

duction early in 1942, only a matter of months after the original approaches to produce a black sheet metal and plywood substitute were made.

As regards the uses to which the product has been put, only a few need be mentioned as examples. Hundreds of thousands of grease drums have been made and many hundreds of thousands of tea-chests. Some three-quarters of a million "Jutlac" liners for supply-dropping equipment have been produced and hundreds of thousands of square feet supplied and used in the fabrication of military vehicles. As regards jettison petrol tanks for aircraft, several hundred were fabricated which passed all tests satisfactorily; these tanks were chiefly of 45 gallon capacity but also larger tanks of 90 gallon capacity were made. Plans were ready to expand production of these tanks but such did not have to come into operation because of a fortuitous change in the situation. "Jutlac" has been used by the British Military and Air Force Services and by the U.S.A.A.F.; it has been used by the tea industry, the oil industry and by other large industries. It has been used in building construction, for panelling, for racking and for boxes. It also makes serviceable suitcases. Moreover, it has been successfully used, and complaints from the users have been practically nil, perhaps a fitting tribute after three years' experience in usage for so many different purposes. As already stated the material is 100 per cent. an Indian indigenous product, evolved, developed and put into production during a very difficult period. A large-scale research and development plan is in course of projection, which will open out possibilities for the establishment of a new industry entirely indigenous to India.

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 Calcutta, W. G. MACMILLAN.
 June 6, 1945.

DETERMINATION OF TOTAL SOLIDS IN MILK

DURING our experience of examination of milk for the prevention of adulteration under the Bombay Prevention of Adulteration Act, it has been found that the Total Solids of milk, when calculated by means of Richmond formula, is generally in excess than that determined by direct gravimetric method. Moreover, when the milk is adulterated either by abstraction of fat, watering, or both, this discrepancy between the two methods is found to be high (see table).

This is so, because the specific gravity of milk is raised by the abstraction of fat and lowered by the addition of water. Hence, by partial skimming and watering, an adulterated sample may possess the same specific gravity as that of genuine milk. In such a case, the Total Solids calculated by Richmond formula will be found higher than the actual present in milk, inasmuch as it will not take into account the adulteration of water, as the specific gravity will be that of genuine milk, even

though abstraction of fat will be accounted for. For such cases, no formula, either for buffalo or cow milk will satisfactorily work,

Sample No.	Specific Gravity, at 60°F.	Fat %	Total Solids % by Richmond formula	Total Solids % by gravimetric method	Excess. By formula
1	1.027	3.4	10.9	8.6	2.3
2	1.023	2.8	9.2	7.0	2.2
3	1.033	3.8	12.9	9.9	3.0
4	1.025	3.0	10.0	8.2	1.8
5	1.023	2.6	9.0	5.8	3.2
6	1.023	2.8	9.2	7.3	1.9
7	1.036	6.8	16.3	15.0	1.3
8	1.037	5.4	15.9	12.6	3.3
9	1.029	4.8	13.1	10.6	2.5
10	1.033	5.6	15.1	12.2	2.9
11	1.034	5.1	14.7	10.9	3.8
12	1.029	4.4	12.6	10.0	2.6
13	1.026	4.2	11.6	9.1	2.5
14	1.042	6.0	17.8	14.2	3.6
15	1.042	6.8	18.8	15.2	3.6
16	1.027	2.3	9.6	8.1	1.5

because specific gravity of milk varies directly as abstraction of fat and inversely as addition of water. Whether, therefore, the specific gravity is normal or otherwise, it is necessary to determine the fat and total solids by gravimetric method.

In this Province Total Solids in milk are calculated on the Richmond formula, in some of the Public Health Laboratories, while in others, by the direct gravimetric method. In view of this, when milk samples under Bombay Prevention of Adulteration Act are sent for analysis from one part of the Province to another, the results are found to be different. Due to this, the accused is given benefit of doubt and acquitted. Hence uniformity of standards as well as methods of analysis and calculation should be laid down by the Central Advisory Board for Food Adulteration, Government of India, for milk and its products.

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 Borough Municipality, C. M. DESAI.
 Surat, A. H. PATEL.
 June 26, 1945.

TAMARIND SEED "PECTIN"

NANJI *et al.*¹ pointed out in a recent issue of this *Journal* that the "pectin" prepared from tamarind seed according to the method of Krishna and Ghose² is "not a pectin as ordinarily understood" as it fails to give some of the characteristic pectin reactions and as it contains nitrogenous material. We had occasion to deal with this substance in the course of a systematic investigation on pectins from Indian plant materials completed in this laboratory some time ago and, after examining it in some detail, reached the conclusion that it was not a pectin. The investigation was undertaken mainly with the object of discovering a source of galacturonic acid required for the