ERRATUM

Article by H. A. Blair, 1932, Volume 29, Page 617, should read

$$p = \frac{KV_0}{\sqrt{k^2 + w^2}}$$

PROCEEDINGS.

VOL. 29. MARCH, 1932. No. 6.

Illinois Section.

Billings Hospital, Chicago, February 16, 1932.

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Local Formation of Antibody by the Nasal Mucosa.

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The importance of the upper respiratory tract as a portal of entry for pathogenic micro-organisms amply justifies attempts to increase its resistance against their invasion. We have recently shown[1] that the local introduction of antigen into an area of mobilized histiocytes leads to the local formation of specific antibody. We have extended such studies to the nasal mucosa, assuming that a similar response might be obtained there following repeated applications of an antigen. This assumption was based on the probable mobilization of cells of inflammation in the mucosa, with consequent fixation of antigen among differentiated histiocytes.

Rabbits were treated intranasally at daily intervals of 2 to 13 days

[1] Cannon, Paul R., and Sullivan, F. L., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 517.

with a formolized vaccine of *Bact. paratyphosum B.*, either by insufflation (2), by instillation alone (12), or by instillation subsequent to earlier instillation of ox bile (1). The animals were then allowed to rest for 1 to 12 days, and were sacrificed. The nasal mucosa, lung, liver, spleen, and blood serum were mixed with 15 parts of a solution of equal parts of glycerol and 0.85% solution of sodium chloride. They were then ground in a mortar, with the exception of the serum, and extracted at 37°C. for 7 days. These extracts were titrated simultaneously against a living suspension of *Bact. paratyphosum B.* Six of the 19 animals were perfused with citrated salt solution immediately after death to remove the blood as far as possible from the organs to be extracted. Most of the blood was removed from all except the spleen.

The content of agglutinin in the nasal mucosa in animals treated daily by insufflation or instillation for at least 11 days was always distinctly higher than that of either the spleen or liver. This was also true of the lung in all but one instance, when the titre equalled that of both spleen and liver. Untreated control animals when extracted and titrated under comparable conditions contained no agglutinin in the organs above mentioned. Six animals, treated 5 times a day for 2 days and killed from 24 to 96 hours after the last instillation, yielded no specific agglutinin at a dilution of 1:120 or above. In the animals with a high agglutinin content of the nasal mucosa and lung, the agglutinin content of the blood serum was higher than that of either the nasal mucosa or lung alone, with one exception when the titres of serum and nasal mucosa were the same.

We conclude, therefore, that the daily local insufflation or instillation of antigen for 11 days led to the local formation of specific agglutinins in the nasal mucosa and lung. Inasmuch as the agglutinin content of the liver and spleen was uniformly much lower and frequently absent entirely, while that of the blood serum was relatively high, we believe that the antibodies were formed *in loco* in the nasal mucosa and lungs and from there diffused into the blood.

It would seem, therefore, that if a local concentration of specific antibodies is a desirable condition in immunity, it may be obtained by the introduction locally, under suitable conditions, of the appropriate antigen. Such a reinforcement of a major portal of entry against bacterial infection should strengthen significantly the resistance of these tissues to the entrance of pathogenic micro-organisms. To that extent, the burden usually borne by the secondary general mechanisms of defence should be lessened. Further experiments along these lines are now in progress.