

tigated was the effect of this bacterial action on the apparent free carbon dioxide content of waters stored in waxed containers. A series of waxed and stoppered Winchester bottles, each partially filled with tap water and inoculated with cultures of bacteria known to attack the wax, was set up. Free carbon dioxide determinations were then made on the water in the Winchesters\*. The interval before the first determination was made varied with each bottle, and the bottles were re-stoppered between each measurement.

For comparative purposes two unwaxed bottles containing the same water uninoculated were stoppered and tested over the same period.

The experiment showed that water in closed waxed containers contaminated with wax-attacking bacteria increased its free carbon dioxide content on storage as much as twenty times in forty days, whereas there was no change in the apparent free carbon dioxide content of the water in the two unwaxed bottles. It was possible to stop the activity of the bacteria by sterilization with heat or disinfectants.

It is known that the presence or absence of carbon dioxide in a water is a most important factor in determining its corrosive action, and the accompanying table illustrates the variation of corrosive attack which can occur if bacteria capable of attacking wax are present in a corrosion experiment where such a substance is used.

EFFECT OF WAX BACTERIA UPON CORROSION OF A DOMESTIC WATER IN METAL PIPES CLOSED AT BOTH ENDS WITH WAX.

Condition of water	Corrosion rate
Untreated water free from wax bacteria	0.9
Water inoculated with wax bacteria	4.1
Sterilized water	0.7
Sterilized water re-inoculated with wax bacteria	4.0

It is believed that other corrosion investigators may use paraffin wax in their work, and if this is so it is imperative that they should be on their guard against the action of these bacteria.

Although the observations have shown that the apparent free carbon dioxide content of a water may be increased by the action of certain bacteria on wax, it must be pointed out that many other microbiological processes normally occurring in natural waters are accompanied by a change in the carbon dioxide content of the water. We are therefore of the opinion that a correct assessment of the corrosive properties of a natural water cannot be made unless the biological state is taken into account. It is seldom safe to assume that any sample of natural water that has been stored for any length of time is representative of the water from which the sample was taken originally.

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\* By titration with  $N/20$   $\text{Na}_2\text{CO}_3$ , using phenolphthalein as indicator. Any organic acids which might be formed by the action of the bacteria would be estimated as free carbon dioxide.

<sup>1</sup> Waksman: "Principles of Soil Microbiology", p. 204 (1927).

<sup>2</sup> Söhngen, N. L., *Centrl. Bakt.*, II, 37, 595 (1913).

## Library Stocks of Periodicals

AFTER this War, even more than after the War of 1914-18, learned and scientific libraries in Great Britain will be faced with the problem of attempting to fill gaps in their sets of periodicals caused not only by the inability to obtain journals from enemy and enemy-occupied countries during the war-period, but also by losses at sea and by destruction in air-raids. As stocks in European countries may also have been destroyed in air-raids, there is likely to be a shortage in many cases, and in order to prevent an unseemly scramble on the part of individual libraries to get volumes of which there may be an insufficient number of copies to go round, it is highly desirable that a representative and impartial body should decide, on a national scale, to which libraries the available copies should be allotted.

This allocation should form part of a much larger scheme whereby the present holdings of learned periodicals in all important libraries in Great Britain would be surveyed and the needs of research in the various centres of learning assessed, due regard being had to existing subject specializations in various institutions. Interchanges of stock could then be arranged so as to ensure the presence of complete sets of important publications in the libraries where they are most needed, and the elimination of many incomplete sets where they are little used. This may entail on the part of some libraries the sacrificing of treasured possessions, but it would be greatly to the benefit of research workers as a whole.

The obvious body to undertake responsibility for this work is the Library Association, which by its royal charter is entrusted, among other tasks, with promoting the better administration of libraries and encouraging bibliographical study and research. In practice, it will probably be found most economical for the actual work to be done at the National Central Library, where the machinery for this kind of undertaking already exists and would only need expanding. Funds for this purpose would no doubt be forthcoming.

It may be mentioned that at least two such schemes in limited fields of knowledge, those of German studies and of medicine, were already being prepared before the War. The former, which was being undertaken by the Joint Standing Committee on Library Co-operation of the Association of University Teachers, had, I believe, reached the stage of recommending the transfer of stocks; the latter, a much larger undertaking under the auspices of the University and Research Section of the Library Association, was only in the preliminary stage of making the survey of holdings, when it was interrupted by the War. Possibly a further extension of such special subject-schemes might be the best way of tackling the job.

In any event, until the work has been done, it would certainly seem premature for any fresh union catalogue of periodicals in British libraries to be undertaken, because its work would be so soon out of date and therefore a waste of money.

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