TECHNICAL SUB COMMITTEE of the BRITISH COMMITTEE of the
CVMA c/o BRITISH GLASS INDUSTRY RESEARCH ASSOCIATION,
Northumberland Road, Sheffield S10 2UA, Gt. Britain

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29th December 1972

NEWS LETTER No. 1

I have received many comments on my document concerning possible programmes of work (TC/72/4, dated 31st October 1972), from members of the Technical Sub Committee and from others who are interested in the work, and there have been several interesting developments. It therefore seems to me that it will be useful to prepare occasional "News Letters" in an attempt to keep my various colleagues informed about work in progress. These News Letters will therefore go to a distinctly wider audience than the Technical Sub Committee and it is hoped that they will lead to a general sharing of information about conservation of medieval glass, to the advantage of all concerned.

1. GENERAL POINTS

1.1 Constitution of the Technical Sub Committee

There are three Appointed Members:-

Mr. Dennis King
Mr. George Linsley
and me

There are five Coopted Members:-

Miss Mavis Bimson, British Museum Laboratory
Mr. Frederick Cole, Canterbury Cathedral
Professor Nicholas Kurti, FRS, University of Oxford
Miss Anne Moncrieff, Victoria and Albert Museum
Miss Janet Notman, Burrell Collection, Glasgow

Five Corresponding Members have already agreed to participate:-

Ing. Jean-Marie Bettembourg, in Paris
Dr. Gottfried Frenzel, in Nuremberg
Professor Hans Hahnloser, in Berne
Frau-Dr. Eva Frodl-Kraft, in Vienna
Professor H. J. Oel, in Erlangen

1.2 Recent developments.

1.2.1 Publication of the Bibliography. It has been agreed that my three annotated bibliographies should be re-written in the light of all the comments which they stimulated, and the new version will be published by the British Academy, as will the details of my contributions to the York meeting of the CVMA. Short abstracts of the papers covered by the bibliography will also be published in Art and Archaeology Technical Abstracts, as an AATA Supplement, probably in issue No. 10/2, Winter 1973. If any reader knows of recent material which should be incorporated, will they please let me know. Additional highly-personalised bibliographies covering new material will be prepared from time to time.

1.2.2 Airbrasive equipment. A grant has been received from the Royal Society for the installation of the Airbrasive equipment in the workshops of the York Glaziers Trust, so that a series of controlled experiments can be carried out on the effects of the different powders, jet sizes, etc. A provisional research programme has been drawn up (as YG/72/1), and copies are being sent to members of the Technical Sub Committee. If any other reader has an interest in this subject, or has some glass they wish to have treated by this procedure, please let me know.

1.2.3 Non-destructive analyses of painted glass. Through the kindness of the Dean and Chapter of York Minster, and the Director of the Research Laboratory for Archaeology and the History of Art at Oxford, it has been possible to test the effectiveness of the "Oxford" non-dispersive X-ray fluorescence equipment using a panel of 12th century glass. The results are very encouraging and a report will be issued shortly; the analyses revealed K, Ca, Mn, Fe, Co, Cu and Zn. It was shown that the pink and green pieces of glass differed in their basic compositions, even though they were contemporary in manufacture, in a manner which rendered the pink glass more durable than the green glass. Also, one of the pieces of green glass differed from the others, both in basic composition and in the composition of the paint, and it seems to be a (later?) replacement.

2. REVISED RESEARCH PROGRAMME

The list of possible programmes of work (TC/72/4) has stimulated much comment and the most important of the new developments are:

A. Tests on protective coatings

Professor Douglas has suggested that the poorly-durable "standardised" synthetic medieval glass should be altered slightly to have the following composition (expressed for convenience both as molar percentages and weight percentages):-

	Molar %	Weight %
SiO_2	50	42.9
CaO	25	19.9
K_2O	17	22.8
P_2O_5	3.5	7.1
Al_2O_3	3.5	5.1
Fe_2O_3	1.0	2.3
	100.0	100.1

A trial melt of the modified composition has already been made and the glass is undergoing durability tests. It seems to have the properties we need because it loses about 0.02% of its weight when immersed in water at 50°C for 18 hours, and 20% of its weight when heated in constant-boiling hydrochloric acid (ie about 20% v/v acid at about 110°C) for three hours; thus it is similar to the early medieval mid-European glass sent to me by Frau-Dr. Eva Frodl-Kraft and probably represents the least-durable glass which has remained until this century. Further quantities of this glass will therefore be prepared for testing the coating materials.

The choice of an accelerated testing procedure will clearly be difficult but the Xenotest equipment is being investigated as providing an available, well-defined, compromise test procedure. A grant from the Radcliffe Trust Scheme for the Crafts has been awarded for this work.

C. Environmental studies for windows

The replies show that this aspect is widely regarded as being of great importance but there does not seem to be much chance of obtaining the necessary funds from the Department of the Environment.

F. Accelerated post-war corrosion

There has been much interest in the proposed enquiry into the conditions of storage of windows during the war, and the possibility that a hydrated surface-layer may have formed if the storage conditions involved condensed moisture. It appears that windows were removed during the war from churches in the industrial areas of Switzerland, and these have deteriorated after re-installation. Details have also been obtained about the window from Chelsea Old Church, which was ruined after being wrapped in a wet blanket. Further enquiries will be made on these lines and I shall be glad to hear from any reader who has information about the conditions under which ancient windows were stored during the war.

H. Adhesives

This new item has been suggested and it clearly merits attention. I shall be glad to hear from anyone who had had experience of "good" or "bad" adhesives.

3. AMENDMENTS TO BIBLIOGRAPHICAL INFORMATION

3.1 The "Jacobi process"

In item No. 14-A of Supplement No. 2 (21 Aug. 1972) I remarked that I had been told that "Jacobi's process" cost about 10 000 DM per sq. m. and I asked for more precise information. I have now had some figures from Dr. Jacobi himself and I am very glad to be able to correct the earlier figure, although everyone will share my sorrow that his wife died in mid-August.

He tells me that, depending on the size, they can bond between 50 and 130 pieces of glass per hour by his method, the total cost of restoration being about 2000 DM per sq. m., of which the safety-glass part of the process costs about 10%, or only 200 DM per sq. m! He states that part of the Schidmaier window in St. Laurence at Nuremberg was restored at a total cost of 3000 DM for an area of 6 sq. m. (500 DM per sq. m.). In Cologne Cathedral the total cost of restoration of the windows works out at 2000 DM per sq. m., the safety glass part of the process being 10%.

3.2 Sonic "bangs" from aircraft

The Neuen Glaserzeitung of 1954 states (as translated from the excerpt given on p. 124 of Kölner Domblatt, 1955, Vol. 9) "When they broke the sound barrier, jet aircraft of the British Air Force caused severe damage to glasshouses erected as recently as 1949 in a smallholding in a quiet valley at Bishops Waltham, Hampshire. In all, the shocks caused by the exhaust gases shattered 500 panes of glass. The owner reported that the employees run out of the glasshouses whenever they hear jet aircraft in the distance." I consulted Mr. D. R. B. Webb of the Royal Aircraft Establishment about the occurrence and he states "The incident you referred to at Bishops Waltham, was caused by a supersonic aircraft, accelerating at lowish altitude, in a turn. This manoeuvre is not permitted overland these days, but in 1954 control was much more lax. It has been estimated that the resulting boom was focused, and so only a small area was affected, and the overpressure some ten times greater than that expected from Civil supersonic aircraft operating commercially. At this overpressure we would expect damage. Our most recent findings are that claims for glass damage can occur even if the booms are of Concorde-type level (or lower) but that these damages were going

to occur very soon anyway due to other causes. It can now be shown that the increase in damage due to the boom is not detectable within the damage that takes place due to the environment."

3.3 Other points

Will any readers please tell me about any other points in the literature, or any other misunderstandings, which I could help clear up.

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I wish everyone a Happy and Conservationally-Effective New Year in 1973.

Roy Newton