useful for specific applications. The action of hydrogen peroxide might also be utilized in the study of the chemical nature of pyrogens.

Pure pyrogens have not yet been isolated and their chemical structure has therefore not been fully established, but the properties of partly purified preparations have received considerable study.[1,5-7] The evidence indicates that pyrogens are neither proteins nor protein split-products and that highly purified preparations may contain no nitrogen whatsoever.[7] Purified preparations exhibit the properties of polysaccharides which can be hydrolyzed to reducing sugars.

The effect of oxidizing agents upon pyrogens appears not yet to have been studied, although in 1930 Carter[8] proposed heating with dilute permanganate solution as a test for the presence of pyrogens in water, on the theory that pyrogens are oxidizable bacterial products. Although the permanganate test has since been proved totally inadequate, because it is not specific and is insufficiently sensitive, Carter's surmise that pyrogens can be readily oxidized may be correct. In 1912, Hort and Penfold[9] observed that if centrifuged cells of *B. typhosus* were washed with hydrogen peroxide, their injection no longer produced the fever which followed injection of similar cells washed with water. Presumably the pyrogens in the cells were destroyed by the peroxide, but the concentration employed was not stated.

In the course of an investigation of plasma substitutes, one of us (D. H. C.) observed that pyrogenic solutions of gelatin were rendered non-pyrogenic by heating with potassium permanganate or hydrogen peroxide. This effect was studied further using two different preparations of partially purified pyrogens in addition to two lots of pyrogenic gelatin. The pyrogen content was estimated by intravenous injection, into each of three rabbits, of 10 cc of solution per kilogram of body weight. Control rectal temperatures were measured within 30 minutes prior to the injection and the temperatures were again measured 1, 2 and 3 hours after the injection. A rise of 0.6° C. or more is regarded as positive indication of the presence of pyrogens.[1,4]

The results summarized in Table 1 show that no significant rise in temperature followed injection of pyrogenic solutions which had been heated at 100° C. for 60–120 minutes in the presence of 0.1 M-hydrogen peroxide, whereas control solutions heated without peroxide caused rises of 0.60–2.25° C. Even at 0.01 M concentration, the peroxide caused a decrease in the temperature response. That the change effected by the peroxide was not due to alteration of pH is shown by the results for Preparation B, the solutions of which were all at essentially the same pH.

On the basis of these results, it is suggested that treatment with hydrogen peroxide might be of practical use in rendering solutions non-pyrogenic, where the peroxide does not adversely affect other constituents of the solution and where the amount used is sufficient to destroy the pyrogens present without leaving a deleterious excess.

Further work on the chemistry of the oxidation reaction is being planned for as soon as reasonably pure pyrogenic material is available.

DAN H. CAMPBELL
CALIFORNIA INSTITUTE OF TECHNOLOGY
ARTHUR CHERKIN
DON BAXTER, INC., GLENDALE, CALIF.

STIRRER BEARING FROM BROKEN HYPODERMIC

MOST chemists have felt the need of a device to supplant the clumsy and frequently inadequate mercury seal stirrer. It has been found possible in these laboratories to eliminate almost completely the use of such seals by the use of a bearing constructed from a hypodermic syringe. The method of utilization is to cut off both ends of the plunger and the closed end of the barrel. The barrel is then inserted in the rubber stopper and acts as the outer bearing. The stirrer shaft is then passed through the converted plunger and sealed into it either by means of rubber tubing or a small stopper, depending on the relative size of the syringe and stirrer shaft. A light lubricant such as vaseline or glycerine should be used. Under these conditions, the bearing may be used with a relatively high-speed stirrer and has proved adequate for pressures as low as 6 mm.

Even where it is necessary to purchase a new syringe for this purpose, it will be found to be a worthwhile investment, as the syringes are usually stoutly constructed and quite durable. However, by arrangement with a hospital a more than adequate supply of damaged or defective syringes suitable for this purpose usually may be obtained.

No credit is claimed here for originating this device as it appears to have been used for some time in other laboratories. Inquiry has shown, however, that knowledge of it is extremely limited, and there appears to be no mention of it in the literature. Hence we feel that the publication of its description should serve a useful purpose.

A. B. CRAMER
H. J. WRIGHT
THE MINER LABORATORIES, CHICAGO

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