SLOW AGEING FOR ENHANCEMENT OF ARTIFACT LONGEVITY

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Abstract - A method of slow aging of artifacts by application of a time retarding solution is described. Tests of a range of manufacured retarding solutions using microscopic techniques and gustation are outlined and results tabulated. Readers are warned that these findings are preliminary and that much further testing may be necessary.

INTRODUCTION

It has long been known by conservators that the deleterious effects of the environment upon artifacts can be lessened by the process of slowing time in their immediate vicinity. Wincarnis (1) will develop a technique for this purpose, but until he does an interim technique is obviously necessary. Accelerated ageing has been used in the study of artifact deterioration (2) and although this does not involve an actual acceleration of time, the effects produced are similar, if not identical. In contemplating accelerated aging this author was led to conclude that the inverse would be quite possible to achieve. In fact, the reason that conservators had not previously discovered a technique for slowing time is largely due to their insularity -- if it's not in AATA, it's not worth reading. A more catholic and less conservative approach on the part of the present author has resulted in the discovery of slow ageing. It was merely necessary to consult abundantly available literature outside the conservation profession. For example, Coors has reported a process for slow aging (3) which may well be applicable to the conservation of antiquities and works of art (See Figure 1). The application of this technique is described in the following sections. •

EXPERIMENTAL

If you haven't read references 1-3, now is the time to do so. It is clear that the brewing industry is away ahead of the conservation profession in terms of time experimentation. If it is indeed possible to "slow age" a beer, there is no reason to suppose that it is not possible to "slow age" an artifact (Fig. 1)*. This author spent a great deal of time and many postage stamps in an attempt to extract more information from the brewing companies than was already available in the reference cited (3) (See also Fig. 1). This approach yielded mixed results as shown in Fig. 2. In summation, the replies to the

* It was to be hoped that the claim of "slow ageing" was not as obviously fallacious as the quotation on the same label regarding "Rocky Mountain smooth". They are not.

enquiries varied from "none" in the case of Molson's, Labatt's and Coors' to "you must be a flamin' looney" from Foster's (4). The author also undertook several brewery tours in order to gain clues to the secrets of the profession, but unfortunatly can remember little of what transpired on these occasions (5).

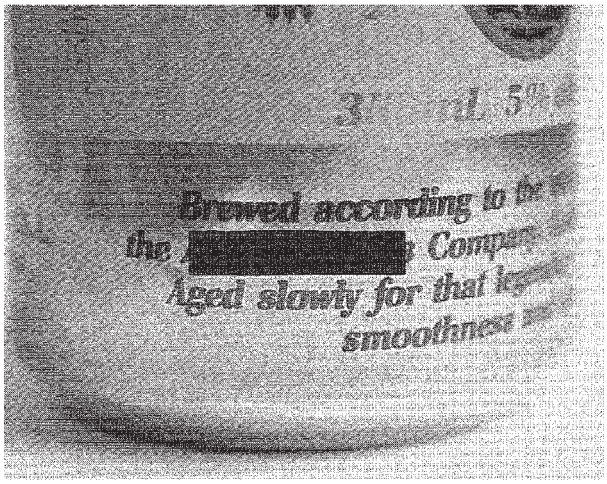

Figure 1. The slow aging claim on the product in question.

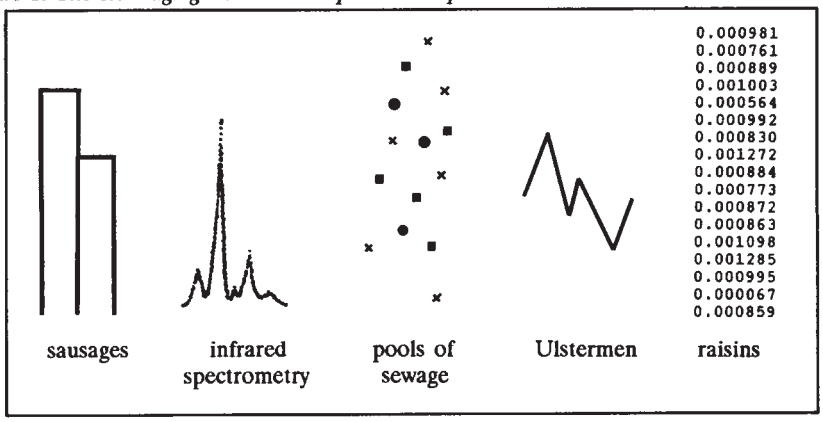

Figure 2. The mixed results mentioned in last text line of the previous page.

A second and more successful approach was to examine the products themselves to determine if the slow ageing process was in any way noticeable chemically or physically. Examination of the ale which boasted slow aging, compared with similar batches where the labels have no such legend, produced interesting results. The following tests were conducted on the samples:

- gas/liquid chromatography
- electrophoresis
- microscopic examination
- flame photometry
- scintillation spectrometry
- gustation
- X-ray fluorescence

The reasons for the wide range of tests applied were two-fold: a) the author had no idea what he was looking for, and b) he works in a very well equipped laboratory.

RESULTS

Of all the techniques applied, only microscopic examination and gustation yielded results. These are enumerated below.

3.1 Gustation

After testing a considerable quantity of each material by consumption it became clear that with the beer which advertised slow ageing, time did, indeed, appear to slow down. What seemed like half an hour was in fact only a few minutes. This effect was, however, transitory and left the operator with the impression that the years had flown and life was all too soon drawing to its close.

3.2 Microscopic Examination

Examination of droplets of each test material yielded no immediate results until polarizing filters were applied, whereupon Brownian motion of particles in suspension in the fluids could be detected and filmed. The results showed clearly that Brownian motion in the slow aged sample was significantly slower than in the other samples, leading to the conclusion that time in the locality of the sample was somehow retarded.

Slow Aging

APPLICATION

It is reasonable to assume that an object in contact with the retarded substance will also be retarded. Indeed, the bottles which contain the fluid proved to be virtually unbreakable due to their slow rate of descent when dropped. Also, examination of a number of hockey jocks in local hockey arena changing rooms has substantially confirmed the existence of this retarding process.

Although the brewing companies proved reluctant to release details of their slow aging processes, the fact that the chemicals they produce are available on the open market means that application can procede. The following artifacts, selected for their instability, were masked over 50% of their surface, sprayed with two coats of each test solution (Fig. 3) using the method described by Michalski and Marcon (6) and allowed to air dry:

- stained quillwork box, Micmac (No.1 in Fig.4.)
- silk Red Ensign (No.2 in Fig.4.)
- watercolour, J.M.W. Turner (No.3 in Fig.4.)

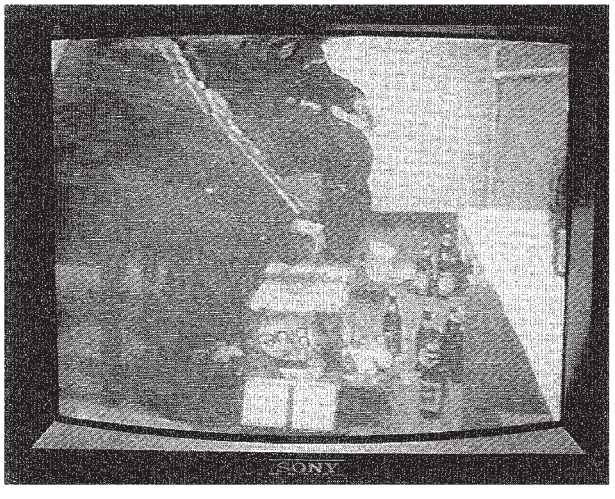

Figure 3. The application technique filmed on location.

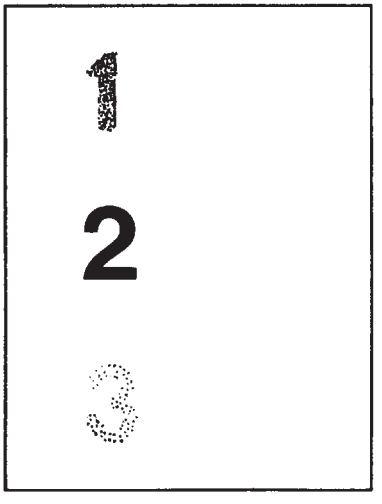

Figure 4. Fading of the test pieces.

The masking was then removed and the artifacts were exposed to an illumination of 20,000 lux, 850 μW/lm for 6 days (144 hours). Fading of pigments and dyes on the test pieces after exposure was measured by reflectance spectrometry (Fig. 4).

DISCUSSION

It is clear that the application of slow aged ale yields an artifact significantly resistant to fading. (The high result noted on sample Number 2 is due to this being a brown ale which tends to absorb light). The positivity of these results is encouraging, although further testing of the product of the brewer's craft may be necessary before definitive conclusions can be drawn. For example, some confusion still exists over the definitions of "slow aged" and "matured". One company even goes so far as to "mature in oak" and in view of the acidity of this wood (pH 3.5) it may not be advisable to apply this chemical to delicate artifacts. (Maturity was not noted in the hockey jock subjects either.)

On a related topic, more work needs to be done on the process of "light ageing" as reported by Tennant (7). It has yet to be determined whether light aging (as opposed to the more generally accepted heavy ageing) can be conducted using any of the new light beers, although evidence so far accumulated by the author looks encouraging. The obvious advantage of using a light beer as a surface coating, particularly for paintings, is that it would add very little mass to the paint/ground/canvas composite, thus altering minimally its dynamic characteristics. This author fully intends to continue along these very fruitful lines.

AKNOWLEDGEMENTS

The author would like to acknowledge the assistance of the many breweries whose products were used in this study. Unfortunately, as he was obliged to purchase all the material at the beer store out of his own pocket, he is unable to do this. It is not uncommon in the history of science to encounter dedicated individuals who place their health, their finances and even their very lives at the disposal of advancement of knowledge. In this regard the author is deeply grateful to J. Cliff McCawley for the selfless sacrifice of his liver, both kidneys, his uric acid levels and parts of his wallet in these studies.

REFERENCES

1. Wincarnis, M., "The Museum Applications of Einsteinian Space Time Geometry", *Recent Setbacks in Conservation*, Vol. 1, 1985.
2. Check any one of a hundred articles - don't bother me.
3. Personal communication from Ale Bottle to Author, somewhere above Medicine Hat, Alberta, Aug. 1986.
4. The full text of this extraordinary communication is available from the author on request in a plain brown envelope.
5. See?
6. Michalski, S. and P. Marcon, "A Hoser Approach to Conservation", CCI/Hungarian Village, September 1985.
7. Tennant, N.H., "Clear and Pigmented Epoxy Resins for Stained Glass Conservation: Light Ageing Studies", *Studies in Conservation*, 24, (1979), pp. 153-164.

REVIEWER'S COMMENTS

Prior to reading this article, I did not believe that the insanity of the previous issues of *Setbacks* could be surpassed (see Ref. 1 above). Unfortunately, this article demonstrates that I was twice sadly mistaken. - Charlie Costain, Ex-Co-editor, *Journal of IIC-CG*