of the animal at the time of secretion. The results are shown in Table I.

It is rather surprising that the 2 monovalent cations, sodium and potassium, behave in this inverse manner with respect to their secretion in the gastric juice. In the ultrafiltration of plasma, as Ingraham, Lombard and Visscher[5] have shown, the potassium ion appears in the ultrafiltrate as a smaller fraction of its concentration in the plasma than does the sodium. Therefore, in any ultrafiltration process one would expect the potassium to be diluted to a greater extent than the sodium. Furthermore, in any distribution of ions set up by electrical potential differences operating to produce iontophoresis it would be expected that all cations would be concentrated or diluted in proportion to their migration velocities, but not that one cation species would behave qualitatively in a different manner from other ions of the same charge. Macallum[6] has pointed out that in mixtures of sodium and potassium salts potassium is selectively adsorbed to silica. He has suggested that the higher migration velocity of potassium ions may be responsible for this selective adsorption.

Tentatively we would suggest as the reason for the difference between the behavior of potassium and sodium in gastric juice that potassium enters the lumen of the gland from the secreting cells themselves, while the sodium reaches the lumen through the intercellular spaces. This is in accordance with the well-known fact that potassium occurs in high concentration within the cells, whereas sodium is very much less abundant. This difference is presumably due to differences in cell membrane permeability with respect to ions as well as to the specific adsorption effect noted by Macallum.

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A Simple Method for Staining Fungi.

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The ordinary dyes, when applied to bacteria, do not stain well the mycelium and the spores of the fungi. Slightly better results are

[5] Ingraham, Lombard and Visscher, *J. Gen. Physiol.*, in press.

[6] Macallum, A. B., *Proc. Roy. Soc. London*, Sect. B, 1928-29, **104**, 440.

obtained if the dyes are steamed. Some procedures apply Gram's iodine, after the respective dye was used. Similarly, the use of spore staining methods is less satisfactory as compared with those observed in staining bacterial spores. In order to obtain more effective staining, the influence of mordants was tested. Smears of fungi were steamed with a mordant preceding the staining. This mordant consists of 2 solutions: Solution A., contains 100 gm. of tannic acid dissolved in 100 cc. of 95% alcohol, and solution B., which consists of 92.5 cc. of 50% formalin, and 7.5 cc. of glacial acetic acid. Before use, one part of solution A and 2 parts of solution B are mixed uniformly; this mixture represents the mordant to be used. Separately, either solution keeps indefinitely. The fixed smear is covered with the mordant-mixture, steamed for 5 minutes, and washed off the slide with warm water. The slide is covered with the respective stain, steamed for 3 to 5 minutes, and washed.

Used after the mordant, almost any of the ordinary dyes give satisfactory results. Particularly good results were obtained with Loeffler's methylene blue, gentian-violet, brilliant green, fuchsin, and safranin. In instances where darker staining is required (for photographic purposes), the application of the stain is followed by steaming with Gram's iodine for 3 to 5 minutes, thus rendering the fungi and their spores almost black (if methylene blue or gentian violet is used).

The application of the mordant also greatly improves the contrasting spore staining methods of bacteria when applied to fungi. The procedure is as follows: The fixed smears are steamed with the above mordant for 5 minutes as above, and washed off with warm water. Methylene blue, or brilliant green is added and steamed for 3 to 5 minutes; the slide is thoroughly washed with water, and 1% acid-alcohol applied until most of the dye appears removed. Ordinary fuchsin or safranin is used for one-half minute, or until the smear assumes a reddish color. The excess dye is removed by washing with running water. The slide is dried and examined. The mycelium appears distinctly red stained, while the spores, regardless of their location or arrangement, assume a deep blue or green color.