It is unlike the tropical growth which thrives near the sea shore and in salt swamps, since this miniature variety only grows away from the sea coast. The lot on which the following examination was made, was imported for confectionary purposes, to be candied similar to the sugared cocoanut now quite common as a sweet meat. The looks, texture, and taste of the meat as well as the flavor and odor of the oil, are nearly identical with that of the commercial species with the exception that the oil has a sweeter and more delicate odor.

A Miniature Cocoanut and its Oil.

The most noticeable feature of the oil expressed from the nuts, is that it is liquid at ordinary temperatures and unlike other members of the Cocoanut oil group in this respect. It has the highest saponification number of any of the Cocoanut oil family, and among the highest of all Vegetable oils with the exception of Kusu oil (from camphor tree), which according to Lewkowitsch is about 284.

Physical Analysis

Average Weight Per Nut	6.36 Gms.
Size	
(Per cent by number)	
Between 5/8" and 7/8"	65.%
Between 7/8" and 1"	30.%
Between 1" and 1 1/8"	5.%
Composition of Nuts	
Shells	59.5%
Meat	40.5%
	100.0%
Total Oil	68.40%
Solids (not fat)	26.92%
Moisture	4.68%
	100.00%

Analysis of Pressed Cake

Crude Protein (Nitrogen x 6.25)	20.98%
Crude Fat (Ether Extract)	8.00%
Crude Fiber	11.27%
Ash (Mineral Matter)	3.27%
Nitrogen Free Ext. (Carbohydrates)	48.48%
Moisture	8.00%
	100.00%

Analysis of Pressed Oil

Specific Gravity at 25.0/15.5°C	0.9243
Specific Gravity at 40.0/15.5°C	0.9143
Refractive Index at 25.0°C	1.4541
Refractive Index at 40.0°C	1.4482
Free Fatty Acids (As Oleic)	0.20%
Saponification Number	273.7
Iodine Number (Wijs)	12.7
Reichert Meissl Number	8.8
Polenski Number	25.5
Unsaponifiable Matter	0.24%
Solidifying Point	8-10°C
Melting Point	11-12°C
Lovibond Color:	
Yellow	15.0
Red	1.5
Mixed Fatty Acids	
Titer	18.7°C
Refractive Index at 25°C	1.4400
Refractive Index at 40°C	1.4344
Neutralization Value	287.3
Liquid Fatty Acids	
Refractive Index at 25°C	1.4441
Refractive Index at 40°C	1.4381
Iodine Number (Wijs)	41.2

The analysis of the pressed cake shows it to be almost identical in composition with an average of several hundred Cocoanut meals examined during the past

year, with the exception of the ash, which is about half that of the meal from the commercial variety.

A comparison of this oil with that from the commercial Cocoanut, discloses a noticeable difference in the melting point, which is roughly about ten to twelve degrees lower than that of the Cocoanut oil of commerce. The saponification number is also an interesting feature when compared with the commercial Cocoanut Oil with its average of about 256 and maximum of about 260. Again the Polenski number is about the same as that of the commercial oil, the Reichert Meissl number about half again as high and the iodine number is about double.

If commercial Cocoanut oil producers could secure crude oil from copra as low in free fatty acids and color as was found in these nuts, it would certainly bring joy to the hearts of many, and yet these nuts at the time of examination were over six months old.

ANALYSIS AND DISCUSSION OF RESULTS OF SAMPLES NUMBER ONE OF THE CRUDE OIL AND IODINE SERIES

By H. J. Morrison, Procter & Gamble Co., Ivorydale, Ohio

EDITOR'S NOTE—Mr. Morrison, chairman of our Committee on Fats and Oils, has submitted the following comments with reference to the results obtained on the first oil distributed to the collaborators. For the benefit of our many readers who are not taking part in this co-operative work and therefore, perhaps, unacquainted with its details, your Editor is taking the liberty of inserting a complete tabulation of all results as reported by Mr. Morrison to the collaborators.

The exact amount and strength of lye was not specified for the refining of crude oil sample No. 1. Groupings of the various kinds and amounts are, therefore, necessary to make a comparative study. We find there were five who calculated the amount of lye from the free fatty acids found, using the formula used in the official table for free fatty acids of 3% to 5%, *i.e.*, enough to neutralize plus 0.67% NaOH. Hence this group used 11.4% to 11.6% of 12° lye, 9.6% to 9.8% of 14° lye, 8.3% to 8.4% of 16° lye.

The next group of fifteen used the maximum allowed by the table for oils not over 3% F. F. A.

A third grouping consists of those results in which the maximum amount of 16° lye was used. This includes twenty-one results.

There were other scattering results which could not

Results Reported on Crude Cottonseed Oil No. 1

F.F.A. Alcohol	F.F.A. Brine	F.F.A. no method reported	12° % Lye used	12° Ref. loss	12° Red color reading	14° % Lye used	14° Ref. loss	14° Red color reading	16° % Lye used	16° Ref. loss	16° Red color reading	R.P.M. high speed	R.P.M. low speed	Iodine No.
1.503	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	106.14
1.65	1.70	.....	11.4	8.0	10.8	9.6	8.0	10.4	8.3 10.0	8.2 8.0	10.3 9.5	.....	.....	105.90
.....	.....	1.35	.....	.....	.....	11.6	7.9	8.8	8.0 10.0	7.2 8.0	8.7 8.6	.....	.....	.....
.....	.....	1.7	13.7	7.6	9.2	11.6	7.8	8.6	10.0 15.0	7.6 9.7	8.8 8.2	.....	.....	.....
.....	.....	1.7	11.5	7.6	9.5	9.7	8.7	9.4	10.0	8.7	8.8	.....	.....	.....
1.55	1.7	.....	5.8	7.24	15.0	4.8 5.43	7.8 11.50	12.0 9.5	4.70	8.7	12.0	.....	.....	100.6
.....	.....	1.80	11.6	15.6	11.0	9.8	8.2	10.0	8.4	8.8	10.0	120	120	109.03
.....	1.83	.....	10.4	6.6	10.0	11.6	8.0	9.6	10.0	8.2	9.2	400	300	107.2
.....	1.7	.....	13.70	7.20	10.1	11.60	7.0	9.4	10.00	7.4	9.3	240	240	108.7
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	104.84
.....	2.6	.....	13.7	9.2	9.6	11.6	8.7	9.4	10.0	9.3	9.2	365	365	.....
1.62	1.68	.....	11.5	10.2	10.1	9.7	8.3	10.1	8.4	8.2	10.0	.....	.....	106.41
.....	.....	1.60	13.7	11.2	9.0	11.6	11.5	9.0	10.0	8.9	8.4	.....	.....	105.55
1.63	.....	.....	4.12	8.0	10.2	3.87	8.98	11.4	.....	.....	.....	.....	.....	104.85
1.70	.....	.....	11.4	7.4	8.9	9.6	7.6	9.0	8.4	8.5	8.7	.....	.....	106.63
1.8	1.7	.....	13.7	9.7	9.2	11.6	9.2	9.2	10.0	8.6	9.1	.....	.....	101.0
.....	.....	.....	10.4	9.5	10.8	8.8	9.2	10.8	7.7	9.6	10.8	.....	.....	110.8
.....	.....	1.75	7.8	9.4	11.8	6.6	8.6	11.6	5.7 10.0	8.6 10.1	11.9 9.9	.....	.....	105.14
.....	.....	1.45	13.7	9.8	10.5	11.6	8.9	10.6	10.0	8.5	13.5	.....	.....	106. 0
1.41	1.5	.....	13.7	8.2	9.4	9.4 11.5	9.2 9.2	8.7 9.0	10.0	9.0	9.2	.....	.....	108.15
.....	.....	1.75	13.7	13.0	10.1	11.5	8.8	10.0	10.0	8.8	10.0	160	86	107.3
.....	1.85	.....	10.0	10.6	11.4	10.0	9.8	10.8	10.0	10.2	10.2	180	120	105.08
1.60	.....	.....	6.17	7.6	12.0	5.24 11.6	7.6 8.2	12.0 8.8	4.51 10.0	7.6 8.3	12.1 8.6	250	175	106.1
1.70	1.65	.....	.....	.....	.....	6.0 8.0	8.8 9.8	13.0 11.0	6.0 8.0 10.0	8.0 8.0 8.1	11.0 8.8 8.8	200	200	126.5
1.60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	107.3
1.75	.....	.....	13.7	7.6	8.7	11.6	6.8	8.6	10.0	7.2	8.5	300	75	106.61
1.90	.....	.....	11.0	7.1	9.5	10.0	7.6	9.5	10.0	11.5	8.8	.....	.....	.....
.....	1.70	.....	13.0	8.4	12.8	11.5	8.65	10.6	10.0	8.5	9.8	150	150	.....
.....	.....	1.45	13.0	8.2	8.4	9.0	7.6	8.7	8.0 10.0	7.6 8.2	8.6 8.4	.....	.....	106.5
.....	.....	1.80	12.0	7.9	9.5	11.5	7.9	9.7	10.0 12.0	7.5 7.0	9.0 8.8	275	164	108.0
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	106.3
.....	.....	1.74	.....	11.8	12.3	.....	7.8	12.5	.....	8.8	11.0	.....	.....	.....

Free fatty acid, Accepted Average of all results — 1.70
Free fatty acid, Accepted Average using alcohol— 1.62
Free fatty acid, Accepted Average using brine — 1.72
Iodine Number, Accepted Average —106.5
All refined oils read with 35 yellow.