GRADING TEA WITH STAMPED ALUMINIUM SIEVES.—II

J. LAMB

In a previous article [1] tests designed to compare stamped aluminium sieves having square perforations, with ordinary brass wire sieves, were reported in some detail.

The results of these tests established the superiority of stamped aluminium due to the comparative smoothness of the surface of the flat aluminium sheet as against the roughness of a wire weave sieve which tends to scratch the surface of black tea particles and cause greyness of appearance. Severe scratching causes loss of soluble material coated on the surface of tea particles and may thus affect liquors to some extent.

Since the article mentioned above was published it has been observed that slight greyness will disappear if the tea absorbs a small amount of surface moisture.

These observations have also been recorded at Tocklai [2] by Harrison who points out that it is inadvisable to grade tea too soon after firing when the surface is brittle. Absorption of a small amount of water apparently renders the surface coating of soluble material less liable to abrasion.

Although the square stamped aluminium sheets have proved very satisfactory in practice, the production of square stamped sheets has been found to be expensive.

The cost of stamping is reduced considerably when the perforations are round instead of square, and we were approached to test circular stamping and to match this form of sieve against standard brass weave sieves.

Some initial difficulty was experienced over the standardization of the circular stamped sieves, since the size and number of perforations and their pattern all affect the mechanical strength of the sieves. These production problems were soon overcome and the sizes given in Table I may be produced in standard form.

TABLE I

Size of Perforation (Diameter in millimetres)		Number of Perforations per square inch.
1	...	288
1½	...	161
2	...	80
2½	...	51
3	...	37
3½	...	30
4	...	24

A series of tests somewhat tedious in nature were then carried out to match the circular stamped sieves against standard brass weave sieves on a mechanical sifter (Michie).

The results are summarised in Table II.

TABLE II

Circular perforation No.	Equivalent range of standard brass mesh	Closest corresponding brass mesh
1 mm.	22-26	24
1½ ,,	18-16	18
2 ,,	14-12	14
2½ ,,	12-10	12
3 ,,	10-8	10
3½ ,,	8-6	8
4 ,,	6	6

Since methods of grading vary a good deal it is not feasible to cover all the possible applications of stamped aluminium sieves in this article. An example must therefore suffice to show how the new material may be adapted to a particular case with success.

Well bulked dhools were employed in all cases described below and equally divided for the purpose of comparing the different sieves. A Mitchie sifter was used in all tests.

(A). BRASS WEAVE SIFTING

Formerly it was the practice in St. Coombs factory to use No. 10 brass wire weave for sifting out F.P. and B.O.P. and a No. 18 sieve for B.O.P.F. When stamped aluminium with *square* perforations replaced brass weave, 2½ mm. and 1 mm. sieves were adopted.

The practice with dhools 1, 2 and 3 was to sift them over No. 10 mesh and the leaf passing over was cut. The leaf falling through went to the B.O.P. fraction. The cut leaf was again sifted over No. 10 and the leaf passing over went to F.P. while that falling through went to the B.O.P. fraction.

(B). STAMPED ALUMINIUM WITH CIRCULAR PERFORATIONS

The problem in this case was to match the grades sifted out on brass weave. No single mesh could be found to match No. 10 brass weave exactly, so the scheme followed was to sift the first three dhools over a 3 mm. sieve and to cut the leaf passing over.

The leaf falling through the 3 mm. sieve was sifted over a 2½ mm. sieve together with the cut leaf to obtain the F.P. and B.O.P. fractions. A 1½ mm. was used to separate B.O.P.F.

It is not intended to describe the rest of the operation as this course will only serve to confuse the main point which is the use of two sieves to match No. 10 brass weave. This artifice causes little additional work but makes a great difference to the "Make" of the teas which was criticised by the Tasters with regard to evenness as well as size when only one sieve was employed.

Table III shows quite clearly that the teas sifted over stamped aluminium were considered superior to those of identical origin sifted over brass weave. The grounds of preference were on quality as well as appearance. This may be explained by the observations given at the beginning of the article.

TABLE III

Grade	Colombo Tasters		London Tasters	
	Stamped aluminium Cts.	Brass weave Cts.	Stamped aluminium Pence	Brass weave Pence
B. O. P.	82	80½	15⅞	15½
F. P.	77½	76⅜	15⅜	15⅛
B. P.	66½	66	13½	13⅛
Pekoe	74⅜	72	15⅛	15
O. P.	79½	77⅜	16⅛	16⅛
B. O. P. F.	82	80½	16⅛	16⅛
"Sale" Average	80½	79	15⅞	15⅛

Table IV contains figures which demonstrate the similarity of the teas in respect to grade out-turns and also the composition of the comparative grades. The comparison between the grades was made by sieving over standard sieves and weighing the various fractions of different particle size.

TABLE IV

Grade	Grade Percentages		Composition of Principal Grades (Per cent)							
	Stamped aluminium	Brass weave	Standard mesh	B. O. P.		F. P.		B.O.P.F.	
				Aluminium	Brass	Aluminium	Brass	Aluminium	Brass
B.O.P.	64.5	63.0	Over 5	—	—	12	6		
F. P.	11.0	12.5	Through 5 & over 8	15	15	66	75		
B.P.	4.0	4.0	„ 8 „ „ 10	32	33	14	12		
P.	2.0	2.0	„ 10 „ „ 12	26	27	8	7		
O.P.	3.5	3.0	„ 12 „ „ 16	19	19	—	—	26	18
B.O.P.F.	11.0	11.0	„ 16 „ „ 20	8	6	—	—	32	32
Dust	2.0	2.0	„ 20 „ „ 30	—	—	—	—	36	40
B.M.	2.0	2.5	Through 30	—	—	—	—	6	9

REFERENCES

1. *The Tea Quarterly*, X, 191.
2. Indian Tea Association, Tocklai Experimental Station, Proceedings of the Second Annual Conference, 1938, pp. 44 and 46.