

physiological saline, and had to take place before the irritant was set free. That as mentioned above had suggested that in the case of pollen being the exciting agent that it was the volatile oil that was the irritant. Dr. Dunbar to test this theory ground up some rye pollen and shook the debris in ether and filtered. Then he carefully evaporated the ether filtrate, and was rewarded by obtaining a largish drop of oil. Two persons, normal and hay fever sufferer, at once received half the drop each, in the conjunctival sac of one eye. Although the half drop contained the oil from many more than the number of pollen grains necessary to bring on a severe attack neither subject suffered in the least.

Fresh rye pollen was shaken with a mixture of equal parts of water and ether, the pollen grains broke up and the result was a temporary emulsion which appeared like thin mucous. On settling there was an upper ether layer, which removed and evaporated, yielded a second drop of oil, also found to be innocuous, and an underlayer, watery, with a deposit at the bottom. Both of these when tested gave positive evidence of the presence of the irritant. If the coats of the pollen grain be ruptured the contents quickly dissolves in physiological saline, tears, nasal secretion and blood serum. From a solution in saline or serum the unruptured pollen grains and the particles of the coats can readily be removed by the use of the centrifuge. The solution also contains the toxin, which therefore, is soluble. The chief constituent within the coats of the pollen grain are short, bacillus-like rods which give a starch reaction with iodine, and are therefore known as the amyloid rods. These rods are soluble in saline, blood serum, tears and nasal secretion.

Some rye pollen was ground so as to break the outer coats of the grains, dissolved in saline, centrifuged and filtered, and to the filtrate thus freed from any undissolved grains, outer coats and debris, alcohol was added. This caused a precipitate flocculent, but very heavy. The precipitate was collected on a filter, washed with alcohol and dried. Very small amounts of the powder thus obtained when brought into contact with the nasal or conjunctival mucous membranes were sufficient in predisposed persons to bring on symptoms of hay fever. The alcoholic filtrate was carefully evaporated, and left a small amount of an hygroscopic substance which, however, proved to be quite non-toxic. Careful solution in saline with examination of the sediment with the microscope, showed that when all the amyloid rods were dissolved the sediment lost all toxic power. The amyloid masses then contain, if they are not themselves, the toxic body. The precipitate gives with warm water the same sort of thick opalescent solution as is obtained with starch. It is soluble in weak caustic soda solution, and