On the Preservation of Dufaycolor Transparencies at Sydney Hospital

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This note reports short-term measures that have been taken to protect a unique collection of clinical slides. At the same time it advertises the aesthetic qualities and research potential in the collection of Dufaycolor images and, by implication, in the Sydney Hospital clinical photography collection as a whole.

Sydney Hospital has undergone traumatic change in the three years since the decision was taken by Government to reduce its status and functions. From a teaching hospital with some 400 beds and special departments of international repute, it is now a community hospital of 120 beds plus the seventy-five specialist beds at the Sydney Eye Hospital, Woolloomooloo. The scaling down process includes progressive evacuation of most of the buildings at Macquarie Street in preparation either for renovation or demolition. In turn this has obliged management to acquaint itself with, and consolidate, a huge range of clinical and administrative records and plan measures for their control, disposition and access.

Uncontrolled accumulations of archival materials generally include a significant percentage of records in a poor physical state, attributable to years of neglect under less than perfect storage conditions. Sydney Hospital's performance in this regard is by no means unusual. More remarkable by far is the volume, date range and variety of the forms that have survived during over one hundred years of anguished debate about the future of the institution. Long forgotten materials are still being rediscovered and some of these present urgent problems for a conservator.

Amongst the most exciting finds of 1984 was a collection of 164 Dufaycolor clinical transparencies (quarter plates) taken by a distinguished portrait photographer, Leonard W. Appleby, during the nineteen-forties. These had been preserved by the Radiotherapy Department which was transferred as a unit to Newcastle at the end of

1983. The images are encapsulated in glass and many of them are extraordinarily beautiful - so much so that they quickened my interest in the history of clinical photography in Australia and I have added this topic to my short-list of themes for intensive study when circumstances permit. There is good reason to believe that the Clinical Photography Department established by Sydney Hospital in November 1929 was the first of its kind in this country. Sadly, the department was closed in April 1985.

Not being expert in the history and techniques of photography, it took me some time to establish that what we had was indeed Dufaycolor. The former head of department, Reg Money, put me on the right track with the observation that Appleby was known to have used Dufaycolor. This hint, offered in conversation without Mr Money having seen the slides, was indirectly confirmed by Alan Davies of the Macleay Museum, who showed me examples of Dufaycolor transparencies; and by Michael Gethen of Consumer, Professional and Finisher Markets, Kodak (Australasia) Pty. Ltd., who ruled out any possibility that our slides were Kodachrome (amongst other things, the size was wrong) and also made the initial diagnoses of the various ills besetting our Dufaycolors.

Dufaycolor was one of several additive colour processes available commercially between 1908 and the late nineteen-forties. Additive film produced a transparency made by a reversal process and relied on the use of a tiny mosaic pattern of primary colours on a screen, through which the picture was exposed and later viewed. Put another way, a dye layer was superimposed over the photographic image, and not involved chemically in the developing of the image, as is the case with modern colour film processes which are known as subtractive.[1] The composition of additive screens varied from manufacturer to manufacturer and may be detected and identified by examination under a microscope. Naturally, I put Sydney Hospital's Dufaycolors to the microscope test, armed with colour photomicrographs of the various additive screens.[2]

Immediately recognisable conservation problems presented by the Sydney Hospital Dufaycolors include:

(i) several shattered glasses due to careless handling;

(ii) fungal growths feeding on the gelatin of many images (visible but not yet disfiguring);

(iii) droplets of moisture trapped between the glasses (possibly the result of overlong exposure of the slides to powerful projector lamps);

(iv) excessive moisture in a few slides which had expanded the gelatin to produce ridges in the transparencies and render them useless.

Despite these defects, the general condition of the slides is excellent. They had been encased in three wooden slide boxes and kept away from light. The disorder within the boxes indicates that they were once

frequently used for lecture and reference purposes. It is unlikely that the 164 Dufaycolors that have come down to us are all that were once held by the Radiotherapy Department. Yet we must be grateful for what has survived, for very little of Appleby's work appears to have been preserved in any public collection in Sydney. It is known that his master files recording fifteen years' endeavour at Sydney Hospital were destroyed as recently as 1971.

The colours have kept their freshness and though Appleby had his off days, the quality of the best of his images is so superior as to provoke the admiration of modern professionals, one of whom was heard to say that he wished he could 'do' flesh tones like Appleby's. Artificial lighting was not suited to Dufaycolor which was one reason why Appleby did not use it. He clung to his old-fashioned quarter-plate camera, stand, and black hood; and had no special lenses. Clinical photography may also put a severe strain upon rapport between sitter-patient and photographer. Thus, the succession of brilliant portrait images (which defy modern clinical conventions) taken in natural light, and included in this small collection, speaks volumes for the technical competence and humanity of the photographer.

The obvious way to draw attention to unique properties in visual images is to reproduce them. I have borrowed a suitable quarter-plate projector which was restored to working order for my use. Yet I hesitated to experiment with the slides although assured that they could be safely projected for several seconds (...remember the mould). Instead, I appropriated one of the hospital's viewing screens for my photographic researches. Spurred by a commitment to prepare a research paper on aspects of clinical photography before the end of 1984, my immediate concern was to find a way to copy a small selection of images without causing harm. At the same time I wished to arrest the spread of the mould and try to establish stable and cool conditions for future storage at the hospital.

For advice about the mould I contacted Karen Coote, objects conservator at the Australian Museum. The order of priorities crystallised as follows:

(i) kill the mould by fumigation;

(ii) copy the best of the images for working purposes and as a record in the event of accident to the originals;

(iii) investigate means of conserving the originals.

To date, only the fumigation has been completed and although the slides are at present in a dark and air-conditioned room, they will soon be re-located. Fumigation kills the live infestation but does not provide lasting protection against future invasions. I anticipate the necessity to fumigate

again when a permanent home for the collection has been established. No attempt was made to separate the glasses for cleaning or replacement, on grounds that the plates had been taped together for some forty years and interference would probably damage the transparencies. Treatment experiments with plates already damaged can be made later. The logic respecting fumigation was simple: if mould could get in, so could the gas.

The recommended fumigant was ethylene oxide under vacuum, which has no side effects for the photographic material but must be used under strict safety conditions. Karen Coote observed that most of the people who attended the State's mandatory fumigation licensing course were health professionals. She suggested that Sydney Hospital probably had the necessary facilities to take care of the Dufaycolors. On enquiry, I found that very few hospitals in Sydney have sterilisation procedures that include an ethylene oxide facility. Fortunately, the Sydney Eye Hospital happens to be one of them. The theatre sister in charge, Janet Stretton, was very willing to help with my emergency, but it would be as well to note that my privileged position as Historian to Sydney Hospital gave me access to a hospital sterilising chamber that normally would be denied to any ordinary enquirer. The hospital chamber proved too small to cope with large quantities of disparate archival materials for which, after all, it was not designed. However, Karen had offered to include our slides in the museum chamber and so, a compromise was effected in November 1984.

Eight slides were chosen for immediate study and these were fumigated in the Sydney Eye Hospital chamber. This load was attended to overnight and retrieved next morning. I took the rest of the slides to the Australian Museum. These slides were left in the boxes - partly to protect them, and partly because there was no point in fumigating the slides without also treating their housing. In this context, some reservations were expressed about appropriate gas dispersal times for substances as different as glass and wood. However, recent investigations suggest that dispersal times depend as much on design of objects, as on the materials of which they may be made. With an efficient airing system, a twenty-four to forty-eight hour dispersal time is now held to be safe.[3]

The last step in this preliminary exercise was to arrange for copying of the eight selected slides, nearly all of which had been chosen in the knowledge that there were similar slides of the same patients in the collection. There are several specialist colour laboratories in Sydney with very sophisticated equipment and finding one to do my slides was not a problem.[4] The 35 mm. copies are very faithful to the original Dufaycolors and were provided in two days. The unit cost including special mounts was $3.62. I have not had time to continue the copying programme and Sydney Hospital does not yet have a budget for its archive; but further work must not be long delayed because stage three, the conservation of Dufaycolors, is known to be a time-consuming and expensive business.

Serious archival complications arising from the preservation of clinical images and involving such matters as the doctor-patient relationship, privacy and copyright, will receive separate notice at a later date. My purpose here has been to demonstrate that with the right advice, even an inexperienced custodian in a hurry, may cope successfully with an unusual conservation problem.

FOOTNOTES

1. Brian Coe, *Colour Photography. The first hundred years 1840-1940.* London, 1978, chap. 3; Robert H Weinstein & Larry Booth, *Collection, Use, and Care of Historical Photographs* Nashville, 1982, pp. 198-99
2. Coe, *op. cit.*, pp. 50-51. For more details on additive screens see, Mark Nizette, 'The Role of the Silver Image in Determining Colour Potential of Finlay Plates', *Bulletin of the Institute for the Conservation of Cultural Material,* 9/1 & 2, June 1983, pp. 21-38.
3. I am indebted to Janet Stretton for pursuing this matter with the Division of Occupational Health, Department of Industrial Relations (Lidcombe, Sydney).
4. Colour Dimensions, Ultimo.

Editor's Note: Since writing this article, the author has had her attention drawn to current controversy surrounding the use of ethylene oxide, which has been banned from United States hospitals. The editor believes nevertheless that the article contains much of interest and hopes that readers may be encouraged to write in and contribute to discussion. Recent experience with a very dirty collection of private papers is reported by Nancy McCall in "Ionizing radiation as an experiment: a case study", *Conservation Administration News,* No. 23, October 1985.