

★ STUDIES ON THE FIRING OF TEA—II ★

J. LAMB

INTRODUCTION

In the first article ⁽¹⁾ of this series an account of experiments on firing temperatures was given. The objects and experimental method were set out at some length and reference should be made to that article for detail.

Experiments concerned with the effect, at different seasons, of firing tea at 160°F., 190°F. and 210°F. under conditions of (a) Constant load and air flow and (b) Constant time and air flow, have been completed and the results form the subject of this article. Since the first article was published it has become impossible, owing to war conditions, to have samples tasted in London but we have been fortunate in having the advice of our usual Colombo Team of Tasters and the results are so very definite that the question of market requirements does not arise.

The present results incorporate those given in the previous article. Values for Flavour and Pungency are omitted from Tables I and II since Colombo Tasters have not reported either property. The Colombo Tasters never report pungency in St. Coombs teas and flavour only when it is outstanding, whereas London Tasters are often of the opinion that some pungency and flavour are present. Such differences are in degree only and are easily taken into account when analysing results so long as the Teams are consistent, as they have been to a marked degree. The London Tasters, as reported in the previous article, ⁽²⁾ were very definitely of the opinion that the degrees of pungency and flavour observed depreciated as the firing temperature was raised. Pungency and quality were marked down severely in teas fired at 210°F.

RESULTS

The complete results are set out in Tables I to IV. As already mentioned they incorporate all previous results. The figures shewn in Tables I and II are the conclusions drawn from sixty-four team reports on sixty-four sets of teas, each set being a well mixed bulk of the teas from three separate experiments. This means that the experiment of comparing firing at 190°F. with firing at 160°F.

and 210°F. has been repeated at least ninety-six times, each lot of samples having been tasted twice, *i.e.*, before and after storage.

During the analysis of team findings very rigorous methods of selection and rejection have been employed with the result that any differences reported in the Tables have been very marked and agreed upon by all the Tasters. All small differences have thus been completely ignored.

COLOMBO VALUATIONS

TABLE I

Load and air-flow constant (Time varied)

N. E. MONSOON SEASON

Temperature °F.	Analysis				Valuation in cents	Analysis after storage*				Valuation in cents after storage*
	Appear- ance	Col- our	Strength	Qual- ity		Appear- ance	Col- our	Strength	Qual- ity	
180	0	0	0	0	0	0	0	0	0	+1
190		Standard					Standard			
210	0	0	0	-1	-3	0	0	0	0	-1½

* Storage for 2 months.

DRY-WEATHER SEASON

180	0	0	0	+1	+2½	0	0	0	0	+1
190		Standard					Standard			
210	0	0	0	-1	-2	0	0	0	-1	-2

INTER-MONSOON SEASON

180	-1	0	0	+1	+2½	-1	-1	0	0	-2
190		Standard					Standard			
210	0	0	0	0	-2	0	0	0	-1	-4

S. W. MONSOON SEASON

Temperature °F.	Analysis				Valuation in cents	Analysis after storage*				Valuation in cents after storage*
	Appear- ance	Col- our	Strength	Qual- ity		Appear- ance	Col- our	Strength	Qual- ity	
160	0	0	0	0	+2	0	-1	0	0	-1
190		Standard					Standard			
210	0	0	0	0	-1½	0	0	-1	-1	-5

TABLE II

Time and air-flow constant (Load varied)

N. E. MONSOON SEASON

160	0	0	0	0	+1	0	-1	0	+1	+1
190		Standard					Standard			
210	0	0	0	-1	-2	0	0	0	0	-2

*Storage for 2 months.

DRY-WEATHER SEASON

160	0	0	0	0	+1	0	0	0	0	+1
190		Standard					Standard			
210	0	0	0	-1	-2	0	0	0	-1	-2

INTER-MONSOON SEASON

160	0	-1	0	+1	+3	0	-1	0	0	+1
190		Standard					Standard			
210	0	0	0	0	0	0	0	0	-1	-3½

S. W. MONSOON SEASON

Temperature. °F	Analysis				Valuation in cents	Analysis after storage				Valuation in cents after storage
	Appear- ance	Col- our	Strength	Qual- ity		Appear- ance	Col- our	Strength	Qual- ity	
160	-1	0	0	0	0	-1	-1	0	0	-2
190		Standard				Standard				
210	0	0	-1	-1	-4	0	0	-1	-1	-4

VALUATIONS FROM LONDON

TABLE III

Load and air-flow constant (Time varied)

N. E. MONSOON SEASON

Tempe- rature °F	Analysis						Valuation in farthings
	Appearance	Colour	Strength	Pungency	Qualtiy	Flavour	
160	0	0	0	+1	+1	+1*	+2
190			Standard				
210	0	0	0	-2	-2	-1*	-3

INTER-MONSOON SEASON

160	0	0	0	0	0		0
190			Standard				
210	0	0	0	-1	-1	-	-1

* Reported in 1 sample only

TABLE IV

Time and air-flow constant (Load varied)

N. E. MONSOON SEASON

Temperature °F	Analysis						Valuation in farthings
	Appearance	Colour	Strength	Pungency	Quality	Flavour	
160	0	0	0	0	+1	+1*	+2
190			Standard				
210	0	+2	0	-3	-3	-1*	-4

INTER-MONSOON SEASON

160	0	0	0	0	0	—	-1
190			Standard				
210	0	-1	0	-1	-1	—	-3

* Reported in 1 sample only

DISCUSSION OF RESULTS

The results are very clear and little explanation is necessary. It is interesting to note that when the appearance of the (fresh) teas fired at 160°F. was marked down one point, the same adverse opinion was given when the same teas were put before the Tasters six weeks later after storage. Teas fired at 160°F. are not quite so black in appearance as those fired at higher temperatures and this probably accounts for the difference reported. However, this is not an important fact as temperature of firing does not affect the appearance of teas to any significant extent; the interest lies rather in the careful attention paid by Colombo Tasters, as often before pointed out, to differences in appearance, and in the consistent nature of our "Team" reports. In the latter connection it may be recalled⁽⁹⁾ that samples received by the team are identified by a number only and they are not even aware, when tasting, that the samples are connected with firing experiments.

The main effect of firing temperatures is obviously upon quality. On an average of twenty-seven out of thirty-two occasions quality

was to a marked extent adversely affected by firing at 210°F. As a result of this the valuation of the teas were affected in the following way:—

160°F.	resulted in higher values than 190° or 210°F.	on 40 occasions.
190°F.	"	" 160° or 210°F. on 19 "
210°F.	"	" 160° or 190°F. on 0 "

Firing at 160°F. undoubtedly results in the best teas but, despite the accurate control over moisture content and storage conditions which is possible on an experimental scale, there were distinct signs of lack of keeping quality in the low fired teas. On an average of eighteen out of thirty-two occasions the margin of valuation in favour of teas fired at 160°F. depreciated after two months' storage. This is probably more than could be due to chance or to market conditions. Depreciation of valuation on thirteen of these occasions resulted in the teas fired at 160°F. being valued after storage, at less than those fired at 190°F.

It must be concluded therefore that the keeping quality of teas fired at 160°F. is doubtful. The moisture contents of these teas did not exceed 5 per cent at any period.

Tables III and IV contain results of opinions given by London Tasters in the early stages of the experiments before the war interfered. Although not so complete as the results in Tables I and II they afford valuable confirmation. Quality and Pungency are marked down severely.

SUMMARY OF CONCLUSIONS

1. Experiments comparing teas fired under carefully controlled conditions in a single operation at 160°F., 190°F. and 210°F. have been completed.

2. Above 190°F. temperature has an adverse effect upon quality, and also upon pungency and flavour when reported. This adverse effect causes a loss of value, and firing temperatures above 190°F. have been found to be inadvisable.

3. Firing at 160°F. results in the production of teas of better quality and higher value (when fresh) than firing at 190°F. but they lack keeping quality even when thoroughly dried and carefully stored with the result that the practice of firing at temperatures below 190°F. cannot be recommended.

4. These results cover both firing with thin spreading in 21 minutes and with thicker spreading for longer periods up to 42 minutes. Double firing has not been studied in this series.

REFERENCES

- (1). *The Tea Quarterly* 1939, XII, 171.
- (2). *Ibid* 1939, XII, 178.
- (3). *Ibid* 1937, X, 57.