

THE RESTORATION OF THE TOWN AND COUNTRY JOURNAL

by T. F. Nielsen

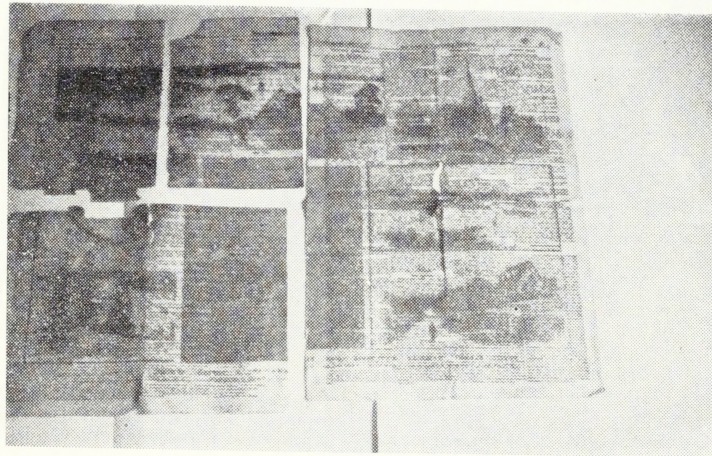
The article that follows describes the restoration, in the Conservation Workshop of the State Library of New South Wales, of pp. 25 and 26, and pp. 27 and 28, of the issue of the *Town and Country Journal* for May 23, 1891. The restoration was carried out by Ms L. Johnston, Manuscript Repairer, who was also the operator responsible for the repairing of the Grants and Leases Register described in a previous issue.¹

The usual surface-cleaning, with rubber and/or rubber-vinyl powder bags, was not carried out on this item, as the rubbing action on the surface would have done more harm to the deteriorated paper than the removal of the relatively small amount of surface dirt would have done good.

Several long pieces of pressure-sensitive adhesive tape had, at some earlier time, been attached, in an attempt to repair the cracks that had occurred at page folds, and these pieces of tape, and the stains they had caused, had to be removed. A variety of solvents was tried, but it turned out that the safest process was to remove the tape, while it was dry, and that the stains could be easily washed out with Ardrex 551 solvent.

The next step was to wash out all the accumulated acid and ingrained dirt which had built up over the past 80 years. This was carried out in the following way.

The double page was enclosed between two layers of plastic wire-netting and taped or stapled around the edges, to prevent the weak newspaper from moving round excessively during the prolonged washing in cold and warm running water. The washing time was about



The newspaper as received

one hour, which is, in my experience, the usual time for this type of material. Regular checks of the pH factor, using a Chem-mate meter and surface electrode, showed the following results taken at certain intervals:

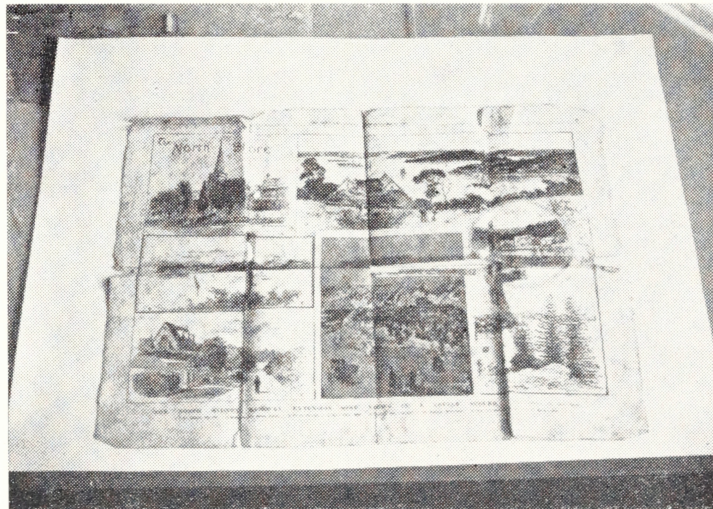
pH as received	3.6
pH after 10 min. washing	3.8
pH after 20 min. washing	4.3
pH after 30 min. washing	4.6
pH after 40 min. washing	4.9
pH after 50 min. washing	5.6
pH after 60 min. washing	5.6

The washing, as can be seen clearly from the photographs, did not remove the well-developed and prominent mould-spots, so it was necessary to resort to bleaching.

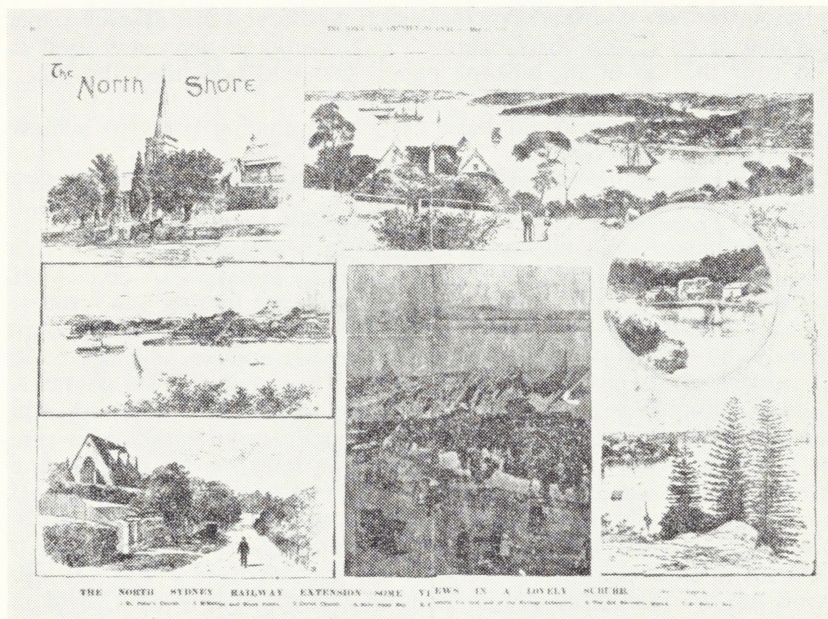
Chloramine-t, sodium hypochlorite etc. was tried along the edges of the item, in an effort to identify the bleaching method which would do the job best and safest. As was expected in view of the fact that it was newsprint that we were dealing with, potassium permanganate oxalic acid/sulphuric acid was the best material to use, and the bleaching was carried out in the following way.

The solution used was 5% w/v potassium permanganate in water. The item was immersed in water for a few minutes, then drained, then immersed in a solution of 5% oxalic acid in water for 30 seconds (the oxalic acid solution must contain 100 ml of 25% v/v sulphuric acid). Finally the newspaper was washed until all traces of oxalic/sulphuric solution were removed.

It should be pointed out at this stage that the sheet of newspaper, due to washing and bleaching, was by then becoming very weak and



The newspaper after washing



The newspaper finished

it was fairly difficult to handle it safely without breaking it. Therefore, I decided that it would not be safe to immerse it any further in water or in a solution which contains water.

The deacidification-method chosen, taking the above into consideration, was barium hydroxide in alcohol (spray) 17-19 g per litre. The barium hydroxide reacts with sulphur in air to produce barium sulphate and water. It leaves a residual buffer of barium carbonate, which reacts with sulphur in air to produce barium sulphate plus carbon dioxide and water.

The repairs and/or lamination of this very deteriorated newspaper could, as far as I could see, be carried out in either one or the other of two different ways. The first way was the wet process, as described in the article on the restoration of a Grants and Leases register in the most recent issue of *Archives and Manuscripts*. The second method I suggest is a dry process, using Primol LC 40 as a heat set adhesive and Process Nylon as a repair and lamination material. Primol LC 40 is available from Rohm & Haas Pty Ltd, Sydney, and is used mixed 60/40 with water. This adhesive is removable in cold and warm water and is neutral. The Process Nylon is available from B. J. Ball Pty Ltd of Sydney. It is very sheer, non-yellowing, whitish, very strong and has a pH rating of 7.0.

As my readers may have guessed, the method we used was the second of those mentioned above. Two sheets of Process Nylon were cut slightly larger than the newspaper, and sprayed twice, drying in between, with Primol (one side only). The newspaper was placed

between the two layers of Process Nylon, and a sheet of silicone paper was placed on top of the "sandwich". A household iron was used to iron over the top of the silicone paper, first one side, then the other, of the "sandwich".

Alternatively, one could have used a laminating press to achieve the last-mentioned result.

The temperature required to activate the heat set adhesive is approximately 85°C.

REFERENCE

1. *Archives and Manuscripts* 6(4) August 1975, pp. 137-141.