

TESTS FOR COCONUT AND PALM OIL.

The following scheme to detect the adulteration of these oils with others may be used:—

First operation.—20 c. c. of the sample are shaken for one minute in a graduated tube with 40 c. c. of alcohol of 90°, when the oil, deprived of its free fatty acids, sinks to the bottom. Alcohol of 85° then absorbs a certain quantity of neutral fatty matter, and the oil dissolves 15 to 20 per cent of alcohol. The solvent power of the oil diminishes sensibly in the presence of insoluble oils, whilst that of the alcohol increases in the presence of oils, soluble in alcohol of 95°, castor oil, resin oil, &c., which latter can be readily characterised by their physical and chemical properties.

Second operation.—5 c. c. of coconut oil, previously washed with alcohol of 95°, are treated in a graduated tube with 10 c. c. of absolute alcohol, and the mixture placed on the water bath at 30° to 31° C.; it is now shaken for 40 seconds and replaced on the waterbath. Pure coconut oil dissolves completely under those conditions, whilst contaminated with oils insoluble in alcohol, such as earthnut, sesame, cottonseed, and maize oils, it does not sensibly dissolve, but falls to the bottom of the tube. Coconut oil containing 20 per cent of palm oil separates, but when the percentage is below this a turbid emulsion results. Palm oil is treated in the same manner, only with 20 c. c. instead of 10 c. c. of absolute alcohol. Five c. c. of palm oil containing 20 per cent and upwards of coconut oil is soluble in 15 c. c. of absolute alcohol, whilst under these circumstances the pure oil forms a turbid emulsion.

The purity of coconut and palm oil cakes is determined by extracting the facts and treating them in the manner above described.

The volatile fatty acids in butter fat may be estimated thus:—

Five grams of filtered dry butter fat is placed in a flask of 900 to 350 c. c. capacity, and 2 c. c. of 50 per cent aqueous soda, and 20 c. c. of glycerol added. The mixture is then carefully boiled over wire gauze, until all the water is expelled, the flask being gently rotated the while; the heating is then continued with a smaller flame; in 15 min. a clear soap solution is obtained, which after cooling, is mixed with 90 c. c. of water and 50 c. c. of dilute sulphuric acid (50 c. c. of acid per litre), some fragments of pumice added, and the mixture distilled until 110 c. c. has passed over. The author regards the method as quicker and more convenient than the older methods, but the test analysis appears to be far from satisfactory.

Baudouin's test for sesame oil in olive oil is applied as follows:—

0.1 gram of sugar is dissolved in a test tube in 10 c. c. HCl, sp. gr. 1.19. 20 c. c. of the sample of olive oil is then added, the whole thoroughly shaken for a minute, and allowed to settle.

If the oil is pure, the acid and oils retain their original colour, but if sesame oil is present they are both of a decidedly reddish shade.—*Chemical Trade Journal.*

MARRAM GRASS.

The following account of the successful planting of Marram grass on a large extent of sandhills is taken from the Melbourne newspaper, the *Leader*:—

"The Marram grass (*Psamma arenaria*), the seed of which was first introduced into the colony of Victoria by the Government botanist, Baron von Mueller, in 1833 (and by him entrusted to the Borough Council of Port Fairy for experiment on the barren shifting sand hummocks fronting the coast line of Port Fairy), has been proved to be the most effective sand stay ever planted. Practical evidence of its value can be seen in the 50 miles of sandhills extending between Warrnambool and Port Fairy, now reclaimed by the Marram plantations, sown under the direction of Mr. S. Avery, the park ranger. So

complete has been the reclamation of the lands that, where a few years ago not a sign of vegetation was to be seen, there now exists a succulent grass, eagerly devoured by cattle, and growing to the height of 4 feet. Marram grass is practically indestructible—burning, cutting, or eating off only makes it thrive—whilst, in exposed, shifting sand, it propagates as surely as in the most sheltered position. The grass for transplanting has been supplied by the Port Fairy Borough Council, not only to the Governments of Victoria and New South Wales, but to numerous municipal bodies and private individuals in all the Australian colonies, New Zealand, and Tasmania, and in no single instance has it failed to thrive. The grass is supplied at the actual cost of digging, packing, and carting to the wharf or railway station, Port Fairy, which does not exceed 25s per ton. The grass is planted in rows, at a distance of 6 feet apart, the space between the plants at least 2 feet. The depth to which each plant is put into the sand depends upon the nature of the sand. If in sand not likely to drift for two or three months, 9 inches is deep enough; but, if very loose and shifting, the grass should be placed from 12 to 15 inches deep. A "plant" consists of as much grass as a man can conveniently hold in his hand, and care is taken to have the roots regular. The system adopted in planting is for one man to dig the hole, and another puts in the "plant," and well treads round the same. After 12 months' growth, the plants are fit for thinning out and transplanting. Cattle are not allowed to graze on the grass until the roots become thoroughly established. It takes 3,630 "plants" to the acre, and there are about 2,800 "plants" to the ton; thus, 1 ton 6 cwt. covers one acre. The most favourable time for planting is from the 1st May to the end of July. The grass retains its vitality, and strikes root after being out of its sand bed for three months or more. In a report upon the grazing capabilities of the grass, furnished to Baron von Mueller by Mr. Avery, from Port Fairy, under date the 18th inst., he says—"I generally put the cattle into the Marram grass enclosure after the first rains we get in April, and then allow them to graze there until the season begins to get too dry, when they are taken out and kept off till next season. I have been able to keep them in longer this season on account of the late rains we have had. During the last season, I have had about 100 head of cattle grazing on about 100 acres of Marram grass for six months, and the cattle kept in fair condition during that time. There seems to be some doubt in the minds of a great many persons, who have heard about the Marram grass, that it is of no use as fodder; but I can assure you that the cattle at Port Fairy thrive well on it, and, if it was not for the grass during the winter months, the residents' cattle would fare badly. I am of opinion that it would make a splendid ensilage." Many hundreds of acres of the valuable potato lands bordering the western coast of Victoria have already been saved from destruction by this valuable grass; and the grateful testimony of the farmer is, that "if Baron von Mueller had conferred no other benefit on the colony than this alone, out of all his other good works, he would deserve to live in grateful remembrance as a great public benefactor." Amongst the latest applications for plants of this grass are several from India and Africa."—*Journal of the Society of Arts.*

Honey is beginning to figure more largely in the list of Australian exports to this country, and the attention given to apiculture is evident from the number of announcements concerning bees to be met with in the colonial papers. The following is a typical announcement from a Victorian specialist:—"Do you know that I have for sale beautiful Italian golden queens, some of them yellow to the tip? They have been bred for business, are consequently good honey gatherers, and quiet to handle. Bees in full colonies, or nucleus —*Gardeners' Chronicle.*