LEATHER FOR BOOKBINDING.

THE protection of bindings from decay must always have been an onerous duty with librarians, and all those devoted to the care of books, but the difficulties attending it were not so great of old as they are at present. The causes of decay, apart from ordinary wear and tear, resolve themselves generally into three, viz., damp, heat, and light. The first alone was formerly the great danger, for heat and light did little harm before rooms were overheated and overlighted. Certainly this may be said of most of the private libraries in the country, until systems of warming by hot air and hot water were introduced. Since then the houses have become too hot when the families are in residence, and too cold when they are away, so that the violent alternations of temperature are injurious to the books. Some instances, however, of the perishing of the backs of books are to be seen in country libraries where the sunlight, pouring in through windows with a southern or western aspect, has destroyed the freshness of the bindings. This was especially the case with the Sunderland Library at Blenheim Palace, and we ourselves have seen an old library in a Jacobean mansion in Norfolk where all the backs in the long gallery devoted to the books are bleached almost white.

On the whole, however, the books in country houses are in excellent condition, as those who are not acquainted with them in their original homes may see when the libraries come to the auction room in London. Here morocco bindings are often found as fresh as when first
 11 sent home, with the added tone and beauty given by years.

In spite of the purity of country air, special care must have been taken of the books, or they would not have remained in such fine condition. Probably they were in many cases protected from injury in glass cases, although the dust of the country is apparently fairly innocuous as compared with the fearfully greasy compound found in London and other great cities.

When large libraries became more common, and these were heated and lighted for night use, the difficulties of protection were greatly increased, and in 1842 a cry of alarm was raised owing to the condition of the books in the library of the Athenæum Club. In the summer of 1842 a committee of the club was formed to consider the subject, consisting of Professors Faraday and Brande, Mr. Aikin, Dr. Prout and others. Dr. Prout took two equal portions of the water used in the house, and exposed one of these for a fortnight to the air of the drawing-room of the club, by which means he found that it thereby acquired a striking increase of sulphuric acid, so that when evaporated nearly to dryness it distinctly reddened litmus paper, and showed the presence of free sulphuric acid. 'This,' said Dr. Prout, 'sufficiently explains the destruction of the books, nor will there be any improvement till either the gas is removed or its fumes conducted away by appropriate chimneys.' Mr. Faraday and Mr. Aikin agreed in this opinion, and the Committee resolved that as from the above experiment it appeared that much of the injury suffered by the books in the library was owing to acid vapours evolved by the combustion of the gas, it was advisable that for the preservation of the library, the gas should either be discontinued or that some arrangement be adopted for carrying off the fumes by an improved system of ventilation. Faraday urged the adoption of the latter proposal, and he designed lamp glasses for the gas jets,¹ and James Faraday read a paper on the same subject

¹ From the Minutes of the Committee, communicated by Dr. Letheby. 'Journal of the Society of Arts,' 1859, vol. vii., p. 215.

before the Institution of Civil Engineers on the following June 13th.

The question at once became an urgent one. From the first formation of the Library Association it was constantly discussed at meetings, and much difference of opinion expressed; but as no renewed scientific investigation has been undertaken since that of Faraday and the Committee of the Athenæum Club, the solution of the question did not progress.

The general results of experience were that the use of Russia was condemned except in the case of such books as were constantly handled, and calf was given up because it was wanting in strength on account of its being pared too thin.

In all libraries where books had much wear morocco was generally used, though in many cases cloth and buckram were adopted as more satisfactory than leather for the bindings of large books. Gradually, however, it began to be understood that so-called morocco was no longer to be trusted. Thus there came to be no longer one question but two:

(1.) The conditions necessary for the preservation of well-bound books in trustworthy leather.

(2.) The means of knowing what leather was bad, and would decay under any conditions.

This last point was a particularly disquieting one, and those interested in the matter felt that it could no longer be left in this unsatisfactory condition. Books in former times had been carefully preserved and could be so preserved again.

About two years ago a committee was formed under the chairmanship of Mr. T. J. Cobden Sanderson, and with Mr. Douglas Cockerell as secretary, to encourage the production of sound and durable leather for book-binding. The committee held several meetings at the Central School of Arts and Crafts in Regent Street, but after a time its members came to the conclusion that the

subject was too large a one to be dealt with by an informal body, and the council of the Society of Arts was asked to undertake a thorough investigation of the whole question. In February, 1900, the council appointed a committee, and this committee has now issued a Report, which contains fresh materials of the greatest value.¹ Two sub-committees were appointed: (1) to visit libraries for practical illustrations of the points raised; and (2) a committee of experts, consisting of Dr. J. Gordon Parker, Prof. Henry R. Procter, and Mr. A. Seymour Jones, to carry out a series of scientific experiments. The general Report is founded upon the reports of the sub-committees, which are themselves printed as appendixes.

One of the first actions of the committee was to formulate a series of questions which were sent out to librarians. As the replies to these questions show the condition of opinion before the publication of the report, they may first be alluded to here. The four questions went to the chief libraries in London and other towns in England, Scotland, and Ireland. The results of the thirty-nine replies are as follows:

‘I.—(a) Do any of your leather bookbindings show marked deterioration; and, if so, (b) What is, in your opinion, the cause?’

(a) Thirty-one replied yes; two replied no; four were undecided; (b) twenty-one, gas; six, bad leather.

‘II.—What class of leather do you consider the best for bookbinding?’

Morocco and pigskin recommended by almost all; cloth by six; Russia by one; calf by three; vellum by three; bark-tanned leather by one; sealskin by one (a member of the Committee);

¹ The report is published in the number of the Society's ‘Journal’ for July 5th. It will shortly be reprinted as a separate pamphlet.

Persian recommended by one and condemned by one.

‘III.—What are the conditions of your library as to lighting, heating, and ventilation?’

Twenty-eight now use electric light where gas was formerly used; hot water and open fires generally used; ventilation good in twenty cases.

‘IV.—Have any regular means been taken to prevent your leather bindings from decaying, by the use of some preservative application?’

Twenty-five have not used regular means; four used vaseline; two used cuirine; one (a member of the Committee) used furniture polish.’

Sub-Committee No. 1 visited a number of libraries, including that of the British Museum, the Bodleian at Oxford, the University Library at Cambridge, the libraries of the Athenæum Club, of the Patent Office, and of the Chemical Society, also the valuable private library of Mr. Huth. The aim of the Sub-Committees was :

‘I.—To ascertain if the complaints of the premature decay of modern bookbinding leathers are justified by facts.

And if so :

‘II.—By comparing bindings of different times to ascertain at about what date the leather began noticeably to deteriorate in quality.

‘III.—By noting the conditions of ventilation, lighting (natural and artificial), heating, etc., in different libraries, and comparing the states of bindings in them; to ascertain the effect of environment on the durability of the leather.

‘IV.—By noting the state of various books bound in various leathers at about the same time and kept under similar conditions; to ascertain the relative suitability of the various leathers for bookbinding.

21. ‘V.—To ascertain how far faulty construction is re-

sponsible for the want of durability of modern leather bindings.'

In addition to these the following points were dealt with in collaboration with Sub-Committee No. 2 :

- ' VI.—To ascertain the nature and special causes of the various kinds of deterioration noticed.
- ' VII.—To suggest practicable methods by which the quality of the leather can be improved, the stability of the binding insured, and the dangerous effects of light, heat, and other external influences in libraries minimised.'

No special report of the condition of the libraries visited is given, but the results of the inspection appear generally under each of these divisions. As the first point was answered unhesitatingly in the affirmative, the following six were fully discussed. It is not necessary here to deal with all these points, as most of them are summarised in the conclusions at which the General Committee have arrived. The main results of the investigations of the first Sub-Committee refer to

- (1) *The date of deterioration*, which they are inclined to put back for eighty or a hundred years, while the deterioration appears to have become more general about 1830.
- (2) *Ventilation, lighting, heating*, etc. Gas is credited with producing the worst effects, tobacco smoke is found to be injurious to bindings, and daylight is proved to have a disintegrating effect upon leather. Books kept in cases with close fitting doors are generally in a better condition than those exposed directly to the atmosphere.
- (3) *Stability of Leather*. Of old leathers white pigskin, probably alum tanned, is the most durable, but its excessive hardness and want of flexibility renders this leather unsuitable for most modern work; old brown calf has lasted fairly well, but since 1830 hardly any really sound calf seems to have been used. Some fifteenth and sixteenth century

sheepskin bindings have remained soft and flexible, but since about 1860 sheepskin, as sheepskin, is hardly to be found. Morocco bindings earlier than 1860 generally remain in fairly good condition, but after that date morocco seems to be much less reliable, and in many cases has become utterly rotten. In nearly every case Russia leather was found to have become rotten, at least in bindings of the last fifty years. Vellum has lasted fairly well, but is easily influenced by atmospheric changes, and is much affected by light. (4) *Faulty construction in binding.* The committee came to the conclusion that the bookbinder must share with the leather manufacturer the blame for much of the premature decay of leather bindings, and they have suggested two specifications, one for binding heavy or valuable books, and one for ordinary library binding. These are so important that they will be found quoted in full at the end of this article.

With respect to the Report of Sub-Committee No. 2, we may say, that it is the first exhaustive investigation of the subject and is of the greatest value. It is grounded on careful tests and analyses of various leathers, and on a long series of experiments upon the action of light and heat by which it was found that change of colour, either by bleaching or darkening, was a sign of the beginning of decay. Justice could only be done to this report by printing it in full, but the chief points dealt with may be summarised.

(1.) *The decay of leather.*—The most prevalent form is what the sub-committee term a red decay, which they divide into old and new, the old red decay being noticeable up to about 1830 and the new decay since that date.

(2.) *Causes which have produced this decay.*—These are both mechanical and chemical. In some cases inferior leathers are finished (by methods in themselves injurious) so as to imitate the better-class leathers, but in the main the injury for which the manufacturer and bookbinder are responsible must be attributed rather to ignorance of the effect of the means employed to give the leather the out-

ward qualities required for binding than to the intentional production of an inferior article.

(3.) *Methods of preparing leather.*—The sub-committee generally condemn the use of tanning materials of the Catechol group, although the leathers produced by the use of these materials are for many purposes excellent. The class of tanning materials which produce the most suitable leather for this particular purpose belong to the pyrogallol group, of which a well-known and important example is sumach.

(4.) *Conditions to which books are exposed.*—Leathers were exposed under various conditions to gas fumes, to light (sunlight, gaslight, and electric light), and to heat. As the result of these experiments the sub-committee consider that of the deleterious influences to which books are subjected the fumes of burnt gas are the most fatal. In respect to the action of direct sunlight it is suggested that all library windows which are exposed to the direct rays of the sun ought to be glazed with glass of a slight yellow or olive tint, so as to exclude as much as possible the more chemically active rays.

The summary of the General Committee's conclusions appear under four divisions, as follows:

'(1.) They consider that the general belief that modern bookbinding leather is inferior to that formerly used, is justified, and that the leather now used for binding books is less durable than that employed fifty years ago, and at previous times. They believe that there ought to be no difficulty in providing leather at the present time as good as any previously made, and they hope that the instructions laid down in the report of the sub-committee will result in the production of such leather.

'(2.) They think that the modern methods of book-binding are, to some extent, answerable for the lessened permanence of modern bindings. The practice of shaving down thick skins is a fruitful cause of deterioration. They think that the adoption of the method of binding recom-

mended in the report of the sub-committee ought to result in a greater permanence of the books treated.

‘(3.) They consider that the conditions under which books are best preserved, are now fairly well understood, except that the injurious effect of light on leather has not previously been appreciated. They are satisfied that gas fumes are the most injurious of all the influences to which books are subjected. They consider that with proper conditions of ventilation, temperature, and dryness, books may be preserved without deterioration, for very long periods, on open shelves, but that there is no doubt that, as a general rule, tightly fitting glass cases conduce to their preservation.

‘(4.) The Committee have satisfied themselves that it is possible to test any leather in such a way as to guarantee its suitability for bookbinding. They have not come to any decision as to the desirability of establishing any formal or official standard, though they consider that this is a point which well deserves future consideration.’

There is one point of great interest which has not as yet been dealt with by the Committee, and that is the havoc which overtakes books exposed to the trying climates of India and China. The librarians who have the care of books in those countries would be glad of some hints which would help them to preserve from destruction the paper and bindings of the books under their charge.

The suggested possibility of obtaining again russia and calf fitted for lasting bindings is good news for the possessors of libraries, because the odour of russia gives us the same delight as does the odour of roses in the drawing-room, and because the appearance of the library has been duller to the eye since calf has been excluded from the shelves.

Viscount Cobham, the Chairman of the Committee, contributes some hints to owners and keepers of libraries which are of value as coming from the owner of a fine private library. He gives a good working guide for the preservation of sound bindings when he says, ‘the better

adapted a room is for human occupation the better for the books it contains.' The late Mr. William Blades, in his 'Enemies of Books,' places among the chief enemies water, gas and heat, dust and neglect, and writes: 'The surest way to preserve your books in health is to treat them as you would your own children, who are sure to sicken if confined in an atmosphere which is impure, too hot, too cold, too damp, or too dry.'

The conclusions of the Committee may be said to clear the ground for further investigation, and while it is eminently unsatisfactory to know that a large proportion of our leather is untrustworthy, it is pleasant to be told that as good leather as any previously made can be provided. We trust that all who use leather will demand that such is provided, and that it will be possible in the future to establish an official standard which will protect the purchaser from deception.

H. B. WHEATLEY.