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December 19th, 1972

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TO:
FROM BY:
FILE:

N.E. Willis, Esq.  
British-American Tobacco  
GR & DC  
38 Regent's Park Road  
Millbrook  
Southampton SO9 1PE

Dear Norman,

We are getting close to the time for planning agricultural work that might take place in Canada for PRT 71, next summer. I thought it would be worthwhile reviewing the status of the Canadian part of the program, in order to facilitate a look ahead. What conclusions can be drawn at this time? Do the original assumptions still make sense? Where should we go from here?

Apart from a re-think of the agricultural work in the light of the current thrust of the PRT project, we in Canada want to be quite clear about future relationships with the Canada Department of Agriculture Research Station, Delhi. Although the C.D.A. Station 1971 crop samples were planned by the Station, we asked for samples for evaluation as part of PRT 71, and of course the 1972 samples were grown by the Station at our request. Apart from a natural curiosity about what has been learned from these samples, the Station must have its program approved by the Research Branch of Agriculture, Ottawa, and to this end is expected to provide progress reports from time to time.

Although we have kept Vickery informed of progress in a general way, we owe him a written report which will satisfy his needs to account for his work. It would be useful at this time, both for the sake of PRT 71, and as a means of preparing something for Vickery, to put together an assessment of the status of the evaluation of Canadian samples. To this end Graham Boswall has prepared summary sheets of leaf analytical data, with sample numbers corresponding to those provided in our description of samples dated May 18, 1972. Would it be possible for you to

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extend these sheets with analytical data and comments about the PRT samples you made from 1971 crop samples, in whatever format you consider appropriate?

The specific questions that Vickery asks are as follows:

1. How does forage harvested (chopped) leaf compare with normally cured whole leaf as a raw material for PRT?
2. Is stalk a satisfactory material for PRT?
3. Is normal flue curing needed, or would a rapid dry, or simulated flue cure be all right?

By way of review, I would like to set out the thinking behind the 1971 and 1972 crop samples, and suggest conclusions that can be reached now, and what additionally will be known by the end of January 1973.

#### Original General Assumptions

1. "Virginian" tobacco would be the best raw material for PRT, from considerations of subjective smoking quality, at least for markets that have predominantly Virginian cigarettes. *Not done.*
2. We would try to grow Virginian at a sufficiently reduced cost to offset the cost of the sheet making process, about 15¢/lb. below the cost of normal leaf. *Still desirable*
3. We assumed normal leaf did not possess enough fibre to make good PRT, i.e. something more than the normal yield of stem was needed. *Not true*
4. We were uncertain whether normal flue curing was needed, or whether an enzymatic process could substitute for flue curing. *Still under review*

#### Agricultural Experimental Designs

There were three main ideas:

1. Reduce cost by
  - a) Elimination or simplification of curing.
  - b) Mechanical harvesting.
  - c) Increased yield per acre.

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2. Grow tobacco in a number of radically different ways to determine if any of the resultant tobaccos are preferable for sheet making in terms of physical quality, or yield of tar and nicotine.
3. Use stalk to augment the normal stem yield.

1971 Samples were conceived without participation by E.A.T., but B.A.T. expressed an interest to evaluate them.

1972 Samples were largely commissioned by B.A.T.

Suggested Conclusions to Date

1. The normal stem yield is high enough without augmentation by stalk.
2. Stalk has been proven undesirable by Southampton.
3. Control of tar yield is more likely to be achieved in the PRT process (extraction and add-back, sheet density) than by properties of the leaf used as raw material. However, there is a possibility of achieving some tar control through the content of potassium or other metals in the leaf.
4. The sheet making process has not really been sufficiently standardized to permit assessment of differences in physical properties that may be associated with different raw materials, at least those of the order of magnitude likely to be achieved within the variants of "Virginian" tobacco.
5. The attempts to simulate flue curing by controlled air flow through beds of forage harvested leaf have been failures - judged by the content of nicotine, reducing sugar, starch, and by visual inspection.
6. Many of the treatments are unacceptable, judged by nicotine content.
7. Enzymatic "curing" is an unresolved issue.

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Information To Be Available by January 30th.

GR & DC

1. Effect of Curing on Subjective Smoking Quality of PRT.

Southampton comparison of PRT's made from lamina ex 1971 samples 13, 22A, 28, 17, 28 with enzyme treatment.

This is intended to assess effect of curing on subjective quality. It will not be the last word, but will be extremely valuable information.

Canada

2. Screening of 1972 Samples by Nicotine, Sugar and Starch Analyses.

I.T.P.L. is analyzing the 89-1 series ex Delhi Station, and the I.T.P.L. farm series.

C.D.A. Delhi is analyzing all other samples grown on the Station.

3. Comparison of smoke from PCL and PRT made from Delhi 1971 samples 11, 14, 15, 18.

4. Evaluation of smoke from PCL cigarettes made from Delhi 1971 samples 1-6 inclusive.

Key Questions

- 1. How valid is the assumption that the preferred raw material for PRT is a low cost form of "Virginian".
- 2. Do we need to develop a low cost form of agriculture to grow a Virginian type of whole leaf specifically for sheet making, or is it more likely that the B.A.T. group could

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get its leaf requirements from bargain grades of low quality leaf available around the world?

3. What can be said to give direction to the thrust of agricultural research?
4. Does the smoke character of the raw leaf greatly influence the subjective smoke quality of PRT? *David Ken...*

These are difficult questions to answer, and perhaps one of the reasons is that the PRT process, both at Wiggins Teape and Southampton has not yet become sufficiently standardized to provide a sufficiently precise assessment of leaf samples.

The 1971 samples were conceived by Vickery to test whether a very simple form of agriculture would yield something good enough to make sheet. The 1972 samples comprised a series of systematic radical departures from the norm. to see if anything of interest turns up. I would not recommend any more of this type of experimentation until we are better informed as to what kind of leaf is required; that is to say, unless evaluation of 1972 samples brings out some definite leads.

One way to become better informed is to make PRT out of as wide a variety of different leaf types as possible, to determine the influence of leaf on the PRT process, and to what degree leaf type influences PRT quality. *Yes.*

If there is doubt that the art of making PRT samples is well enough controlled to permit a good assessment of the 1972 crop samples, perhaps we should consider deferring evaluation of these samples. This would be a disappointment, but would be better than running the risk of being inconclusive, or being misled by spurious results. *No*

I have tried to set forth as many definite statements and arguments as we can think of, in the hope that you people will do the same - disagreeing or agreeing as you see fit. I am particularly anxious that there be genuine agreement all round as to what role, if any, should be played at the C.D.A. Station and our farm in the future.

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We would greatly appreciate a reply from you in the near future containing such information as can be passed on to the C.D.A. Station. This can be a combination of whatever data, general observations and conclusions you consider can properly be given to the Station. On the broader question of planning future agricultural work, would you and Jim Drummond be able to get over here for the first week of February? This is about as late as we can wait to make plans for 1973 crop.

With kind regards,

Yours sincerely,

*B.G.*

R. M. Gibb

c.c. Dr. S.J. Green  
Mr. J.W. Drummond  
Dr. G.W. Boswall

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