tungstic acid, mercuric chloride, or neutral lead acetate, gives a faint haze with tannic acid, and is precipitated by basic lead acetate. At a dilution of 1:1,500,000 it still gives the Molisch reaction and yields a precipitate with Type II immune serum. $[\alpha]_D$ is $+58.7°$; N, 1.2 per cent.; P, trace; S, none; C, 46.2 per cent.; H, 6.1 per cent. Hydrolysis yielded 79 per cent. of reducing sugars, of which glucose was identified by the melting point and optical rotation of its phenylosazone. Earlier preparations containing more nitrogen and yielding less reducing sugars on hydrolysis were not specific at as high dilutions.

While it is not excluded that the non-carbohydrate portion of the preparation is actually the carrier of the specific reaction, it is believed that the evidence points to the identity of the specific soluble substance with the polysaccharide portion, thus linking it with the bacterial gums isolated by others from capsular material, but never before connected with specificity.

217 (2177)

Immunological relationships of cell constituents of pneumococcus.

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In the preceding communication, it has been pointed out that the so-called soluble specific substance of pneumococcus is non-protein in nature, and in its present state of purification is either itself a polysaccharide, or intimately associated with the carbohydrate. Although antigenically this substance appears capable of stimulating little or no antibody response, serologically it is highly reactive and exhibits to an extraordinary degree the reactions of type specificity in antibacterial serum of the homologous type of pneumococcus. On the other hand it is possible to recover from the pneumococcus cell another substance which is protein in character and which is distinctive in its serological behavior from the soluble specific substance. From bile solutions of pneumococci dilute acetic acid precipitates a protein fraction. This precipitate is washed in water and redissolved in dilute al-

kali. After repeated precipitations and thorough washing the dissolved material is passed through a Berkefeld filter and reprecipitated. The final precipitate is washed rapidly with acetone and ether and dried *in vacuo*. The preparation so obtained is a whitish powder, readily soluble in faintly alkaline solution, possessing the properties of a mixture of nucleoprotein and mucoid. It contains about 16 per cent. of nitrogen and 0.5 per cent. phosphorus.

Solutions of nucleoprotein prepared from one type of pneumococcus (Type II) react in about equal degree with all three types of antipneumococcus serum, and not with antityphoid or normal horse serum. This fact, if confirmed by subsequent investigation of the protein from pneumococci of other types, would indicate, on the basis of specific precipitin reactions, that all pneumococci possess in part at least a common specific protein. The protein of pneumococcus, as contrasted with the non-protein fraction or soluble specific substance is not type specific, but reacts with antipneumococcus serum regardless of type derivation. It is therefore species specific, not type specific.

218 (2178)

Gastric antacids which cannot act as systemic alkalies.

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The antacid most frequently used in the treatment of hyperchlorhydria is sodium bicarbonate. But this is not only an antacid but an alkali, so that the contents of the stomach occasionally become alkaline. Moreover, the amount required to control the gastric symptoms is frequently sufficient to make the urine alkaline. Both these alkalinizations are regarded as unphysiological. Direct evidence of the occasional toxic action of therapeutic doses of sodium bicarbonate has recently become available.[1, 2]

[1] C. A. L. Binger, A. B. Hastings and J. M. Neill, *Arch. Intern. Med.*, 1923, xxxi, 45.

[2] Leo L. Hardt and Andrew B. Rivers, *Arch. Intern. Med.*, 1923, xxxi, 171.