In the nose hemolytic streptococci and *B. pfeifferi* showed increases which were due entirely to late secondary spread. In the throat, *staphylococcus aureus,* hemolytic streptococci, and *B. pfeifferi* went up; in the case of the two former this was due to secondary spread. The increase of *B. pfeifferi* was due mainly to the fact that the organism was widespread, in normals as well, at the time of most of our colds (late winter and spring). It also played an important part as a late secondary invader.

No bacteria were found in the first or in early cultures to which an etiological role could be attributed. The indications are that the so-called pathogens noted above probably play a secondary role in the type of upper respiratory infection under investigation.

Cultures taken during sore throats showed the expected increase, in the throat, of hemolytic streptococci (from 17 per cent in normals to 56 per cent during infection).

2923

Glutose and its biochemical behavior.

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Glutose, a 3 ketohexose, prepared by the regulated action of alkali on glucose or fructose, has been investigated.

Chemically it resembles glucose in several ways. On treatment with sodium hydroxide it is converted into hydroxy acids, chiefly optically inactive lactic. On warming with phenylhydrazine in weakly alkaline solution it yields the osazone of methyl glyoxal. Zinc ammonium hydroxide converts it into methyliminazole.

Biologically it differs from glucose in several ways. In human beings, when taken by mouth, it is almost quantitatively eliminated, about half in the urine and half by bowel. Human diabetics show no change in glucose excretion when fed glutose, and the glutose is eliminated as in normals. Phlorhizinized dogs excrete glutose given subcutaneously quantitatively in the urine, and no extra glucose is formed. The respiratory quotient of 0.77

in two normals was not changed after glutose. Glutose did not protect rabbits from insulin shock. Of four individuals on high fat diet, three showed no reduction of ketosis after glutose, while one did. Thus most of the evidence points toward glutose being inert in the body.

It is of great interest in this connection that yeast did not form a hexosephosphate with glutose under conditions that led to ready hexosephosphate formation with glucose. *B. coli* was found to yield both acid and gas on glutose broth.

Methods of preparation and estimation will be described in a subsequent communication.

2924

The ionic nature of amylase.

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By studying the distribution of trypsin and pepsin between suspended particles of gelatin and the fluid surrounding them, Northrop[1] has been able to show that these enzymes behave like univalent ions, the former being a cation and the latter an anion. We have carried out some preliminary experiments in which Northrop's procedure has been used to investigate the ionic nature of amylase.

Particles of iso-electric gelatin were suspended in solutions, the pH of which was varied by the addition of HCl or NaOH. On the alkaline side of the iso-electric point a small amount of KCl was added to furnish an ion (Cl^-) which could easily be titrated. The suspensions were stirred constantly for 2 hours. The solution containing the enzyme[2] was then added, and stirring was

[1] Northrop, J. H., *J. Gen. Physiol.*, 1924, vi, 337; *Ibid.*, 1925, vii, 603.

[2] "Taka-Diastase" (Parke-Davis) was used in these experiments. In a few instances a 5 per cent aqueous solution was used. It was found more convenient, however, to employ a 20 per cent solution of this preparation in 60 per cent alcohol.