# ASSOCIATION
OF
# BATH SUPERINTENDENTS.

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# Report
on
# Water in Public Swimming Baths.

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## ASSOCIATION OF BATH SUPERINTENDENTS.

# Report on Water in Public Swimming Baths.

The provision to swimming baths of water of a quality satisfactory to the bathing public at all times is a matter of great concern to all municipal authorities maintaining baths. Bath Managers and Superintendents may fairly claim to have brought about a great improvement in this respect during recent years, and efforts are being made in all directions tending toward further improvement. Lack of facilities and the expense of overcoming them alone prevent more rapid progress toward conditions which may be considered wholly satisfactory.

In different districts great variation is found both in the clarity and in the colour of water as seen in bulk in a swimming bath, the differences being due to the sources of supply and the matter contained in the water. It must be recognized that the large body of water in a bath, though freshly filled and unused, may not be clear. Although neither turbidity nor a dark colour necessarily indicates that a tankful of water is not fresh, such an appearance is certainly less inviting and it is less safe in case of accident to a bather than is clear water.

The use of the water in the swimming pond—for swimming and bathing—necessarily introduces matter of many descriptions, and it must be admitted that at the end of the first day of such use the standard of purity, *i.e.*, that of drinking water, has deteriorated, although it may contain nothing harmful and be still quite safe for bathing purposes.

The pollution of the water in swimming baths is due to a variety of causes and may be divided into two classes; first, those which may be prevented by the better planning,

arrangement and construction of the baths buildings and the education of the bathing public, and second, the causes that are purely incidental to bathing.

On a hot day it is no uncommon occurrence for more than a thousand bathers to use a single swimming bath, and this fact indicates that the water, though perfectly clean and bright for the first bather in the morning, assumes a very different appearance towards evening. No detail of construction or management can prevent the water becoming polluted in some degree when used by large numbers of bathers, and a satisfactorily clean, clear and safe swim to the later bathers is impossible unless the water receives some kind of treatment during the whole period of bathing.

In many swimming baths nothing more than filling and emptying daily or at more or less frequent intervals takes place ; it follows that these baths instead of being an attractive recreative facility may, when used to the extent indicated, become quite the contrary. In some baths chlorination of the water is effected by various means, and although this treatment has resulted in some improvement as compared with baths not so treated, it cannot be regarded as adequate or satisfactory.

More recently attention has been directed to the use of the principles of filtration for the purification of swimming bath water. Various systems of continuous filtration have been designed, and the practical experience of the Bath Superintendents who have handled them has largely contributed to improvements therein and to their successful employment.

The continuous filtration system may thus be briefly described.

The water is pumped from the deep end of the bath through a strainer, passes through the filter, is re-heated, and re-enters

the bath at the shallow end; it is aerated either before or after entering the filter, and in most plants the water also receives such chemical treatment as will ensure its effective sterilization. These processes are carried on continuously during bathing hours at a rate of flow through the filter sufficient to maintain the bath in a satisfactory condition during the periods of greatest use; when further filtration is required the process is continued after bathing hours.

From the evidence laid before the Association by Superintendents of Baths where this system has been installed and operated for a number of years, it is proved that satisfactory results are obtained, the water being maintained in a clear, clean and sweet condition all day and every day.

The success of the filtration system is apparent from its progress since adapted for swimming bath purposes some twenty years ago. Up to the year 1910 practice was more or less experimental, and there were but four public baths in the Metropolis fitted with filtration plants; during the past twelve months the system has been adopted and plants installed in several baths in and around London; other installations are under consideration, and the number for the whole country exceeds 200. The fact that some half-dozen reputable engineering firms are now specializing in the making of filtration plants for swimming baths is a further indication of the modern trend of thought in relation to the problem of providing pure water for public swimming baths.

Quite apart from the advantages which continuous filtration offers, in providing a bath clean at all times instead of on occasional days, an important factor in its favour is that from a financial point of view sufficient evidence has been obtained to show that it is also a sound economic proposition, efficient plants having saved their cost in periods of five to ten years. The adoption of the filtration system has proved

that the cost of water may be reduced 80 to 90 per cent. below that of the intermittent refilling system. Heating costs also show a reduction as compared with that of heating a bath full of cold water, and taking pumping, reheating and all other costs incidental to filtration into account, it is definitely stated that very considerable economies have been effected by the filtration system.

In those districts where water, and in some cases heated water, is obtained from an adjacent waterworks, power-station or other undertaking at a nominal cost, the reduction in expenditure by the adoption of the system of constant filtration will obviously be less than where the water is taken from the town main and coal purchased to heat it, but the quality of the water, particularly for the later bathers, will be greatly improved if continually filtered.

Whatever scheme or plant is adopted for the improvement of the condition of water in swimming baths, its success or failure will depend upon the personal factor ; constant supervision by the Superintendent and a competent staff interested in the work is essential if satisfactory results are to be obtained.

Relative to the question of the purity of water in swimming baths, it is felt that their planning and construction frequently leaves much to be desired. The following general principles are recommended for adoption in the construction of new and so far as is possible in the remodelling of existing baths :—

(*a*) The entrance to the swimming bath should not be directly from the street. The dressing boxes should be so placed as to admit of easy supervision but without necessitating bathers walking upon the floor surrounding the bath until prepared for bathing. The compartments should be of material impervious to water and so constructed as to admit of easy, thorough and effective cleansing.

(*b*) The floor space surrounding the bath should be of ample width and have adequate fall draining away from the bath to prevent the slightest possibility of any dirt entering the bath.

(*c*) The lining of the swimming bath should be smooth and of a suitable colour, impervious to water, readily cleansed, all corners rounded with a large radius, and such joints as are necessary—which should be as few as possible—made flush and of the smallest dimensions.

(*d*) A scum trough or gutter should be provided at the water level for the purpose of draining off surface dirt.

(*e*) Adjacent to the dressing boxes adequate shower-bath and lavatory accommodation should be provided.

With reference to the last named a great deal may be done by educating bathers to the necessity for the use of both, and of clearing the nasal passages before entering the water. This can best be done by propaganda through those in charge of school children, particularly when attending with parties of bathers, and also through swimming clubs and other organizations using the baths. Ignorance and lack of thought are the causes of much preventable pollution of swimming bath water.

The general conclusions drawn from consideration of the subject are :—

1. That the system of periodic emptying and refilling of swimming baths is not the best method.
2. That sufficient sensible inflexible rules should be laid down by the management to ensure the better hygienic education of bathers, and that these be brought under the notice of all having charge of bathers, especially children, so as to reduce preventable pollution to a minimum.

3. That a definite, easily ascertainable standard of purity of water should be laid down by a competent authority for the guidance of those responsible for the management and care of swimming baths.

4. That the process of continuous filtration, aeration and sterilization at a capacity flow sufficient to maintain the bath water at a constant state of purity is essential.

5. That the general details embodied in this report regarding buildings and their construction should be observed.

6. That this Association recommends the adoption of the system of filtration and purification of swimming bath water as being highly commendable, hygienic and economical, and is of the opinion that the Ministry of Health should urge Public Authorities to adopt this system as a standard procedure.



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