On Smoke and Fog
Performance
Revisioning
Remembrance
and
Reclamation.
Appendix

by Louise Birgitta Adkins
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The following appendix offers a contextual overview of the archival materials worked with during Notes for a Performance – Re visioning a Smoky Meeting and Notes for a Performance – Weather Permitting. The material from the Tetley Archive, in-house and at West Yorkshire Archive Service, includes a variety of correspondence, recipe reports and summaries, personal letters, diary extracts, photographs, memos and newspaper clippings. The archival material from Barrow Archive and Local Studies Centre includes the Ben Lones and Abel Masson collections and illustrate the material content of the archive. Additionally, ordinance survey elevation profiles from Summits on the Airways (SOTA) have been included.

The selection highlights how the performance narrative and language was developed, illustrating how the heritage sites and locations informed the performance mise en scène throughout the research process. The archival documents have been selected from collections that are expansive and in part disordered and should be read as a contextual framework of the performance works. The photographs, memos, reports, recipes, letters, drawings and paintings illustrate a snapshot of the practice led research process, offering historic and contextual understanding of the heritage sites and collections alongside the cultural landscapes of the institutions worked with.
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Board of Directors.
From: Kennedy Brown
To: Mr. R. L. Thompson.

I enclose herewith portrait photographs of the Group Chairman, which are to replace previous portraits.

Enc: 12

Figure 1. Hustler T. (Date unknown), Portrait and Accompanying Memo., At: Tetley Archive, Leeds.
Figure 2. Hustler T. (Date unknown), Portrait of Group Chairman. At: Tetley Archive, Leeds.
Figure 3. Hustler T. (Date unknown),
Photographic stamp on the back of the portrait. At: Tetley Archive, Leeds.
NON COPY MEMO

From
Kennedy Brown

To
Mr. R. L. Thompson.

I enclose herewith portrait photographs of the Group Chairman, which are to replace previous portraits.

Encs: 12

Figure 4. Brown, K. (Date unknown), Memo to R. L. Thompson. At: Tetley Archive, Leeds.
Figure 5. Logan Bringham. (Date unknown), Bass. S. opening. At: Tetley Archive, Leeds.

Board of Directors.
Figure 6.  Paxon A. W. (1959), Portrait of Director. At: Tetley Archive, Leeds.
Head Brewer, Romford.

Mr. R. L. Thompson,
Public Relations Officer,
Burton.

Date 7th December, 1964.

One of the Romford chauffeurs has suggested to me that it would be a great help to them if they could be given a book containing photographs of the directors of Allied Breweries and constituent companies. Apparently they are not infrequently called upon nowadays to meet people who they do not know, and they feel that the provision of such a book would assist them considerably in providing the maximum service.

I feel that this is a highly intelligent suggestion which I wholeheartedly endorse, and shall be obliged if you would let me know if you are able to help as I think that this can be considered an exercise in internal P.R.

Copy to: Group Captain B. G. Carfoot
Mr. N. H. Kennett
Mr. W. J. Joyce

Figure 8. Head Brewer, Romford. (1964) Memo to Mr R. L. Thompson. At: Tetley Archive, Leeds.
Mr R L Thompson  
Public Relations Officer  

Head Brewer  
Romford  

9th December 1964  

Thank you for your memo of the 7th instant.

I like your suggestion about a book containing the photographs of the Directors of Allied Breweries and Constituent Companies, and I will arrange for this to be compiled.

It may take some time to get all the photographs together.

Figure 9. Mr R. L. Thompson. (1964), Memo to Head Brewer, Romford. At: Tetley Archive, Leeds.

Board of Directors.
I was wondering whether you have a spare copy of a photograph of
Lord Brocket, as I require this for my files?
Mr R L Thompson  
Public Relations Officer  

The Assistant Secretary  
Ind Coope Limited  
London

EIL/SS  
12th August 1965

Thank you for your memo of the 11th instant and for sending the extract from the 'Hunters'. I will now be able to obtain the photographs I require.
Replying to your enquiry of the 10th instant, I have never had in my possession a photograph of Lord Brocket, other than the enclosed. If you really require one, I could ask him when I see him at the Allied Board Meeting on Thursday next.

Yours,

[Signature]

Figure 12. Secretary Ind Coope Ltd. (1965), Memo to Mr. R. L. Thompson At Tetley Archive, Leeds.
Mr R. L. Thompson, Public Relations Officer

The Secretary
Ind Coope Ltd
Victoria House

ELX/3
11th May 1965

Thank you for your memo of the 12th instant. I would be grateful if you could ask Lord Brocket for a photograph when you meet him at the Allied Board next Thursday.

Figure 13. Mr R. L. Thompson. (1965), Memo to secretary Ind Coope Ltd. At: Tetley Archive, Leeds.
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Handwritten Letters, Reports and Recipes.

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Yorkshire Archives Service, Leeds.
Figure 29. Tetley, J & Son. (Date unknown), Letter, war allowance fund. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
Dear Sirs, return Notice Papers which have been sent to the undersigned men who are in our employ, they hold certificates of exemption to 31st January which have been granted by the Leeds Tribunal.

Yours faithfully, Tetley & Son Ltd.

Joshua Tetley & Son Ltd.


At: Tetley Archive - West Yorkshire Archives Service, Leeds.
Figure 31. Tetley, J & Son – Hart R. H. (1918), Letter, war exemption. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
Dear Sir,

Replying to your communication of the 13th inst. we have received the report of our representative (Mr. Walton) and find it is true that he gave instructions to our Manageress, Mrs. Swales of the Old Bar Hotel, to obtain small quantities of spirits from Mr. Hayes, our Manager, at the Carlton Hotel.

The facts are these:

Sometime ago our representative when in Scarbrough was informed by Mrs. Swales that she was entirely without spirits, that she was unable to obtain any from the local people who had previously supplied the hotel.

As we had a cask of whisky lying at the Carlton Hotel Mr. Walton told her that he would arrange with Mr. Hayes that small quantities of this should be supplied to her until such times as a supply could be sent in from this district.

Figure 32. Tetley, J & Son – Hart R. H. (1917), Letter, Spirits and the Old Bar Hotel. At Tetley Archive – West Yorkshire Archives Service, Leeds.
Both the Houses are under Management & no sale therefore has taken place. There has merely been a transfer of Spirits belonging to us from one managed House to another.

We now understand from your communication that this procedure is irregular and we express our regret.

Instructions shall at once be given to prevent a repetition of the irregularity.

Yours faithfully,

For Joshua Tetley & Son Ltd

[Signature]

Figure 33. Tetley, J & Son – Hart R. H. (1917), Letter, Spirits and the Old Bar Hotel.
Dear Sir,

In reply to your enquiry about your sales of iron to us on Feb 14th 1916, & then again on July 19th 1916, we have to say that our stock of连锁铁 was so low that we were urgently in need of these two consignments.

We are not members of the Farmers' Union, so as we cannot get our horses worked anywhere but in our own yard, we are compelled to shoe them with extra care, & with extra good materials to minimise the necessity of getting work done outside.

We much prefer the shoe made by Messrs Coghlan, and attribute much of the soundness of our horses feet to the use of their metal.

We may also say that in the year 1916 we had nearly 100 horses, many of them doing very long journeys. To keep the various districts which we serve even moderately supplied with the iron, it was necessary that the feet of these horses should be in the best condition.

It was on these grounds that we pressed you so urgently to supply us, as we could not otherwise have hoped to do justice to the various workers in the district without it.

Yours faithfully,

[Signature]

The Coghlan Steel & Iron Co.,
Humelet Forge.

18th Oct 1

Figure 34. Tetley, J & Son – Hart R. H. (1917), Letter. At: Tetley Archive – West Yorkshire Archives Service, Leeds.

p53 Handwritten Letters, Reports and Recipes.
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Dear Sir,

We find that the dripping we used to raise the
quality of the lower class Beers has been during the
past quarter placed by the excise in the category of
Beers brewed above 1936. Xr. and Prem. are
a dry.

If this method of restoring is continued, it will
almost seriously the outlet of our strongest Ales, as we use the
bulk of our dripping to improve the light gravity Ales.

We hope you will be able to do something to remove this
injustice which will prevent the public from receiving
their proper proportion of better class Ales.

We also consider it a gross injustice that the Ord
should be issued only one day before it is to come into ef
Can no delay be obtained?

There are many other stupidities in the Order wh
should be discussed.

Yours faithfully,

Joshua Tetley Son Ltd.

O. T. Tetley, Ltd.
Figure 37. Barret E. D Esq. (1918), Letter, cheque and statement. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
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Handwritten Letters, Reports and Recipes.
Figure 41. Tetley, J & Son. (1916), Letter, Mr Gillespie. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
he is obliged to spend every winter abroad & has been at Cannes & San Remo since November. You will have heard what a bad illness he had in 175 he was very much pulled down by it & still keeps very feeble.
Figure 43. Tetley, J & Son. (Date Unknown), Letter. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
April 15th 80

My dear Edward,

I now return the lease
for which I am much obliged.

I regret that in present circumstances I do not feel my way to take St. Anne's.

I am very sorry to find you are so unwell. I hope that this attack will clear away all the ill effects of your hard work in Wales.

Believe me,
yours very truly,

J. F. Tetley

Figure 44. Tetley, J & Son. (1880) Letter. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
at present will set it up a year
more when his mother dies. I of
the joint estate of 2000 a year
The mayor (Mr. Tatham) is hasten
having asked him these questions.
I refer him beyond it remains
to be seen whether he will write
or wait till you come home.
I have had a talk with Mariannes
but cannot form any definite
idea as to the state of his feelings,
or as books say await a further
development of my knowledge in
medication of the other...
I am very sorry you have such
bad winds at Hanove with the
you will be able to get home by
June 10th. Though unhappily this
change in your various dates will
surely prevent our joining you

My dear Brother
Many thanks for your letter
received on Sunday.
On Tuesday or Monday received a
tweet from a young gentleman
living on Headingley. Mr. Harry
Walter, the object of which was
knows his attachment to
Marianess. I pointed out the dis-
parity of their ages (he is only 22)
that he is prepared to risk; I also
asked about his half brother and
the mental taint is on that unhappily
creature's side inherited from his
mother. The youth has 2900 aper
Figure 46. Simnett J. S.  (Date unknown) At: Tetley Archive, Leeds

Handwritten Letters, Reports and Recipes.
Socialising and Parties.
Figure 47. Photographer unknown. (Date unknown). At Tetley Archive, Leeds.
Figure 48. Photographer unknown. (Date unknown). At: Tetley Archive, Leeds.
Figure 49. Photographer unknown. (1961), *Staff dance* At: Tetley Archive, Leeds.
Figure 50.  Photographer unknown. (Date unknown), At: Tetley Archive, Leeds.
Figure 51.  Photographer unknown. (Date unknown), Staff dance. At: Tetley Archive, Leeds.
The Promettes.
Figure 52. (Date unknown), Newspaper clipping.
At: Tetley Archive, Leeds
Further to our recent conversation, I would like to try to arrange for some of your hostesses in Burton to do an exchange visit with the "Promettes", their counterparts in Brighton.

The "Promettes" are attractive, uniformed hostesses operating on the sea front at Brighton for the convenience of visitors. They are extremely photogenic and their doings are usually popular with the London evening papers.

What I would like to suggest is that four or six Burton hostesses should be taken to Brighton for the day (they could fly down to Gatwick from Burton). They would then meet the "Promettes" and be entertained to lunch and a day out in Brighton. At a later date the "Promettes" could make a return visit as guests of the company to Burton-on-Trent where they would be shown the brewery and entertained to lunch in the Open Arms.

The event should attract the attention of the Brighton, Burton and Derby papers, and may possibly interest the London evenings as well.

[Signature]

September are set.

Figure 53.  Johnson E. (1960), Memo to Mr. L. Thompson regarding the Promettes. At: Tetley Archive, Leeds.
In reply to your memo of the 30th June, re Brighton "Promettes" we like the idea and I am sure that we can arrange to send our Hostesses to Brighton in our own aircraft.

We must send all six of ours and owing to heavy visitors programme, the earliest date would be in September.

When we have confirmation that those in Brighton agree, I will make a booking of the aircraft for this visit.

They are generally photogenic and their stories are usually popular in the "London evening" papers.

Finally, would like to suggest that four or six Burton Hostesses could be taken to Brighton on the day (they could fly down to London, the Burton Hostesses then meet the "Promettes" there to commence the tour, and the Burton Hostesses could then return as a party.


The Promettes.
I am going to Brighton on Saturday, July 16th to discuss this matter with Mr. McDonnell of their Entertainments Department.

My original idea was to envisage flying the Promettes to Burton-on-Trent, as well as taking our hostesses to Brighton.

The event should attract the attention of the Brighton, Burton and Derby papers, and may possibly interest the London evening as well.

Figure 55. Johnson E. (1960), Memo to Mr. R. L. Thompson regarding the Promettes. At: Tetley Archive, Leeds.
Figure 56. Photonews Ltd. (1960), *Promettes visit Brighton*. At: Tetley Archive, Leeds.

p77 The Promettes.
From: Ind Coope/PDA Ltd.
10 Bruton Street,
W.l.
For further information, contact:
Erik Johnson, GRO 7701

September 1, 1960

Hoping to train as air hostesses, 19 years old identical twins Pamela and Penelope Mitchell made their first flight Wednesday, 31st August. They are "Promettes" at Brighton and with colleague Valerie Spooner (20) they flew to Burton-on-Trent for a day as guests of Ind Coope Ltd., the brewers.

Today three Ind Coope hostesses fly to Brighton for a day as guests of the "Promettes"!

Picture shows: Pamela (left) and Penelope getting acquainted with the controls of the Company's 'Dove' aircraft in which they made the flight from Gatwick.

Figure 57. Photonews Ltd. (1960), Publicity shoot and accompanying memo from Ind Coope / PDA Ltd. At: Tetley Archive, Leeds.
Figure 58. Photonews Ltd. (1960), Promettes visit Brighton. At: Tetley Archive, Leeds.
Figure 59. Photonews Ltd. (1960), Promettes visit Brighton. At: Tetley Archive, Leeds.
Figure 60. Photonews Ltd. (1960), *Promettes visit Brighton*. At: Tetley Archive, Leeds.
Figure 61. Photonews Ltd. (1960), Promettes visit Brighton. At: Tetley Archive, Leeds Archive, Leeds.
Figure 62. Photonews Ltd. (1960), *Promettes visit Brighton*. At Tetley Archive, Leeds.

p83 The Promettes.
Figure 63. Photonews Ltd. (1960,) Promettes visit Brighton. At: Tetley Archive, Leeds.
Figure 64. Photonews Ltd. (1960), Promettes visit Brighton. At: Tetley Archive, Leeds.
Figure 65. Photonews Ltd. (1960), *Group portrait with Brighton Promettes*. At: Tetley Archive, Leeds.
Figure 66. Photonews Ltd. (1960), Group portrait with Brighton Promettes. At: Tetley Archive, Leeds.

p87 The Promettes.
Figure 67. Thompson R. L. (1960), Programme: Exchange visit of Brighton Promettes.
At: Tetley Archive.
Figure 68. Photonews Ltd. (1960), Group portrait on Brighton beach. At: Tetley Archive, Leeds.
Figure 69. Photonews Ltd. (1960) Brewery tour.  
At: Tetley Archive, Leeds.
Figure 70. Photonews Ltd. (1960), *Brewery tour.*
At: Tetley Archive, Leeds.

The Promettes.
Figure 71. Photonews Ltd. (1960), Brewery tour.
At: Tetley Archive, Leeds.
Figure 72. Photonews Ltd, (1960). Brewery tour.
At: Tetley Archive, Leeds.

p93 The Promettes.
Figure 73. Photonews Ltd. (1960), *Brewery tour.*
At: Tetley Archive, Leeds.
Figure 74. Photonews Ltd. (1960), Brewery tour. 
At: Tetley Archive, Leeds.
Figure 75. Photonews Ltd. (1960), Brewery tour.
At: Tetley Archive, Leeds.
Figure 76. Photonews Ltd. (1960), *Brewery tour.*
At: Tetley Archive, Leeds.

p97 The Promettes.
Figure 77. Photonews Ltd. (1960), Brewery tour. 
At: Tetley Archive, Leeds.
Typed Letters, Reports and Recipes.
Mr. Horace T. Brown.

London, January 10th 1896

Messrs. J. Tetley & Son.
Leeds.

Gentlemen,

On my last visit to your brewery on Jan. 6th and 7th, I made a very thorough examination of your cold beers in the sample cases, with a view to seeing whether any light could be thrown upon the difficulties which you have been having in the conditioning of some of these beers. The results are highly instructive, and all point in one direction: i.e. that your best results are obtained with low opticality worts, and without drumming. You should in future, when using your present malts, aim at an opticality of about 100, and attenuate these beers to a gravity of about 5.5. I feel sure you will then have little or no difficulty to contend with; and that the beers will condition rapidly, and take their finings readily. It is not necessary for me to give you full particulars of the beer which I saw, but I would recommend you to make a careful comparison of 120 X, 130, 134, and 135, in which I think you will see very clearly the great superiority of the low opticality beers. I cannot think there is any need for you to resort to "dressing" the beers during fermentation; but if through any chance you get high opticalities, and consider it desirable to add "dressing", I would recommend you to do this in

Figure 78. Brown, H. T. (1896), Letter to J. Tetley & Son Ltd. At: Tetley Archive – West Yorkshire Archives Service, Leeds.

p101 Typed Letters, Reports and Recipes.
On examining the particulars of brewings received this morning, I noticed a decided tendency to get the opticities of some of your beers too low. I may instance 341 (opticity 108.5), 345 (opticity 109.4), and 349 (opticity 107.3). I should not recommend you to go for a lower opticity than about (a) 110 – 111 for these beers. There is a special danger in running these too low, if at the same time you do not carry your attenuation on sufficiently far. If you will look at the particulars of 341 brew, you will see that with an opticity of 108.5 you have run the final attenuation down only to 6. Such a beer is extremely likely to give you trouble by undue fretty after-fermentation, and you must especially guard against this as the warm weather comes on. It is possible that this tendency to very low opticity may be
to a gravity of about 5.5. I feel sure you will then have little or no difficulty to contend with; and that the beers will condition rapidly, and take their finings readily. It is not necessary for me to give you full particulars of the beers which I saw, but I would recommend you to make a careful comparison of 163 X, 153, 144, and 142, in which I think you will see very clearly the great superiority of the low opticity beers. I cannot think there is any need for you to revert to "dressing" the beers during fermentation; but if through any chance you get high opticities, and consider it desirable to add "dressing", I would recommend you to do this in
I cannot help attributing to some imperfection in the bottles, there is a want of true stout flavour about these. In order to meet this, I would recommend you to make an alteration in the grist of your stout, and would propose to you the following mixture.

Patent, 8%; Crystallised, 16%; Brown, 10%; Garton’s Invert, 10%; and XX malt 51%.

During the course of my visit I saw a large number of your malt samples, and found them on the whole very satisfactory. They are very much more regular, both in tint and diastase, than they were. Your Sack malts are especially good, and although some of your English malts were not quite as tender as one could wish, I am sure this

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Figure 83. Author unknown. (Date unknown), At: Tetley Archive – West Yorkshire Archives Service, Leeds.
A letter is at present being investigated by Mr. Grandison at the latter brewery. Some possible sources of infection have been found in the brewery which may have accounted for these occasional irregularities but the investigation is still not completed.

One very marked point of difference between the two breweries is, of course, the wort cooling conditions, as at Hunslet there is a two-stage cooling operation, the cooling water for the last stage being at quite a low temperature, whereas the Plum Street brewery wort is cooled in one stage and the cooling liquor is sometimes only a few degrees below the final wort temperature. This difference would very much affect the cooling curves of the worts and would probably account for the marked difference in the amorphous matter deposits noted between the two breweries.

Another point of difference which is connected with the cooling is that at Plum Street by virtue of the large wort receiving vessel and the fact that the wort has been drawn hitherto from near the surface of this vessel, it enters the paraflow at a temperature...
Forcing results are now very satisfactory and it would seem that the new antiseptic used in the bright beer tanks is very effective. Only one or two bottles at 4 weeks showed any deposit.

AIR IN NECK SPACE

It is understood that the amounts of air in neck space have been too high recently. I examined the bottling line and the beers seemed to be fobbing regularly and well; I shall be interested to see the air content on bottles from this bottling, as from this inspection I should expect it to be reasonably low.

The difficulty now, of course, is that with the new regulations there is a very small margin between fobbing the beer adequately to remove the air and losing too much beer with consequent short measure. Comparative tastings of three sets of bottles of Pale Ale 20 days after bottling namely (a) bottles selected which had not fobbed well, (b) bottles which had fobbed well and (c) bottles specially filled to the top of the neck to eliminate air; gave irregular results and no general conclusions could be drawn from them so that these trials will need to be continued.
**Mash Tun Worts**

<table>
<thead>
<tr>
<th>Melbourne Brewery</th>
<th>Hunslet Brewery</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1 M.T.</td>
<td>No. 2 M.T.</td>
</tr>
<tr>
<td>Opticity (°)</td>
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</tr>
<tr>
<td>110.7</td>
<td>112.5</td>
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<tr>
<td>1.65</td>
<td>1.6</td>
</tr>
<tr>
<td>No. 5 M.T.</td>
<td>No. 6 M.T.</td>
</tr>
<tr>
<td>Opticity (°)</td>
<td></td>
</tr>
<tr>
<td>114.7</td>
<td>115.7</td>
</tr>
<tr>
<td>1.17</td>
<td>1.16</td>
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</tbody>
</table>

**Hopped Worts xx Hopback**

<table>
<thead>
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<th>Hunslet Brewery</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1 Hopback</td>
<td>No. 5 Hopback</td>
</tr>
<tr>
<td>Specific Gravity</td>
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</tr>
<tr>
<td>1087.8</td>
<td>1083.5</td>
</tr>
<tr>
<td>1st Length</td>
<td>2nd Length</td>
</tr>
<tr>
<td>1089.2</td>
<td>1021.0</td>
</tr>
<tr>
<td>Total Wort Solids</td>
<td></td>
</tr>
<tr>
<td>% w/v</td>
<td></td>
</tr>
<tr>
<td>22.04</td>
<td>5.81</td>
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<tr>
<td>22.42</td>
<td>5.20</td>
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<tr>
<td>ash % w/v</td>
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</tr>
<tr>
<td>0.36</td>
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<tr>
<td>0.38</td>
<td>0.11</td>
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<tr>
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<td>0.149</td>
<td>0.0435</td>
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<td>Fermentable Matter</td>
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<td>Lactose %</td>
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<td>11.90</td>
<td>1.97</td>
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<tr>
<td>10.22</td>
<td>2.84</td>
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<tr>
<td>Glucose %</td>
<td></td>
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<tr>
<td>3.42</td>
<td>1.63</td>
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<tr>
<td>4.66</td>
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<tr>
<td>Maltose %</td>
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<td>1.87</td>
<td>1.93</td>
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<tr>
<td>1.99</td>
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<td>Balance +</td>
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<td>negligible</td>
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<td>0.32</td>
<td>0.35</td>
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<td>Total</td>
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<td>4.42</td>
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<td>17.39</td>
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<tr>
<td>3.97</td>
<td></td>
</tr>
<tr>
<td>In fermentable Matter</td>
<td>3.99</td>
</tr>
<tr>
<td>1.99</td>
<td></td>
</tr>
<tr>
<td>5.03</td>
<td></td>
</tr>
<tr>
<td>1.63</td>
<td></td>
</tr>
</tbody>
</table>

* Possibly including some maltotriose
† Probably levulose

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Figure 86. Moritz & Fuller. (1961), Report on Four Mash Tun Worts. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
Figure 87. Moritz & Fuller. (1961), *Analysis of test results*. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
There were no distinguishing marks between the duplicates of each sample but for convenience of reference, these have been labelled '1' and '2' on the bottles of each beer respectively.

**Stability Tests**

In these tests duplicate portions from each bottle, (i.e. four replicates of each sample), were inoculated at the rate of approximately 1000 bacteria per ml, using for that purpose a red bacterium obtained from a Tetley forcing sediment. The rate of inoculation was the same to within 15 for all the forty-eight cultures; acetylene at the rate of 10 p.p.m., was added to the cultures to suppress any yeast growth.

These were kept in a water bath at 86°F., for seven days then transferred to an ice-cold water bath until counting could be carried out. The figures given below for the bacteria counts after cultivation are in millions of organisms per ml. The reproduction rate therefore, are given by these figures x 1000.

The head spaces in the bottles were variable and it is understood from Mr. Haught that as the beers were filtered before bottling and sterilising, these head spaces would contain air and not carbon dioxide. In view of the long periods during which some of the beers have been stored it is possible that the air in these head spaces could have affected the preservative values and so the volumes have been recorded and are shown.

**Nitrogen Tests**

The beers contained varying amounts of sediment but for these tests the clear decanted beers were used without filtration and the nitrogen contents given below are on these beers; no nitrogen tests have been done on the sediments but these have...
It will be seen that both the 1st and 2nd lengths from the Melbourne Brewery show a relatively higher proportion of fermentable matter and a lower proportion of unfermentable matter than those from one Melbourne wort is some 1/3 lower than that of the Banstead wort.

The attenuation limits of the worts from the two breweries broken down to original gravity of 1030 show that the final gravity obtainable from the Melbourne wort is some 1/3 lower than that of the Banstead wort.

The same relative differences are borne out in the beers themselves as brewed at the breweries from these worts when it is seen that although the Melbourne beer has a 3.0 as ranked of 3° higher than the Banstead beer, its attenuation limit was 1/3 lower, due to the presence in the Melbourne beer of a considerable amount of residual fermentable matter, corresponding to some 1/3 of further attenuation.

The nitrogen and ash contents of the relative worts are practically identical so that the question of possible lack of nitrogenous yeast food does not appear to be the cause; it would seem in fact that the cause has to be looked for in what might be called, the mechanics of the breweries.

It is understood that this particular Melbourne beer was brewed in open fermenters (whereas the Banstead beer was brewed in Yorkshire ales) but that the same poor attenuation are obtained in Yorkshire ales at the Melbourne Brewery as in the open fermenters. The yeast counts at rack on the two beers do not differ sufficiently to suggest that they have any marked relationship to the attenuations and, as with anything they are in a direction which one would expect to favour the attenuation of the Melbourne beer.

There are so many factors which can enter into this question, namely, possible different developments of the yeast strains in the two breweries, fermentation temperature gradients and a possible check to fermentation due to an unnoticed drop in temperature overnight, the amount of feeding and rousing, control of attenuation and so forth, that it is difficult to pin point any particular cause without a rather more detailed knowledge of the conditions at the two breweries.

There is one possible, although not very probable explanation in connection with the wort itself, that is to the cold break, the quality and completeness of which can definitely affect the rate and degree of the fermentation and as the cold break has been shown by Bishop and others, and this cooling conditions.

It is rather difficult to observe this satisfactorily on worts which have been sent some distance and it is also the particular heat of the breaking vessel. The effect of investigating this point is, of course, on the spot but if small samples of 1st and 2nd wort could be taken from the delivery main into the vessel, mixed in equal proportions with the normal breaking liquor to give cold break, it might show if any differences occur in the breweries. It is suggested that as a practical, half a pint of 2nd wort and half a pint of 1st wort after paraffin mixed under the usual conditions as practicable, half of the mixed should be sample being sent to us and the other retained in the brewery and the mixed sample of this sort being taken, of course, from each brewery under as parallel conditions as possible.
Dear Mr. Seahrooks,

Although in my report of 27th April I gave reasons for considering that
the most likely cause of your recent poor attenuations was possibly lack of yeast
nutrition, I suggested that nevertheless some tests should also be made on the yeast
with regard to flocculent quality, an excessive flocculence can of course, result
in poor attenuations.

Certain points which came out in the discussion last Thursday, namely
Mr. Grandison’s statement that there had been a tendency towards higher final for
quite a long period and Mr. Hagues’ feeling that the cause was in the yeast, led me
to revise my view and I felt that perhaps that tests on the yeast should be made
first, before dealing with the question of wort nutrition, so I took back a sample
of your pitching yeast and commenced work on it right away.

The results of the tests are quite illuminating and although the work is
not yet completed, you will see from the attached report that your yeast has become
extremely flocculent; the flocculents being maintained over the whole range of pI’s
encountered during the fermentation and not being dispersed by the presence of
maltose.

Taking these results in conjunction with some comparative fermentations
the second set of which is not yet finished, it is seen that your yeast lags behind
in attenuation compared with some other yeasts.

The attenuation tests on two of your beers also shows that there is
an excessive amount of readily fermentable matter left in your finished beer; this
confirms the results obtained in Peter Walker’s laboratory.

I am now in process of growing up a number of individual strains from
the yeast, to ascertain the relative proportion of flocculent and non-flocculent
strains present and this work should be completed during next week. Anticipating
that these results will show a considerable proportion of the former, I think that

Figure 90. Moritz & Fuller. (1962), Letter
regarding a report dated 27th April 1962.
At: Tetley Archive – West Yorkshire
Archives Service, Leeds.
If, as I expect, your yeast should prove to contain a number of non-floculent strains (in spite of its over-all flocculence) I could grow up a small quantity of a blend of these strains for you to grow further in the brewery. My laboratory facilities would not enable me to provide more than about half a pound at the outside, but this would be enough to pitch about a barrel of wort in one of your very small vessels and then about 24 hours afterwards the vessel could be filled with more wort, this being grown up in larger vessels. So how far this strain should be developed before venturing to mix it with your existing yeast, would depend upon its behaviour with regard to crop, attenuation, yeast at rack and flavour; but as you are fortunate in having some small vessels, only a small quantity of beer would be involved should the strain prove unsuitable. In any case, no doubt you have your own methods for growing up small quantities of laboratory cultures.

If you think this suggestion is worth while (and assume there are a sufficient number of non-floculent strains in your yeast to give a representative blend) I can set about preparing this small pitching quantity and this would take me a week or two.

I shall proceed with the amino nitrogen determinations as soon as possible, but I have thought it wise to give prior consideration to the yeast experiments.

Yours sincerely,

[Signature]

Figure 91. Moritz & Fuller. (1962), Letter regarding a report dated 27th April 1962.
**Figure 92.** Moritz & Fuller. (1962), Report on yeast sample. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
Figure 93. Walker, P. (1962), Laboratory report. 
<table>
<thead>
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<th>No.</th>
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<th>6</th>
<th>6</th>
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<tr>
<td>Brewery</td>
<td>L</td>
<td>W</td>
<td>L</td>
<td>W</td>
<td>L</td>
<td>W</td>
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<tr>
<td>Brew No.</td>
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<td>2468</td>
<td>890</td>
<td>2528</td>
<td>912</td>
<td>2509</td>
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**Analyses**

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<tr>
<td>Chloride</td>
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<td>164</td>
<td>76</td>
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<td>Sulphate</td>
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<td>Carbonate</td>
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<td>66</td>
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**Beer**

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<td>9.8</td>
<td>8.3</td>
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<td>9.6</td>
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<td>A.L.G.</td>
<td>4.2</td>
<td>3.75</td>
<td>3.3</td>
<td>2.5</td>
<td>7.2</td>
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<td>Opacity</td>
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<td>111.7</td>
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<td>114.5</td>
<td>111.2</td>
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<td>Nitrogen</td>
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<td>30.1</td>
<td>25.2</td>
<td>34.2</td>
<td>30.3</td>
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<td>E.E.P.</td>
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<td>98.3</td>
<td>92.7</td>
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<td>5.2</td>
<td>5.8</td>
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<td>3.3</td>
</tr>
<tr>
<td>Chloride</td>
<td>231</td>
<td>310</td>
<td>233</td>
<td>342</td>
<td>258</td>
<td>321</td>
</tr>
<tr>
<td>SO2</td>
<td>49.4</td>
<td>49.5</td>
<td>49.5</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Tannin</td>
<td>0.52</td>
<td>0.71</td>
<td>0.47</td>
<td>0.58</td>
<td>0.43</td>
<td>0.56</td>
</tr>
</tbody>
</table>

**Yeast Count**

<table>
<thead>
<tr>
<th>Base</th>
<th>1 day</th>
<th>2 day</th>
<th>3 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.52</td>
<td>0.71</td>
<td>0.47</td>
<td>0.58</td>
</tr>
<tr>
<td>0.43</td>
<td>0.56</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Figure 94. Tetley Walker Ltd. (Date Unknown), Brewery trials analysis. At: Tetley Archive – West Yorkshire Archives Service, Leeds.

Typed Letters, Reports and Recipes.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>962</td>
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<td>186</td>
<td>76.0</td>
<td>966</td>
<td>1</td>
<td>233</td>
<td>110.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>132</td>
<td>23.0</td>
<td></td>
<td>2</td>
<td>231</td>
<td>40.0</td>
</tr>
<tr>
<td>963</td>
<td>1</td>
<td>136</td>
<td>25.0</td>
<td></td>
<td>3</td>
<td>231</td>
<td>40.0</td>
</tr>
<tr>
<td>868</td>
<td>1</td>
<td>175</td>
<td>82.0</td>
<td>970</td>
<td>1</td>
<td>267</td>
<td>88.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>116</td>
<td>31.0</td>
<td></td>
<td>2</td>
<td>267</td>
<td>35.0</td>
</tr>
<tr>
<td>969</td>
<td>1</td>
<td>206</td>
<td>57.0</td>
<td></td>
<td>3</td>
<td>262</td>
<td>6.5</td>
</tr>
<tr>
<td>973</td>
<td>1</td>
<td>175</td>
<td>67.0</td>
<td>972</td>
<td>1</td>
<td>235</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>158</td>
<td>21.0</td>
<td></td>
<td>2</td>
<td>231</td>
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<td>54.0</td>
<td>976</td>
<td>1</td>
<td>248</td>
<td>110.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>138</td>
<td>21.0</td>
<td></td>
<td>2</td>
<td>253</td>
<td>45.0</td>
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<tr>
<td></td>
<td></td>
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<td>45.0</td>
<td></td>
<td>3</td>
<td>253</td>
<td>9.0</td>
</tr>
<tr>
<td>978</td>
<td>1</td>
<td>253</td>
<td>113.0</td>
<td></td>
<td>1</td>
<td>253</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>248</td>
<td>45.0</td>
<td></td>
<td>2</td>
<td>248</td>
<td>45.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>244</td>
<td>45.0</td>
<td></td>
<td>3</td>
<td>253</td>
<td>9.0</td>
</tr>
<tr>
<td>982</td>
<td>1</td>
<td>245</td>
<td>105.0</td>
<td></td>
<td>1</td>
<td>245</td>
<td>36.0</td>
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<tr>
<td></td>
<td>2</td>
<td>245</td>
<td>36.0</td>
<td></td>
<td>2</td>
<td>245</td>
<td>36.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>243</td>
<td>8.0</td>
<td></td>
<td>3</td>
<td>243</td>
<td>8.0</td>
</tr>
</tbody>
</table>
From these samples worts were prepared representing the actual worts fermented (O.G. 1031.0)

Wort Analyses.

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Plum Street</th>
<th>Hunslet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tint</td>
<td>69</td>
<td>59</td>
</tr>
<tr>
<td>pH</td>
<td>5.42</td>
<td>5.20</td>
</tr>
<tr>
<td>Bitterness (p.p.m.)</td>
<td>25.8</td>
<td>23.5</td>
</tr>
<tr>
<td>Attenuation Limit</td>
<td>4.0</td>
<td>4.1</td>
</tr>
<tr>
<td>Total N. (mg./100 ml.)</td>
<td>5.9</td>
<td>5.7</td>
</tr>
<tr>
<td>Amino N. (mg./100 ml.)</td>
<td>3.9</td>
<td>3.7</td>
</tr>
<tr>
<td>Anthocyanogen Value-Soluble</td>
<td>0.96</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Figure 96. Author unknown. (Date unknown).

p119 Typed Letters, Reports and Recipes.
Figure 97. Tetley Walker Ltd. (1962), *Laboratory report*. At: Tetley Archive – West Yorkshire Archives Service, Leeds.

<table>
<thead>
<tr>
<th>Volatile Components (Results in P.P.M.)</th>
<th>Hunslet Road</th>
<th>Plum Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brew No.</td>
<td>966 970 972 976 978 982</td>
<td>962 963 968 969 973 974</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>24.5 26.0 27.0 26.0 23.0 16.5</td>
<td>8.0 20.0 20.0 16.0 17.0 15.0</td>
</tr>
<tr>
<td>Acetone</td>
<td>0.9 0.5 0.5 0.5 0.5 0.9</td>
<td>0.7 0.3 0.7 0.5 0.5 0.5</td>
</tr>
<tr>
<td>Ethyl Acetate</td>
<td>10.5 9.0 8.0 8.5 8.5 10.5</td>
<td>0.0 7.5 8.5 7.5 7.0 6.5</td>
</tr>
<tr>
<td>n-Propanol</td>
<td>18.0 16.0 15.0 14.5 15.5 18.0</td>
<td>14.0 14.5 14.0 12.0 14.5 11.5</td>
</tr>
<tr>
<td>iso-Butanol</td>
<td>32.0 22.5 22.5 27.0 22.0 21.5</td>
<td>24.5 26.0 39.0 30.5 34.0 29.0</td>
</tr>
<tr>
<td>iso-active amyl alcohols</td>
<td>67.0 27.0 29.0 30.5 35.0 33.0</td>
<td>61.5 28.0 39.0 34.0 34.0 37.0</td>
</tr>
<tr>
<td>ratio iso-butanol/amy alcohols</td>
<td>0.53 0.39 0.46 0.46 0.40 0.40</td>
<td>0.59 0.65 0.63 0.56 0.60 0.51</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean results (P.P.M.)</th>
<th>Hunslet Rd.</th>
<th>Plum St.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaldehyde</td>
<td>23.8</td>
<td>16.0</td>
</tr>
<tr>
<td>Acetone</td>
<td>0.57</td>
<td>0.53</td>
</tr>
<tr>
<td>Ethyl acetate</td>
<td>9.2</td>
<td>7.5</td>
</tr>
<tr>
<td>n-Propanol</td>
<td>15.8</td>
<td>11.4</td>
</tr>
<tr>
<td>iso-Butanol</td>
<td>29.3</td>
<td>34.4</td>
</tr>
<tr>
<td>iso-active amyl alcohols</td>
<td>36.8</td>
<td>37.8</td>
</tr>
<tr>
<td>ratio iso-butanol/amy alcohols</td>
<td>0.44</td>
<td>0.59</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statistical significance of difference in mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunslet Rd.</td>
</tr>
<tr>
<td>Acetaldehyde</td>
</tr>
<tr>
<td>Acetone</td>
</tr>
<tr>
<td>Ethyl acetate</td>
</tr>
<tr>
<td>n-Propanol</td>
</tr>
<tr>
<td>iso-Butanol</td>
</tr>
<tr>
<td>iso-active amyl alcohols</td>
</tr>
<tr>
<td>ratio iso-butanol/amy alcohols</td>
</tr>
</tbody>
</table>

S.R. Hall Gain A. Tetley
R. Moss J.A. Seabrooke
A.R. Hall G. Grandison
A.R. Hatton G. Maggs
G.A. Howard.
### Figure 98

**Typed Letters, Reports and Recipes.**

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Mean of Plum Street Results</th>
<th>Mean of Hunslet Results</th>
<th>Statistical Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P.G.</td>
<td>10.73</td>
<td>9.35</td>
<td>99.9%</td>
</tr>
<tr>
<td>Tint</td>
<td>58</td>
<td>56</td>
<td>Nil</td>
</tr>
<tr>
<td>pH</td>
<td>4.25</td>
<td>4.28</td>
<td>Nil</td>
</tr>
<tr>
<td>Bitterness (p.p.m.)</td>
<td>21.9</td>
<td>23.5</td>
<td>not calculated</td>
</tr>
<tr>
<td>Total N. (mg/100 ml.)</td>
<td>32</td>
<td>32</td>
<td>Nil</td>
</tr>
<tr>
<td>Amino N. (mg/100 ml.)</td>
<td>1.3</td>
<td>1.4</td>
<td>Nil</td>
</tr>
<tr>
<td>Anthocyanogen Value</td>
<td>0.90</td>
<td>0.91</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>Fermentations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.G. at 40 hrs.</td>
<td>16.96</td>
<td>16.71</td>
<td>90%</td>
</tr>
<tr>
<td>S.G. at 117 hrs.</td>
<td>11.09</td>
<td>10.33</td>
<td>90%</td>
</tr>
<tr>
<td>N.</td>
<td>P.S.N.</td>
<td>H2O</td>
<td>Amino Nitrogen</td>
</tr>
<tr>
<td>----</td>
<td>-------</td>
<td>-----</td>
<td>----------------</td>
</tr>
<tr>
<td>34.2</td>
<td>20.9</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>35.9</td>
<td>21.6</td>
<td>33</td>
<td>4</td>
</tr>
<tr>
<td>36.5</td>
<td>20.0</td>
<td>33</td>
<td>3.5</td>
</tr>
<tr>
<td>34.5</td>
<td>19.8</td>
<td>33</td>
<td>3.5</td>
</tr>
<tr>
<td>37.6</td>
<td>20.2</td>
<td>31</td>
<td>3</td>
</tr>
</tbody>
</table>

N., P.S.N., and H2O figures in brackets are our figures. Amino nitrogen figures are ours. The five moisture values were determined on the actual samples as received and show considerably higher values than the original ones. It is assumed that the total N. and P.S.N. figures as given were calculated on dry matter and the various relationships are worked out on this basis. The amino nitrogen figures are calculated on our moisture figures when determined; in the other cases assumed moisture of 0.9% higher than those given (your figures) are used. It was not considered necessary to redetermine all the moisture on the effect of any differences on the amino nitrogen (on dry) figures would be very slight.

ForMoritz & Fuller

*Signature*

Figure 99. Tetley Walker Ltd. (Date unknown), At: Tetley Archive – West Yorkshire Archives Service, Leeds.
2 pints gave quickest results, but 1, 2 or 3 pints gave equally good final results (24 hrs), bright beer with small compact flocculum. 4 pints gave bright beer but rather excessive flocculum.
### Tetley Walker Bitter Brewing Trials

#### Tasting Results

| Date Brewed | 27.6.62. |
| Date Racked | 1 & 3.7.62. |
| Taster      | Days from rack | Comments | Prefer |
| D.L.R. Hall-Gain | 5 | T more hop nose; both fruity | None |
| F. Moss      | 5 | Very little difference | T |
| A.H. Makin   | 5 | T has harsh after flavour. Apart from this very similar | W |
|              | 10 | Very little difference but T has more after harshness | W |
| G.A. Howard  | 5 | T slightly more fruity than W. Difference not great | T |
|              | 10 | W less harsh than T | W |
|              | 17 | W smells of hydrogen sulphide | T |
| G. Farres    | 5 | W smoother; L harsh & unpleasant | W |
|              | 10 | Both harsh, T slightly less so | W |
| W. Massey    | 5 | T harsh hop; W too sweet & tastes thin | None |
|              | 10 | T harsh; W slight smell but flavour good | W |
| G. Johnson   | 5 | T has harsh flavour; W thin but good flavour | W |
|              | 10 | - | None |
|              | 14 | T very harsh | None |
|              | 17 | - | W |
| R.D. Hall    | 5 | W is smoother | W |
| J.A. Skelhorn| 14 | T is cleaner & has much more character | T |
| J.K. Henshaw | 17 | T harsh | W |

Date: 8.8.62.
<table>
<thead>
<tr>
<th>Taster</th>
<th>Days from rack</th>
<th>Comments</th>
<th>Prefer</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. Johnson</td>
<td>7</td>
<td>W very harsh</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Very little difference</td>
<td>Hone</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td></td>
<td>W</td>
</tr>
<tr>
<td>A. J. Skelhorn</td>
<td>7</td>
<td>W lacks character and has slight harshness</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>T has a lingering &quot;iodine&quot; taste</td>
<td>W</td>
</tr>
<tr>
<td>G. A. Howard</td>
<td>11</td>
<td>T harsh</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>T smoother than W</td>
<td>W</td>
</tr>
<tr>
<td>W. Hamsey</td>
<td>14</td>
<td>W has more character. Difference slight.</td>
<td></td>
</tr>
<tr>
<td>J. K. Henahaw</td>
<td>11</td>
<td>W slightly harsh</td>
<td>2</td>
</tr>
</tbody>
</table>

Date: 8.8.62

Figure 102. Tetley Walker Ltd. (1962), Test results.
Figure 103. Author unknown. (Date unknown), Yeast results. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
Summary.

The wort produced at Plum Street is higher in colour, pH, total nitrogen and soluble anthocyanogens than that produced at Hunslet Road.
For trial fermentations it ferments faster and to a lower final gravity.
The beer produced at Plum Street has a higher final gravity than that from Hunslet.

Figure 104. Tetley Walker Ltd. (Date unknown), Summary. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
amount to some % or more of the titration and thus the values of amino nitrogen given are subject to this range of error.

Possibly the comparative accuracy could be increased by removing some of the buffer materials from the beer and, of course, there is also the method entailing liberation of nitrogen, although probably this would also not give any indication when the nitrogen is bound up as NH₃ and not present as a free NH₂ group. The remainder of the beer samples are being kept in the refrigerator and could be used if necessary for a more exact determination.
These results indicate that the bleed of non-floculent strains give a good attenuation whereas the mixture of both floculent and non-floculent strains gives a poor attenuation which is in fact, worse than that given by the floculent bleed only. This would seem to indicate that there is some mutual flocculence between the two types of strains although, of course, these are the results of only one experiment. The tests so far carried out appear to indicate definitely that your poor attenuations are due to the composition of the yeast.

for Moritz & Fuller

Figure 106. Moritz & Fuller. (Date unknown), Results. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
Figure 107. Author unknown, (Date unknown), Letter and circulation notes. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
Visits and Visitors.
Figure 108. Photographer unknown. (Date unknown) At: Tetley Archive, Leeds.
I enclose correspondence with Mr. Thompson which I should be grateful if you would return.

I do not myself anticipate writing an article for the Ind Coope News, but I did wonder whether some of our Operatives in the Cooperage might not like to make a visit to Fairey's to see where so many of our casks are made.

Figure 110. Simnett J. S. & Co. (Date unknown),
At: Tetley Archive, Leeds.
Figure 111. Simnett J. S. & Co. (Date unknown),
Visit to Norfolk Farmers. At: Tetley
Archive, Leeds.
Figure 112. Burton Mail & Observer. (Date unknown) At: Tetley Archive, Leeds.
Figure 114. Photographer unknown. (Date unknown), Visit by police representatives from Pakistan. At: Tetley Archive, Leeds.
Figure 115. Photographer unknown. (Date unknown), At: Tetley Archive, Leeds.
Figure 116. Photographer unknown. (Date unknown) At: Tetley Archive, Leeds.
Miscellaneous Materials.
Mr R L Thompson

Dr E C Kilkenny

DATE RECEIVED
17 May 1966

Date 16th May 1966

I thought you would be interested to see the enclosed photographs
sent to me by the Fairley Company of the manufacture of stainless
steel beer containers.

If at any time you should be writing an article for the Ind Coop.

News in connection with stainless steel containers, we may be able

to use these as illustrations.

Would you kindly return the photographs to me in due course.

No.

Dw

Figure 117. Thompson R. L. (1966), Memo to Dr
B. C. Kilkenny. At: Tetley Archive –
West Yorkshire Archives
Service, Leeds.

p143 Miscellaneous Materials.
Figure 118. Author unknown. (1958), Photographs of Alloa, list. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
Further to my note of 12th inst. and your reply of 15th inst., I now enclose the following photographs which should complete the series you require:

1. 2 copies of 1099, 992, and 1306.
2. 2 copies of 1217.
3. 2 copies of 1010, 1006, 1120, 1125, 1266, 1296, 1283 and 1292.

With regard to No. 1139, we regret that in previous correspondence this was wrongly given as 1089.
Figure 120. Author unknown. (1958), Photographs of Alloa, list. At: Tetley Archive – West Yorkshire Archives Service, Leeds.
THE Fairey COMPANY LIMITED

24 BRUTON STREET - LONDON, W.1.

Figure 121. The Fairey Company Ltd. (Date unknown), Letter regarding beer containers from Britain’s leading brewers. At: Tetley Archive - West Yorkshire Archives Service, Leeds.

Miscellaneous Materials.
The range of Keg, draught beer Casks, and dual-purpose containers is produced in capacities ranging from 4½ to 18 Imperial gallons. In addition to the standard models, the fluid capacity and certain dimensions can be varied within reason to suit customers' special requirements.

**Quality-controlled material.**

Every Fairley Cask and Keg is manufactured from special formula stainless steel, the chemistry of which has been balanced to give a true austenite. With careful control of trace elements, this ensures complete absence of flavour effects and a particularly high resistance to corrosion.

The stainless steel is a low carbon 19/8 chromium nickel austenite, basically similar to that used for domestic hollowares, cooking, and food manufacturing equipment. It is particularly suitable for automatic TIG (argon-arc, tungsten electrode) welding, and is used for the manufacture of Fairley beer-containers in several thicknesses between 12 and 26 millimetres.

Stainless steel raw material arrives at the factory in 3 ton coils. Samples from each batch are subjected to exhaustive tests in the metallurgical laboratories before being released for manufacture.

In addition, during manufacture particular care is taken to eliminate iron pick-up which can affect the flavour of beer. The wearing surfaces of all tools are constructed from special materials which do not contain free iron.

**Advanced production techniques.**

The basic components of both Casks and Kegs comprise a centre portion, and a top and bottom skirt unit together with inner dome sections.

The first stage of production takes place on an automatic, continuous cut-off line which straightens the material, and
cuts it into lengths to an accuracy of ± 0.001 in. Sheet blanks for the centre sections, and top and bottom skirts, are roll-formed, and then transferred to automatic welding installations for the main longitudinal seam welding.

All seams are fusion welded by a patented method which gives smoother and stronger welds than can be obtained by conventional welding techniques. The edges of each seam are fused together without the addition of filler rod and since the characteristics of the parent metal are not changed by the welding process, the welds are completely resistant to intergranular corrosion and weld decay.

After the longitudinal seam welding has been completed, the centre sections are transferred to an automatic peening machine, which work-hardens the weld. Stretch forming of the welded centre and skirt sections, to provide their initial external form, then follows. The centre and skirt components are finally shaped on a rim-rolling machine, controlled automatically on a time cycle to ensure the correct degree of work hardening.

The height, and hence the ultimate capacity, of the beer container is precisely controlled by a simultaneous trimming operation on both ends of the centre section.

Various forming and piercing operations follow on the top and bottom skirts, both of which are similar in general form. These include piercing operations to form the drain holes and the handling, or grip, holes. Some sections are also blanked out on a press, and then pierced, formed, and trimmed to final size and shape.

With the centre barrel, top and bottom skirt and the dome completed, and various welded fittings added, the container is ready for final assembly. This operation includes four separate automatic circumferential welds. The first joins the top skirt to the dome end, and is done on a special welding...

Figure 123. The Fairey Company Ltd. (Date unknown), Letter regarding beer containers from Britain's leading brewers. At: Tetley Archive West Yorkshire Archives Service, Leeds.
machine in which the skirt and dome are mounted on a rotating fixture. The welding operation, which is entirely automatic, involves some four feet of welding.

The welded sub-assembly unit is subsequently joined in a similar manner to the centre unit, to form the three-quarter assembly, and finally, the bottom skirt is added to complete the container.

**Pressure testing: stringent inspection procedures**

After final assembly each container is air pressure tested. This operation is followed by a chemical cleaning process, after which the containers pass through automatic washing and steaming cabinets, and then to hot-air driers. The chemical cleaning not only removes soil which has accumulated during manufacture, but also etches the internal and external surface of the barrel to obtain a smooth surface. In addition it ensures that all surfaces are completely free of contamination, and for this reason Fairey containers can be put straight into service at the brewery, without the initial pickling which has been necessary in the past for other types of container. This, together with the special formula stainless steel ensures complete absence of flavour effects, right from the start.

Before despatch every Keg and Cask has to pass a stringent inspection for cleanliness, surface defects, faulty welds, and possible damage to threads. Spot-checks are also made on Casks and Kegs which are selected at random from the production line and tested to destruction. These particular tests include metallurgical tests of both parent metal and welds, fatigue, drop, and ultimate burst pressure tests. A typical 9 gallon Keg failed after nine minutes, at 955 p.s.i. without shattering or fragmentation. Just a simple split seam — proof of the tremendous safety factor inherent in Fairey quality-controlled material and manufacture.

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Figure 124. The Fairey Company Ltd. (Date unknown), Letter regarding beer containers from Britain's leading brewers. At: Tetley Archive – West Yorkshire Archives Service, Leeds. Archive, Leeds.
Cellar Tanks

While Fairey Stainless Limited have in the past concentrated on the manufacture of stainless steel Casks and Kegs for the brewing industry, a range of stainless steel Cellar Tanks from 25 to 99 barrels capacity has now been introduced. These containers are constructed from the same special Fairey-formula stainless steel, and use similar production techniques to that of the Kegs and Casks. Fairey Cellar Tank designs are unique in presenting a complete system to the brewer. The tanks incorporate a built-in cleaning system and self-sealing quick-disconnect couplings to ensure maximum flexibility and ease of handling in the public house cellar.

Fairey believe that the bulk Cellar Tank will be increasingly used in the high volume retail outlets which are normally serviced with Barrels and Kegs. On the other hand, for the smaller retail outlets which constitute the greater majority, increasing use will be made of the smaller capacity Casks and Kegs. Consequently Fairey are now able to supply a complete range of beer containers to meet all future market requirements.

For further information contact:
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01/734 5791

Figure 125. The Fairey Company Ltd. (Date unknown), Letter regarding beer containers from Britain's leading brewers. At: Tetley Archive - West Yorkshire Archives Service, Leeds.
Figure 126. The Fairey Company Ltd. (Date unknown), Letter regarding beer containers from Britain’s leading brewers. At Tetley Archive – West Yorkshire Archives Service, Leeds. Archive, Leeds.
Figure 127. Adpoint. (Date unknown),
Fermentation at a rigorous stage. At:
Tetley Archive, Leeds.

p153 Miscellaneous Materials.
Figure 128. Marshall & Co. (Date unknown), Tetley offices. At: Tetley Archive, Leeds.
Ben Lones Collection.
Figure 129. Lones, B. (Date unknown), Fellside Path, Sunny Bank. (Pencil sketch on paper). At: Barrow Archive & Local Studies Centre, Ben Lones collection.
Figure 130. Lones, B. (Date unknown), Untitled. (Pencil sketch on paper), At: Barrow Archive & Local Studies Centre, Ben Lones collection.
Figure 131. Lones, B. (Date unknown), Lowca. (Pencil sketch on paper) At: Barrow Archive & Local Studies Centre, Ben Lones collection.

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Figure 132. Lones, B. (Date unknown), Untitled. (Pencil sketch on paper), At: Barrow Archive & Local Studies Centre, Ben Lones collection.
Figure 133. Lones, B. (Date unknown), Coastal Scene near Ulverston - Canal Footpath. (Pencil sketch on paper), At: Barrow Archive & Local Studies Centre, Ben Lones collection.
Figure 134. Obituary Notice. (Date unknown), At: Barrow Archive & Local Studies Centre, Ben Lones collection.
Figure 135. Lones, B. (Date unknown), Footbridge, Walney Channel. (Pencil sketch on paper), At: Barrow Archive & Local Studies Centre, Ben Lones collection; LC280 CY/Wal.

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Abel Masson Collection.
Figure 136. Masson, A. (Date unknown), North Scale, Walney Island. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.

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Figure 137. Masson, A. (Date unknown), North Scale, Walney Island – back detail. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.
Figure 138. Masson, A. (Date unknown), Biggar Farmyard at the New Inn. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.
Figure 139. Masson, A. (Date unknown), Biggar Farmyard at the New Inn – back detail. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.
Figure 140: Masson, A. (Date unknown), Biggar Farmyard at the New Inn – painting detail. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.
Figure 141. Masson, A. (Date unknown), Biggar Farmyard at the New Inn – painting detail. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.
Figure 142. Masson, A. (Date unknown), Oil sketching tablet. At: Barrow Archive & Local Studies Centre, Abel Masson collection.

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Figure 143. Masson, A. (Date unknown), Untitled. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.
Figure 144. Masson, A. (Date unknown), Untitled – Back detail. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.

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Figure 145. Masson, A. (Date unknown) Biggar, the Graves house. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.
Figure 146. Masson, A. (Date unknown), Biggar, the Graves house. – back detail. (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.

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Figure 147. Masson, A. (Date unknown), *Untitled*, (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection.
Figure 148. Masson, A. (Date unknown), Untitled, (Oil on board), At: Barrow Archive & Local Studies Centre, Abel Masson collection Archive, Leeds.

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Ordinance Survey Profiles.
Figure 149. SOTA Elevation Profile. 2018,
Elevation between point 54.25774
North - 3.32864 West and 54.19960
North - 3.26250 West. Black Combe
to Hodbarrow Point (Online).
from https://www.sotamaps.org
Figure 150. SOTA Elevation Profile. 2018, Elevation between point 54.15899°N, -3.09897°W and point 54.19959°N, -3.26242°W.
K-factor: 0 (= Flat earth, no curvature).
Elevations profile between point 54.15899°N, -3.09897°W and point 54.19959°N, -3.26242°W
K-factor: 0 (= Flat earth, no curvature).


(Accessed: October 2018)

Ordance Survey Profiles

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