

## GRADING TEA WITH STAMPED ALUMINIUM SIEVES.

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That great care is necessary in the handling of black tea after firing is almost axiomatic in modern teamaking. Greyness not only spoils the appearance of black tea, but it indicates that some of the soluble material, which is responsible for the liquoring characters of the tea, has been lost. This soluble material is worked out of the cells during rolling and coats the surface of the leaf, where it ferments and becomes tacky like a varnish. The "varnish" is baked in a smooth coat on the surface of the leaf during firing and appears dead black when the leaf is dry. If a piece of this "varnish" is scaled off and held up to the light it appears light brown and resinous. When in a fairly divided condition the "varnish" assumes the appearance of a light-brown powder and largely constitutes the familiar dust of the sifting room. A scratch in the smooth coat on the leaf causes light to be dispersed from the jagged edges of the resinous material where small particles have been torn away, and to the naked eye this scratch appears grey against the black background of the rest of the leaf. Apart from scratching the leaf, rough handling may also detach a large number of fine brittle hairs from pieces of the tip, resulting in loss of tip or diminution of the fine appearance of the tip. The hairs so detached form part of the "Fluff" of the sifting room. Thus, in normally-rolled teas greyness is an indication that liquors are not all that they might be.

In the annual report of the Tea Technologist for 1936, there appears an account of the methods adopted up to the end of that year to replace brass wire weave by stamped aluminium sheet for grading tea. Stamped aluminium sheets have an almost perfectly smooth surface whereas the surface of brass weave is corrugated and rough to the touch: As will be shown later, the effect of this difference is sufficient to enable tasters to pick out tea graded by the two different methods.

When comparing brass weave with stamped aluminium sieves it is desirable to maintain the same make of tea. Difficulty was encountered at first by reason of the difference in the effective sifting area between the same sized sheets of brass weave and stamped aluminium. The reason for this difference is that the divisions between the holes are much thicker in stamped aluminium than in normal brass weave and, therefore, although the holes may be the same size in both cases, there are less of them per unit area of stamped aluminium sheet than in brass weave. Care must, therefore, be taken never to feed stamped aluminium sheet at too fast a rate. Overfeeding of any sifter must always be scrupulously avoided, and in the normal course of events the latitude is such that stamped aluminium does not delay sifting operations. At present we employ the same rate of feed with stamped aluminium as was formerly employed with brass weave.

In the above-mentioned annual report experiments are described in which 3 mm. stamped aluminium was compared with No. 10 mesh brass weave, and it is explained that results were not completely satisfactory for B.O.P. and F.P. owing to the fact that 3 mm. stamped aluminium is more nearly equivalent to No. 8 mesh brass weave, and that this oversize had to be compensated for by employing a faster rate of feed. Under these conditions the make was not as even as desirable. A 2 mm. stamped aluminium sheet was available but proved less satisfactory than 3 mm. under the conditions described.

At our request the agents imported an intermediate size, viz. 2½ mm. This has been used in the following experiments and has enabled us to obtain exactly the same proportions of various grades with stamped aluminium as could be obtained with Nos. 8, 10 and 18 mesh brass weave.

A day's make of tea was graded, half on stamped aluminium and half on brass weave. The quantities used were as follows:—

Dhools 1, 2 and 3	...	=	423 lbs.
Dhool 4	.....	=	192 ..
Big Bulk	.....	=	82 ..
			<u>697 lbs.</u>

(A). *Stamped Aluminium*.—3 mm., 2½ mm. and 1 mm. stamped aluminium sheets were used on a Michie Sifter. The 3 mm. and 2½ mm. were used in lengths of 6 ft. × 3 ft. on the top tray. The 1 mm. sieve (1½ ft. × 3 ft.) was used in the bottom tray. Hand sieves 3 mm., 2 mm. and 1 mm. mesh of 22 inches diameter were

also employed. There was not any stamped aluminium hand sieve available corresponding to the brass 30 mesh dust sieve, in which circumstances dust was removed with a wire sieve.

The following are the equivalents of stamped aluminium to brass weave:—

3 mm. stamped aluminium = 8 mesh brass weave.

2½ mm. " " " = 10 " " " "

1 mm. " " " = 18 " " " "

(B). *Brass Weave*.—Brass weave meshes Nos. 8, 10 and 18 were used on a Michie Sifter. Hand sieves, 10 mesh, 18 mesh and 30 mesh, were also employed, and a bamboo hand sieve used for Orange Pekoe.

The percentage out-turn of grades was as follows:—

TABLE I.

	A. Stamped Aluminium	B. Brass Weave
B.O.P.	47	46
B.P.	6	6
F.P.	30	30
Pekoe	5	5
O.P.	2	2
Fannings	5.5	6.5
Dust	1.5	1.5
Broken Mixed, Fluff & Pickings	3	3

The composition of all the grades except Orange Pekoe and Dust were determined by means of a nest of standard sieves. This fractionation showed clearly that each grade prepared by means of aluminium sieves approximated very closely indeed to that sorted with brass mesh sieves.

The composition of three main grades is given in Table II.

TABLE II.

## COMPOSITION OF PRINCIPAL GRADES

Standard Mesh	B. O. P.		F. P.		Fannings	
	Aluminium	Brass	Aluminium	Brass	Aluminium	Brass
Over 5			14	10		
Through 5 & over 8	22	25	64	73		
"    8 " " 10	32	34	13	10		
"    10 " " 12	22	21	9	7		
"    12 " " 14	16	14				
"    14 " " 16	8	6			16	14
"    16 " " 20					25	29
"    20 " " 30					46	46
Through 30					13	12

The differences between the stamped aluminium and brass weave in the out-turn and composition of the grades have been almost eliminated by the use of  $2\frac{1}{2}$  mm. stamped aluminium in place of the 3 mm. mesh used in previous experiments.

*Tasters' Reports.*—A "Team" of four Colombo tasters distinguished the aluminium sifted teas from teas sifted on brass weave without any doubtful or borderline cases. The samples were sent down according to our usual system, the packets bearing numbers only, so that the tasters were unaware of the nature of the samples until after they had been valued. The grades sifted on aluminium sheets were valued highest in every case. The results are summarised in Table III:—

TABLE III

Grade	Average valuation in cents	
	Stamped aluminium	Brass weave
B.O.P.	80	79
B.P.	75	74
F.P.	84	82
Pekoe	78	76
B.O.P.F.	84½	83
Dust	72	71
O.P.	75½	75
O.P.	71½	71