ions respectively, it is to be expected that there will be resonance of the positive charge in both these ions. While this would favour H_3O^+, it seems reasonable to suppose that this resonance will also confer some stability to the H_2O^+ ion. Furthermore, the dipole interaction energies of a proton with an H_2O molecule on the one hand and with an OH radical on the other, should be of the same order of magnitude.

In view of these considerations, it is probable that whenever OH radicals are formed in aqueous solution, they may be present to a certain extent, in the form of (hydrated) H_2O^+ ions according to the equilibrium (2).

Hydroxyl radicals are known to play an important part in the reactions of hydrogen peroxide[2] and also in the action of ionising radiations on water[3].

Recent studies have shown that a number of reactions of OH radicals in aqueous solution exhibit a pH-dependence, which can, in some cases, be accounted for by assuming processes involving the H_2O^+ ion.

For instance, in the hydroxylation of certain monosubstituted benzene derivatives by OH radicals, it was found that the ratio of the hydroxylated *ortho-*, *para-*, and *meta-*isomers shows a distinct pH-dependence[4].

The presence of this ion may also have a bearing on the interaction of two OH radicals in aqueous systems. In the gaseous state the experimental evidence is strongly in support of the view that hydrogen peroxide is *not* formed by the recombination of two OH radicals ($2\ OH = H_2O_2$)[5]. However, this may be different in aqueous solutions, where it appears that, under suitable conditions, hydrogen peroxide can be formed directly by some interaction of OH radicals. It is suggested that, in acid solutions, hydrogen peroxide formation may take place according to:

$$H_2O^+ + OH \longrightarrow H_3O_2^+ \qquad (3a)$$

$$H_3O_2^+ \rightleftharpoons H_2O_2 + H^+ \qquad (3b)$$

In general, therefore, in all the reactions of OH radicals in aqueous systems, processes involving the participation of the H_2O^+ radical ion may have to be taken into account.

A detailed study of the pH-dependence of such reactions is now in progress and may give more information regarding the basicity of the OH radial in solution.

J. WEISS

University of Durham, King's College, Newcastle upon Tyne, April 9, 1956.

Zusammenfassung

Theoretische Überlegungen führen zur Annahme, dass das in der Gasphase wohlbekannte Molekülion H_2O^+ auch in wässeriger Lösung unter geeigneten Bedingungen eine gewisse Stabilität besitzt. Es ist zu erwarten, dass dieses Ion, welches als protoniertes OH-Radikal aufgefasst werden kann, bei Reaktionen in saurer, wässeriger Lösung eine gewisse Rolle spielt.

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PRO EXPERIMENTIS

A New Fixative for Smoked Kymographic Tracings

By the difficulties encountered in using the traditional fixatives of alcoholic solutions of natural shellacs, we were induced to look for a new synthetic plastic substance for the fixation of smoked kymographic tracings.

The ideal properties for such a surface coating agent are: to be inexpensive, readily prepared, quick in drying and rendering the record permanently soft and flexible without any damaging effect to the smoked surface.

Such a fixative suitable for everyday use can be prepared from commercially available polybutyl methacrylate solutions. The available lacquer[1] contains 50% of the polymer in solution, it is transparent with a pale straw colouring.

As the viscosity of this solution is high, a 1 to 7 dilution of the concentrate is made with dry acetone.

The results obtained with this fixative correspond fully with requirements outlined above.

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Department of Pharmacology, University of Ghent, Belgium, March 28, 1956.

Résumé

Une dilution de polybutyl méthacrylate dans de l'acétone anhydre (rapport 1 à 7) est proposée comme fixateur d'enregistrements sur papier enfumé. Ce nouveau fixateur est incolore, sèche vite, rend les enregistrements flexibles et est peu coûteux.

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[1] Available as Vinalak No. 5909 from Vinyl Products Ltd., Carshalton, Surrey, England.

PRO EXPERIMENTIS

Efficacy of some Histochemical Techniques for Acid Mucopolysaccharides

In an earlier investigation[1] we studied, by chemical methods[2], the acid mucopolysaccharide content of the rats skin (hyaluronic and chondroitinsulphuric acids) and its variations under diverse experimental conditions. The histochemical examination by metachromasia with thionine was simultaneously made with a portion of the same material, fixed in a 4% formalin solution in 90° alcohol. In accordance with LISON's recommendations[3] for avoiding false reactions, use was made of an aqueous 0·5% solution of that stain in an acid medium (pH 3·2) and of APATHY's syrup for mounting. Some sections were previously incubated for 5 h at 37°C with 1:25,000

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