

per c.c.). At the height of the ensuing fever (*i.e.*, after three or four hours) was injected the standard dose of pilocarpine. In both cases the secretion curves exhibited an unusually slow onset and a much diminished maximum as well as total secretion. The saliva was of a much thicker consistency than normal.

These experiments were made at a stage of fever in which Barbour and Howard<sup>1</sup> have demonstrated a thickening of the blood. It is suggested that the latter is the chief causative factor in numerous cases of diminished secretion which have been reported in fevers.

#### 114 (1574)

### Temperature changes induced by gum acacia injections in normal and fevered animals.

By H. G. BARBOUR and L. H. BARETZ.

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The effects of gum acacia upon the body temperature have been studied in both normal and fevered rabbits and dogs. Solutions were made in water redistilled from glass and given intravenously. In the following experiments upon rabbits 20 c.c. of fluid per kilo were injected unless otherwise stated.

Intravenous injections of control fluids (Locke's solution or physiological saline) gave an increase in temperature of 1° C. or more, subsequent to a brief depression of 0.2° C. This temperature increase could be superimposed upon the rise induced by bacto-peptone injections.

Similar amounts of 7 per cent. acacia (also 10 c.c. of 20 per cent.) gave a slight depression in normal rabbits by a few tenths of a degree centigrade, never an increase.

In five bacto-peptone rabbits in which the temperature had reached a level of about 1° C. or more above normal within 4 or 5 hours, an injection of acacia (7-10 per cent. or 10 c.c. per kilo of 20 per cent.) brought the temperature back to approximately

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<sup>1</sup> Barbour, H. G. and Howard, A. J., Proceedings of the Society for Experimental Biology and Medicine 1920 XVII.

the normal level in 20-40 minutes. A rabbit in which fever was induced by puncture of the corpus striatum gave a very rapid fall (average  $1.1^{\circ}$  C. in 20 minutes) of temperature on three different days as a result of 7 per cent. acacia injections.

In rabbits, therefore, acacia injections induce a mild temperature depression in health but a marked antipyretic effect in fever.

Four dogs responded to 4 c.c. per kilo of 20 per cent. acacia injected intravenously by increases in body temperature varying from  $0.9$  to  $1.8^{\circ}$  C. In one of these, however, a preliminary depression of one half degree was observed. The normal temperature was regained within from 3 to 8 hours after injection.

Two dogs were given coli fever (method of Barbour and Howard) and the usual increase in blood solids was noted. Following an intravenous injection of 4 c.c. per kilo of 20 per cent. acacia in each dog reductions of  $0.4$  and  $0.7^{\circ}$  C. respectively were noted within 20 minutes, with a corresponding diminution in the total solids of the blood. This was followed however by a renewed temperature rise in both cases.

Intravenous acacia injections therefore raise the temperature of normal dogs but in fever dogs exert a brief though marked antipyretic action, accompanied by increased blood volume. The latter phenomenon is obviously parallel to the antipyretic effect of intravenous injections of 50 per cent. dextrose.

### 115 (1575)

#### **Studies on salt action. III: The effect of hydrogen ion concentration upon salt action.**

By **I. S. FALK** (by invitation).

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Our recent studies of the effect of electrolytes upon the viability of bacteria have indicated the important influence of even slight variations in hydrogen ion concentration upon such phenomena. Working with *Bact. coli* we find that hydrogen ion concentrations above  $\text{pH} = 6.0$  or below  $\text{pH} = 7.0$  give a much more rapid death rate than occurs when the  $\text{pH}$  is maintained within these limits. Our experiments suggest that a very careful