48 (744)

A preliminary communication on certain specific reactions exhibited by hay fever cases.

By GEORGE H. A. CLOWES.

[*From the Laboratory of Biological Chemistry, State Institute for the Study of Malignant Disease, Buffalo, New York.*]

Dunbar was the first to demonstrate conclusively that the European or spring variety of hay fever is caused by the pollen of timothy and other members of the graminaceæ family. He found, that, even in midwinter an aqueous extract of timothy pollen produced flushing and intense irritation when introduced into the eye of a susceptible individual, whilst normal individuals were entirely unaffected by such a procedure.

Sufferers from the American or autumnal form of hay fever (caused by the pollen of ragweed, golden rod, and other members of the Compositæ family) exhibit a similar sensitiveness when tested with aqueous extracts of ragweed pollen. This reaction is also strictly specific, and only those who suffer from both spring and autumnal hay fever react to the extracts obtained from both varieties of pollen. The amount of pollen extract required to produce flushing in the eyes of sensitive individuals varies from 1/20 of a c.c. of a solution of one in five hundred thousand to 1/20 of a c.c. of a solution of one in five hundred. This test can be utilized quantitatively and affords a fair index of the measure of immunity or resistance possessed by sensitized individuals.

A specific cutaneous reaction capable of quantitative application may be obtained by making a slight abrasion of the skin and applying a drop of pollen extract of suitable concentration. A large white welt similar to that resulting from a mosquito or bee bite accompanied by a distinct itching sensation develops on susceptible individuals within 15 minutes, while normal controls are unaffected. A small dose of pollen extract (1 c.c. of a one in a million for example) injected subcutaneously produces in highly sensitized individuals an itching or prickly sensation followed immediately by considerable swelling at the point of injection and redness extending sometimes over an area of several inches. The

injection of a somewhat larger dose (1 c.c. of a one in fifty thousand) caused a considerable swelling and pain, and small blisters resembling hives developed at the point of injection. This was followed by dizziness and a sense of general discomfort and a slight attack of hay fever was precipitated.

Specific precipitin and complement deviation reactions using pollen extracts as antigens were exhibited by certain cases before the commencement of the hay fever season. These reactions disappeared under treatment (see following paper) reappearing a few weeks later. Since the reactions in question, while quite definite, were not exhibited by all the cases, it is proposed to make them the subject of further investigation. The leukocyte count and body temperature were frequently above the normal in the course of an acute attack of hay fever. All attempts to induce hay fever symptoms in normal individuals by introducing into their eyes pollen extracts mixed with the serum or nasal secretions of sensitized individuals have failed. It may be concluded from these results that specific enzymes capable of splitting the pollen protein and liberating a toxic factor, or immune bodies capable of combining with the specific body present in the pollen extract to form a toxic combination are either not present or not demonstrable by this method in the blood or secretions of hay fever cases. Preliminary experiments which require confirmation would indicate rather that the serum of highly immunized hay fever cases when mixed with pollen extract may exert a slightly neutralizing effect on the latter, protecting the eyes of sensitive individuals to a certain extent from pollen toxin.

49 (745)

A preliminary communication on the treatment of autumnal hay fever by vaccination with an aqueous extract of the pollen of ragweed.

By GEORGE H. A. CLOWES.

[*From the Laboratory of Biological Chemistry, State Institute for the Study of Malignant Disease, Buffalo, N. Y.*]

Dunbar was the first to attempt active immunization against hay fever by vaccination with aqueous pollen extract. He used