A NOTE ON PACKING MATERIALS.

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An account of the factors which should be taken into consideration when selecting packing materials for tea chests was published in *The Tea Quarterly* Vol. VIII (1935) page 171, and reference was made there to some tests with new materials, most of which, however, had proved unsatisfactory. Since then, other types of material have been tested with more satisfactory results. Unfortunately our tests are not complete and for various reasons the work with some materials has progressed further than with others. But in view of the fact that many superintendents, owing to the enhanced cost of, or lack of, materials used in the past, may be forced in the near future to

make a change in their methods of packing, it is considered advisable to publish all the information available. This note is, therefore, more in the nature of a progress report than an account of completed investigations.

The materials to be described have passed all the tests to which they have been subjected.

The standard test for moisture proof qualities is to make a sealed liner for a momi chest, fill the chest on a mechanical packer, complete the sealing of the lining, nail up the chest, and then to store it in a humidified rolling room for one month. This is the first test to which all materials are subjected, and if successful the material is then tested as a lining for patent chests. Following this the behaviour of the material in transit is studied by first including a few experimental chests amongst a commercial invoice, and if encouraging results are obtained experiments are extended to whole invoices.

The materials tested are of three main types:—

1. RUBBER DERIVATIVES.—The only tested material of this class which shows signs of promise is a substance called *Pliofilm*, which is easily heat sealed. Tests with patent chests have not yet been carried out.

2. CELLULOSE DERIVATIVES.—A new moisture proof grade of *Cellophane* became available during the past year. This may be heat sealed and possesses marked mechanical strength. Tests with patent chests have not been carried out so far.

3. REINFORCED METAL FOILS.—(*Syn.* paper backed foils).—This class of material is represented by the following three makes which are undergoing tests:—

(a) *Kraft Paper*, a thin aluminium foil firmly fixed to a strong brown paper backing.

(b) A similar material with a thinner backing of white paper.

(c) *Aluminite*, a thin aluminium foil rolled on to a thin white waxed paper.

In class 3 (reinforced metal foils) the foil and paper adhere so closely to one another that, at first sight, the metal appears to have been sprayed on to the paper. The foil and the paper are actually rolled together with an adhesive between them. All three materials tested may easily be folded into both patent and momi chests in the same way as lead or aluminium foil. Nos. 3(a) and 3(b) may be sealed with ordinary adhesive paper tape if the chests are packed

with the paper next to the wood, and a neat effective package results. No. 3(c) owing to the waxy nature of the paper requires a special adhesive for sealing, the best form of which has not yet been determined.

Two experimental shipments have been made with two different types of patent chest lined with Kraft Paper. In one case three full chests, and in the other, four full chests were included amongst ordinary estate invoices. In both cases favourable reports were received from London, the absence of "pin prick" perforations and tears being specially commented upon. The linings were in all cases fixed under the battens. A comparison of the methods of sealing (1) by folding in the top and bottom sections and (2) by sealing with special gummed paper strips supplied by the makers of Kraft Paper, was also made. The sealed lining has a much better appearance and is preferred in London. The second London report concluded with: "We are again very favourably impressed with the new type of lining and its performance under practical conditions. We now await with much interest the opportunity of examining the complete invoice which is to come forward packed in Kraft Paper." The complete invoice in question has been despatched but the report has not yet been received.

Provided that the paper in this class of material is non-absorbent, the linings stand up very well to actual wetting. A momi chest and a patent chest of eight batten construction were lined with Kraft Paper, filled, sealed with the gummed strip provided by the makers, nailed up, and stored in a mist chamber under a continuous spray of water for three days. The results of this very stringent test were extremely satisfactory, as only a small part of the tea in one chest became damaged, and this was traced to a fault in the sealing where the gummed strip had not been wetted sufficiently to make it adhere firmly when the lining was made up. The gum on the sealing tape requires a thorough wetting for the best results.

In chests of eight batten construction a continuous sheet is used for lining the four sides. This sheet is only punctured by rivets where the sides are finally fixed to form the chest proper, and in this case the punctures were sealed by a strip of adhesive aluminium foil. The punctures made by nails used in fixing the battens are, apparently, effectively sealed by the nails themselves together with the battens.

It appears certain that this class of material will prove successful although we must await reports on the shipment of the complete

invoice of Kraft Paper lined chest before reaching any final conclusions. The thickness of the aluminium foil used in this class of lining gives a greater degree of flexibility and, therefore, less chance of cracking of the moisture proof component, while the paper gives the mechanical strength and resistance to puncturing which is lacking in the plain metal foils employed in the past.