in blood from tuberculous guinea pigs. It also can be blocked by phosphate buffer or in complement-poor suspending fluids.

(9) Guinea pig lympholysis is followed by destruction of granulocytes and monocytes as well as some of the remaining lymphocytes. If lympholysis is blocked, all cell types remain similarly unaffected.

(10) Specific lympholysis can also be demonstrated in fresh heparinized mouse or guinea pig blood to which PPD is added directly. The degree of lysis and nature of the phenomenon are the same as seen in more homogenous cell systems; the leucopenia and lymphopenia present in tuberculosis, however, complicate accurate cell counts.

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Inhibition of Histamine Whealing in Human Skin by Pyribenzamine Hydrochloride Using Iontophoretic Technique.

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It is well known that histamine produces a wheal in the skin of man, whether introduced by injection or by iontophoresis. Inhibition of these wheals has been accomplished by means of the newer histamine antagonists when they are administered orally or by injection; the reaction of the skin to the subsequent intradermal injection of histamine is thereby diminished.[1-3] In the present study various substances were introduced into the skin by iontophoresis. Their influence upon the development of wheals subsequently produced by the iontophoretic administration of histamine into the same sites was then observed.

Method. An ordinary iontophoresis apparatus was used. The current density in all cases was 0.5 milliamperes per square centimeter. Canton flannel saturated with the solutions to be tested was applied to the skin. The positive electrode applied to the flannel was made of aluminum foil. The time of the application of the electrode to the skin was 3 minutes. Each of the test solutions was introduced by iontophoresis into a rectangular area of skin of the ventral surface of the forearm. Immediately after the removal of the electrode the area was cleansed with distilled water. Erythema and papules were usually observed at the site following the introduction of the initial substance. When the area regained its normal appearance histamine was introduced into the skin in the manner described using a rectangular electrode which was superimposed on the initial site as a vertical bar in the form of a "T." This was done in order to compare readily the whealing effect of histamine in the normal skin with its effect upon the immediately adjacent prepared skin.

Experimental. Solutions of pyribenzamine hydrochloride were made up in concentrations of 10, 5, 1 and 0.1%. Each of these solutions was introduced into the skin by iontophoresis. Following injections of these concentrations, the subjects usually felt a slight local burning sensation which subsided a few minutes after the electrode was removed. Initially there was an erythema at the site and papules formed about the pores. In all cases it required approximately one and a half hours for this reaction to disappear completely. The dilutions of histamine phosphate used were 1 to 10,000 and 1 to

1 Friedlander, S., and Feinberg, S., *J. Allergy*, 1946, **17**, 129.

2 Arbesman, C. E., Koepf, G. F., and Miller, G. E., *J. Allergy*, 1946, **17**, 203.

3 Cohen, M. B., Friedman, H. J., Burke, M., and Abram, L. E., *J. Allergy*, 1947, **18**, 32.

100,000 in distilled water. The whealing normally produced by either of these dilutions in 10 different subjects was essentially inhibited in every case when applied to sites previously prepared with 10 and 5% pyribenzamine hydrochloride, the inhibition being most complete with the dilute histamine. Low papules were noted about the sweat glands. Around the pyribenzamine site the flare was inhibited but there was extreme erythema at the site. Lesser inhibition of the wheal was noted consistently with lower concentrations of pyribenzamine, *i.e.*, 0.1 and 1%. Also the degree of inhibition appeared to depend upon the reactivity of the individual skin to both the histamine and to the density of electrical current. Similar experiments were performed introducing the histamine 24 hours after the iontophoretic introduction of pyribenzamine solutions into the skin. It was repeatedly found that almost the same degree of inhibition existed after the longer interval of time.

The effects of sodium chloride, ephedrine hydrochloride, ephedrine sulfate and procaine hydrochloride in concentrations of 10, 5, 1 and 0.1% were also studied in the same manner. When any of these substances were introduced into the skin by iontophoresis the subjects noted a slight burning sensation, and on removal of the electrode, there was an initial erythema and papule formation about the pores. This reaction disappeared in all cases in approximately one and a half hours and no further effects were noted. No inhibition of the histamine wheal or flare was observed by any of these substances when using dilutions of histamine phosphate of 1 to 10,000 and 1 to 100,000.

Summary. Using the iontophoretic technic, it was observed that pyribenzamine hydrochloride inhibited histamine wheal formation in the human skin whereas sodium chloride, ephedrine hydrochloride, ephedrine sulphate and procaine hydrochloride failed to produce this effect in the concentrations used.

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A New Bone Deformity in the Chick.*

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A bone deformity has been observed in White Leghorn cockerels which were raised on purified diets. The first observation was made on chicks receiving diet 653 of Hill, Norris, and Heuser,[1] to which had been added 55 μg of synthetic folic acid† per 100 g of diet. The incidence of the malformation was relatively low, occurring in approximately 15 to 20% of the chicks. The weights of the affected chicks at 6 weeks of age were 150 to 250 g below the average weight (460 g) of the unaffected chicks. The most severe cases had difficulty in walking, and their legs splayed out from the tibio-femural joint. No slipping of the tendon from the condyle

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[1] Hill, F. W., Norris, L. C., and Heuser, G. F., *J. Nutrition*, 1944, **28**, 175.

† We are indebted to Lederle Laboratories, Pearl River, N.Y., for synthetic folic acid.