Progress of Medical Science.

NATURE AND TREATMENT OF ASTHMA.

The majority of authors now believe that the phenomena of asthma are dependent upon spastic contraction of the muscles of the bronchial tubes. Although many other theories have had, and some still have, able supporters, yet the weight of authority favors by great odds the spasm theory, as affording the most rational explanation concerning the nature of true and uncomplicated asthma. It is not at all surprising that many vague and erroneous notions should be entertained with regard to the essential nature of sthma, since death from the disease is rare, and there being, therefore, few opportunities for post mortem examination. Even in asthmatic persons who have died from some other disease there is usually found no appreciable morbid change in the lungs, or indeed anywhere else, to account for the asthmatic phenomena.

The pathological condition of asthma, whatever it may be, must be sought for in the nervous system, for the affection is peculiarly nervous in its origin. Irritation of the vagus nerve, either at its origin or along its course, will occasion bronchial spasm. Periodic excitement of this nerve, or of some of its fibres, produced either directly, or in a reflex manner by irritation of various organs, is believed to be a common cause of asthma. According to some authors direct irritation of the vagus, or some of its branches, may sometimes be occasioned by swollen bronchial or tracheo-bronchial glands, which by occasional increased tumefaction produce paroxysms of asthma. This is thought to be the explanation of the etiology of the disease when it occurs in children after measles and whooping-cough.

Bronchial asthma occurs much more frequently through excito-motory or reflex action. Thus, irritation of the bronchial branches of the vagus nerve, giving rise to asthma, may be produced by the action of an irritant on the Schneiderian membrane, the skin, the circulatory and abdominal organs. Of such reflex nature is the asthma which is produced by the inhalation of ipecacuanha powder, the odor of dried hay, fodder, rye, pollen, and the like. So also cold water suddenly applied to the feet has been known to excite the bronchial spasm. Indeed, one of the peculiarities of asthma is that the paroxysms may be induced through the action of an irritant on remote parts. Salter speaks of a case "in which the patient could regulate his asthma entirely by the condition of his bowels. They were, as a rule. relieved every evening. If the customary relief took place, and he retired to bed with an empty rectum, he awoke the next morning well; but if he neglected to relieve his bowels, or his efforts to do so were

abortive, he was quite sure to be awoke toward morning by his asthma." Copland also, has observed that the paroxysms are often preceded by constipation. The cases of hysterical asthma are of an analogous nature, the paroxysms being often preceded by well-marked symptoms of uterine displacement or irritation.

A more common illustration of the reflex nature of asthma may be found in the fact that errors of diet are often provocative of the attack, particularly in persons who are at all predisposed to the disease. Salter says : "Cases of peptic asthma, in which the attacks are caused by pneumogastric irritation, are so common that I think few cases could be found of true spasmodic asthma in which the disease is uninfluenced by the state of the digestive organs, while in a very large number it is entirely under their control. This fact is so patent and so generally recognized, that it has by many writers been made the basis of their classification of asthma: thus Dr. Bree and Dr. Young erect into a distinct species those cases that are dependent on gastric irritation. Therapeutically, the full appreciation of this fact is most important; more is to be done for our patients on the side of the stomach than in any other direction. An observant and thoughtful physician once said to me that he considered dietetic treatment the only treatment of asthma."

According to the theory of Bree, all the spasmodic muscular contractions in asthma are but efforts to get rid of irritating material present in the bronchi this irritating material being mucus, which is finally expelled, and then the paroxysms subside. But the presence of mncus must, I think, be regarded as having a *post* rather than a *propter* relation to the disease. The first appearance of moist râles and loose cough is looked upon as the harbinger of relief, and it must be remembered that the bronchial spasm subsides coincidently with the first appearance of expectoration, instead of continuing until all the mucus has been expelled.

As to the origin of the sputum, which is often expectorated in very large quantity, I have to say that not only does clinical experience lead to the assumption that a severe congestion of the mucous membrane of the bronchi takes place during the paroxysm, but that Stork has even demonstrated the correctness of this view by tracheoscopic examination, by which he found the mucous membrane of the trachea and larger bronchi intensely congested during the attack. If this is true of the larger, it is reasonable to infer that this hyperæmia exists even to a greater degree in the smaller bronchi. This condition would evidently give rise to the catarrhal symptoms; and it cannot be wondered at that long continued and frequently recurring attacks of asthma should lead to chronic bronchial catarrh, a condition so often observed in confirmed asthmatics.

Concerning the character of the sputum, it is of a grayish-white color, generally frothy and viscid,