

MACHINES AND MATERIALS.
A SUMMARY OF TESTS CONDUCTED
AT ST. COOMBS FACTORY.

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During the past two or three years there has been a marked increase in the number of tests which we have been asked to conduct with various new machines and materials introduced into Ceylon. At the present moment this part of our duties is becoming liable to disorganise other research work and it is possible that some reservation will have to be imposed in the near future.

However, in so far as equipment new to the Ceylon Tea Industry is concerned, it appears a legitimate part of our duties to carry out at least initial tests and we shall always endeavour to fulfil this function as far as our Staff, (i.e., Biochemical Department Staff) and other facilities permit.

The Board of Control has laid down certain rules including the reservation of our rights to publish information derived from such tests and a brief summary usually appears in the annual report.

This summary is normally sufficient to indicate the conclusion arrived at and requests for information could sometimes be saved if the annual report were consulted. Where details are required, however, much information is lodged in our files and we are only too pleased to be helpful whenever possible. Very often it will be possible for those interested to see the particular piece of equipment at St. Coombs and for this purpose appointments can be arranged; on the contrary, however, it is exceedingly difficult to maintain organised work when visitors arrive without notice.

The purpose of this article is to draw attention to this branch of our activities and to give a brief indication of our findings; the writer's departure on leave also occasions the drawing together of miscellaneous information, the delay in publication of which may invalidate its usefulness to the Industry.

WITHERING

1. The different types of withering material having a much more open weave than ordinary jute hessian have been tested for effect on rate of wither and quality of resultant teas. In each case a very slight effect on rate of wither was revealed by moisture content determinations, but it was not apparent to the eye or touch. The leaf from the different materials was manufactured separately over a prolonged period but when results were averaged out there was a surprising uniformity in all the valuations. In short we could not detect any difference of commercial importance between any of the withering materials of open weave compared to the ordinary weave of jute hessian.

The open weave construction of jute hessian markedly reduces its wearing properties. Linen cloths of similar construction are stronger, but it is doubtful whether they will outlast the jute hessian cloth of ordinary weight. One of the materials tested which had been treated with Cutch did not give any trouble with taints when new. This suggests that Cutch treatment of ordinary hessian might be advantageous.

2. A locally made cotton cloth proved to be unsuitable for withering.

3. The question of fireproofing hessian was examined and certain materials tested. Processing of this nature could only be carried out effectively by suppliers.

4. *Withered Leaf Sifting*.—Machines made by Messrs. Colombo Commercial Co. and Messrs. Walker & Greig Ltd. have been tested and found to be very satisfactory. No. 4 mesh proved to be the best size for employment in withered leaf sifting. Tip passing through the mesh may be recovered by winnowing.

ROLLING

1. *The Chivemeure Roller*.—References to this machine have been made in previous publications. Experiments have reached the stage of commercial scale experiments and the results have been encouraging.

2. *Fermenting Surfaces*.—Aluminium and galvanized iron have been tested for use in fermenting trays. Aluminium is quite satisfactory. The quality of galvanized iron on the market is so poor that its employment cannot be recommended. Tests with monel metal are being arranged.

3. A rolling pressure indicator of the dial type made by Messrs. Marshall, Son & Co. proved to be quite useful. This instrument gives an easily visible indication of pressure in terms of pounds weight.

FACTORY ORGANISATION

Two ingenious devices for setting out manufacturing programmes so that exact details of the work which should be carried out at any minute of the manufacturing day are clear to all the factory staff, have been tried out. Both devices are adaptable to changes in programme and are very satisfactory.

Anyone entering the factory at any time during working hours is enabled to tell at a glance whether routine is proceeding smoothly. A great deal of record keeping is rendered superfluous by these indicators.

One device is called the "Tell Tale Indicator" and has interchangeable slides for relating the time, while the other is attached to a clock with a single indicator hand along which may be read off details of rollers in use, roll breakers in use, and details of dhools in relation to the exact time within a 12-hour period.

The "Tell Tale Indicator" is adaptable to any programme by the use of coloured pegs and new dials may be fitted to the clock when the programme is changed.

Both these indicators have been devised by Ceylon planters and are available locally.

GRADING

1. *Stamped Aluminium.*—Results with stamped aluminium have been published in *The Tea Quarterly*. The stamping of square perforations in aluminium is a relatively expensive item in production and tests with similar material having circular perforations are now in progress.

2. *Aluminium Scoops or Winnowers.*—Two aluminium winnowers intended to replace the familiar bamboo winnowers have been submitted for test by Messrs. Harrisons & Crosfield. One type is constructed of plain moulded aluminium, and the other, although of similar construction, has a ribbed or fluted bottom which assists in hand winnowing since it affords the operator more control over the movement of the bulk of the leaf. The fluting affords a gripping surface similar to the weave of the bamboo. Both types are of sound construction and will outlast many bamboo winnowers whilst eliminating contamination of dry leaf by pieces of bamboo.

3. *Sifting Machines.*—A new type of sifting machine called the "Arnott Filtrate Sifter" is now undergoing tests. Messrs. Walker & Greig Ltd. are the agents for the machine.

4. *Surfaces for Picking Over.*—It is generally agreed that black surfaces are the best for showing up red stak. A material called Masonite Presdwood, one type of which is dyed black has proved suitable for surfacing picking over tables. It is supplied in sheets 12 feet x 4 feet, Messrs. Delmege, Forsyth & Co., Ltd. being the agents in Ceylon.

Before use it should be treated with a pink solution of permanganate of potash rendered acid by a few drops of dilute sulphuric acid. Both of these materials are easily obtainable, the latter may be purchased cheaply from garages as accumulator acid. The whole of the surface should be treated with the solution and left for a few minutes. After a thorough washing, tea fluff or waste should be spread on the table and left for several hours. This treatment removed the "new" smell of the material and is useful for many other new materials which are liable to cause taints. Wet tea fluff alone is quite effective for metal or concrete surfaces which must not, of course, be treated with acid solutions.

A black rubber enamel is also being tested as a covering for picking over tables. The material in question is supplied by the Goodyear Tyre and Rubber Co. and is called Pliolite. The material dries quickly and hardens to a satisfactorily durable surface. Preliminary results are favourable.

PACKING

1. *Linings*.—Tests with packing materials have been reported in previous publications. A dozen or more materials including Kraft Paper, Cellophane and various grades of Pliofilm have been tested on a commercial scale.

The scrap value of linings removed from tea chests counts, however, over all other considerations since unfortunately the new materials tested have been at least as expensive as metal foils, and there has not, therefore, been any incentive for tea producers to adopt them even when notably satisfactory as in the case of Kraft Paper.

Tests with lining materials have been discontinued.

2. *Locally Made Momi Chests*.—Locally made momi chests have been found to be quite satisfactory. The samples submitted were in fact superior to the chests made up from imported materials which at the present moment are liable to have an excessive number of knots which became detached from the planks thus forming large holes. It is to be hoped that knot-free timber will be available to the local manufacturers in sufficient quantities to enable them to maintain this superiority. Tests with locally manufactured plywood are also being arranged.

3. *Tares*.—The Ceylon Estates Proprietary Association asked us to suggest a suitable form of tare for tea chests. With the kind co-operation of Mr. James Forbes (Jnr.) and the Colombo Commercial Co., Ltd., we devised and tested tares made from strip iron weighing approximately $\frac{1}{4}$ oz. per inch. Suitable lengths may be cut off with a cold chisel and holes for fixing either punched or drilled.

The tares may then be fixed to the lids of the chests by short nails, long enough to allow of their being clouted over on the outside of the lid.

The tares may be wrapped in cheap paper, although this is not strictly necessary, and should be fixed as close to the batten as possible.

Tares of this type may be made on the estate or obtained from the local firms in mixed lots.

Favourable reports have been received from London on a shipment by this means.

MISCELLANEOUS

Tests with spark arrestors are being conducted in co-operation with the Ceylon Fire Insurance Association.