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THE NOSE AND ASTHMA.

THE appearance of a timely and interesting little volume by Schmiegelow, of Copenhagen, upon asthma in connection with intra-nasal disorders, gives us an opportunity of discussing the present position of intra-nasal surgery in relation to nervous disorders. We have passed through two phases, namely, comparative neglect and ultra enthusiasm, a period during which the nose was thought little of, except in its æsthetical and physiognomical aspects; and a modern period, when pretty nearly all the nervous ills that flesh is heir to—at least, those so-called "functional" disturbances—have been connected in some way, directly or indirectly, with the organ which was formerly thought only to subserve the sense of smell, and to be troublesome during spring and autumn.

As the functions of the nose came to be better understood, we have passed from a period of indifference to one of active enthusiasm, during which many rhinologists have come to regard the organ with feelings of veneration, if not, as Oliver Wendell Holmes said of Boston, as "the hub of the universe." We are now in a transition state; the pendulum has swung too far in one direction, and it shows signs of falling back, possibly too much, into its former inertia. There are those who have resolutely refused to believe, all along, in "neuroses" of nasal origin, but these have surely shut their eyes to plain facts. Therapeutic nihilism is no more justifiable than injudicious enthusiasm. Epilepsy, convulsions, vertigo, chorea, asthma, goitre, exophthalmic goitre, hemicrania, hay fever, various diseased states of the eyes and ears, retarded mental development, melancholia, "irritation of the gastro-intestinal, utero-ovarian, and genito-urinary tracts," and other conditions have been considered to be originated or connected in some way with the nose. Doubtless this is true in some cases. Many of us, however, must confess that while we have often achieved brilliant results from the intra-nasal treatment of certain of these functional disorders, we have been often subject to woeful disappointment. We have learned that the treatment of these affections, *viâ* the intra-nasal cavities, must not be indiscriminate, and that it is not

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necessary to gouge, chisel, saw, or burn every hypertrophy, exostosis, or intra-nasal irregularity we meet with, and that even when we feel confident that we have established a connection between the nose and asthma, epilepsy, etc., we must still be guarded in our prognosis and cautious in our treatment. This is the more necessary, inasmuch as the profession generally, at least in this country, has not accepted the intra-nasal treatment of these disorders with the enthusiasm of specialists; and the laity knowing nothing of the current of modern rhinological thought, and ignorant of "reflexes" and "functional" physiology, fails to appreciate the importance of the nasal organ as a factor in disease, accepts treatment with sceptical reserve, and regards failure with disfavour. Hence, for the credit of rhinology, too eager and enthusiastic specialism is not wise.

It is chiefly in regard to asthma that we shall confine our remarks. While, as has been shown in an interesting historical review by Dr. John Mackenzie, of Baltimore, Aurelian, Zecchius (1650), Schneider, Floyer (1726), Bree (1811), Trousseau, Follin, Duplay, and Ferber (1869), all referred to the connection of nasal disease with asthma—the credit of pointing out this connection has usually been attributed to Voltolini (in 1871). This accomplished rhinologist believed that asthma was often due to the presence of polypi, and was cured by the removal of these growths. He was careful to point out that not all persons with nasal polypi suffered from asthma, and that if the asthma had existed sufficiently long to give rise to emphysema, the removal of the polypi would not cure the asthma. Hänish (1874), Hartmann (1879), Schæffer (1879), B. Fraenkel (1874), reported cases of asthma cured by the removal of polypi. The latter regarded chronic nasal catarrh as an important etiological factor in the production of asthma through the intermediation of the trigeminus nerve. Up to 1884, Schæffer reported that he had seen seventy-four cases of asthma originating in intra-nasal conditions. Daly, in America (in 1881), and Elsberg (1883), and Sajous (1884) had called attention to the connection of reflex phenomena, especially hay asthma, with intra-nasal conditions, a position which was taken up by Roe, Jarvis, Seiler, Bosworth, and others.

The greatest impetus was given to this special line of treatment by the publication of Hack's well-known work in 1884, in which he connected a number of obscure neuroses with swelling of the cavernous membrane over the inferior turbinated bodies, and which were to be cured by the removal of these structures. The numerous errors and exaggerations into which he fell, and the many exaggerations into which his more unthinking followers have been led, do not destroy the importance of his work, or deny to him the credit of being more than any other observer the one to direct universal attention to these questions. Five years have elapsed since the publication of his book; a multitude of papers and reports has been published within that period, and if we have stripped the theories of much exaggeration, new facts have come to light, and fresh confirmation of older ideas, and we are to-day in a position to regard the connection of the nose with asthma as an established fact. This is, of course, a truism to rhinologists, but it is not so to others, and the fact still requires to be insisted upon on every occasion.

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In giving due importance to the nose as a centre of local irritation, we look further, to the cerebral ganglia as of prime importance in the production of an attack of asthma. Much has been written in reference to the much-abused sympathetic system and its ganglia in connection with this subject of "reflex neuroses."

Aschenbrandt's experiments showed that the superior ganglion of the sympathetic is neither vasodilator nor trophic for the nasal mucous membrane, and that electrical stimulation of the spheno-palatine ganglion resulted in engorgement of the cavernous tissue and increased secretion, the spheno-palatine branch of the trigeminal being therefore a nerve, which, ending directly in the mucous glands, controlled secretion, and section of which resulted in dryness of the mucous membrane, and its ultimate degeneration.

Prévost found that extirpation of this ganglion was not followed by any alteration in nutrition or vascularity of the nasal mucous membrane, its sensibility remaining intact, but that galvanisation of the ganglion produced a flow of mucus in the nostril of the same side and increase of temperature, these phenomena not being produced by excitation of the superior end of the cervical sympathetic nerve. Bernard also showed that tearing away the spheno-palatine ganglia caused a serous flow like coryza. He also found the sensibility of the nasal mucous membrane persist after section of naso-palatine branches of Meckel's ganglion.

Experiments such as these, of course, only show that the nerve fibres connected with these ganglia are concerned in the function of secretion, and perhaps of nutrition, of the nasal mucous membrane. So far as these ganglia being centres of reflex action, there is no proof of such, and it is contrary to physiological teaching to suppose the isolated ganglia of the body to possess any such functions. That the branches of the trigeminal nerve are the controlling nerves of the nose, through which impulses must reach the lower cerebral ganglia, is, of course, common knowledge. How these irritations come in some cases to originate asthma is not so clear. The majority of writers agree in considering asthma to be a cramp of the bronchial muscles, brought about through irritation of the pneumo-gastric nerves, but it is important to remember that various experimenters have failed to cause artificial asthma in animals subjected to mechanical, chemical, electrical, and thermic irritation of the intra-nasal cavities.

Roy and Graham, in communicating some interesting experiments to the Physiological Society in 1885, stated that they had found that, while section of one vagus caused expansion of the bronchi of the corresponding lung, stimulation of its cut peripheral end caused a powerful contraction of the bronchi of both lungs, and stimulation of its central end caused a less powerful contraction. Under ether, stimulation of the central end of one cut vagus caused powerful expansion of the bronchi; stimulation of the peripheral end doing the same to a lesser degree. The vagi, therefore, contain centripetal fibres which can cause both contraction and expansion. The stimulation of the uncut nerve was always less in result than that of the cut nerve. The assumption was arrived at that these are two centres in the cerebro-spinal tissue which can influence the bronchi reflexly or by

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direct stimulation of these centres. Asphyxia produced by stopping the respirations usually caused contraction of the bronchi, but under ether it caused expansion. After section of both vagi no effect was produced upon the calibre of the bronchi by asphyxia. Stimulation of the central end of a sensory nerve, other than the vagus of the stomach, pleura, tracheal mucous membrane, intestine, nostrils, etc., produced little or no effect upon the calibre of the bronchi. In the dog, the only connection between the cerebro-spinal centres and the bronchi is through the vagus, as shown by section of both vagi, when stimulation of their central ends in the neck produced no effects upon the bronchi.

Why stimulation of the nasal cavities in its normal condition has failed with most observers to cause artificial asthma may well be, as Schmiegelow points out, due to "a want of predisposition in the central " nervous system of the animals experimented upon, so that the irritations " of the mucous membrane were too slight to call forth the cramp of the " respiratory muscles which causes asthma."

The cerebral centres may be thrown into excitation not only by the trigeminal nasal fibres, but by stimulation of the olfactory nerve endings, a fact which was well known to older writers, who have cited asthmatic phenomena produced by odours of certain plants (violets, roses), and by ipecacuanha, etc. Some of these effects may be of psychical origin, as in those cases in which an asthmatic phenomenon has been excited by the mere presence of a noxious animal (cat asthma, etc.). Gourewitz and Luschinger showed experimentally that asthmatic attacks might be produced by stimulation of the olfactory nerve, after section of the trigeminus and superior laryngeal nerves.

As to the exact regions of the interior of the nose whence the irritations start, various spots have been localised. While some observers have found irritative zones on the anterior ends of the middle and inferior turbinated bodies, and on the opposite part of the septum, others have found them (John N. Mackenzie) on the posterior part of the turbinated bodies and the contiguous portion of the septum. The exact localization of these irritative spots probably varies considerably in different patients, and is in no two cases exactly alike. All that may definitely be said is that whereve the nasal branches of the trigeminus spread out in the nasal cavities, there will be found spots, irritation of which produces a reflex, and in certain cases where the resistance of the medullary ganglia is lowered, or their excitability increased, there results, instead of an ordinary simple reflex of the respiratory centre such as sneezing, an overflow of nervous force, which passes down the vagus nerves to the bronchi, perhaps down the phrenics to the diaphragm, and possibly overflows to the vasomotor nervous cells in relation with these parts. What is very certain, and admitted clinically, is that there must be some abnormal state of excitability of the basal ganglia, which is vaguely understood under the terms neurasthenic or neurotic. How the irritation is started in the nose is thought by many rhinologists to be through congestion or swelling of the cavernous tissue of the turbinateds; but in view of physiological experiment, it does not seem necessary to invoke this factor as of

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etiological moment, and the cavernous swelling may be just as much a sequence as a cause of the trigeminal irritation. We also see a good many patients who exhibit undoubted reflex actions, which we may regard as nasal in origin, who do not show any marked pathological changes in the nasal cavities.

It is as great an error to look upon all asthma as of intra-nasal origin, as to deny that asthma can arise in this way, to assert that rhino-surgical treatment alone is sufficient, as to decry the benefit of it. Granting, as all thoughtful observers now do, that asthma is a disorder of the central nervous system, and that the nose, when it becomes a possible factor in the production of this disorder, does so only secondarily and through interaction upon already physiologically altered nervous centres, it becomes possible to seek for limitations in rhino-surgical treatment, and to lay down rules derived from experience, when to interfere and when not, with the nasal cavities. Schmiegelow lays down some good rules with regard to the connection of the asthmatic phenomenon with the nose, which on the whole we have found to accord with our own experience. The connection may be assumed—(1) when the clinical picture leads to a belief that the abnormal condition of the nasal cavities is a factor in the production of the asthmatic attack, which is to be inferred when the asthmatic symptoms occur, or are aggravated with any increase in the nasal symptoms; (2) when local treatment, such as pencilling the nose with cocaine, the introduction of tampons of cocaine or menthol arrests the symptoms, or local treatment gives immediate relief; (3) when the careful treatment of peripheral irritation, due to a chronic nasal catarrh, definitely arrests the asthmatic attack. At the same time, as Schmiegolow very properly remarks, "nasal diseases may "accidentally accompany cases of asthma without having any etio- "logical connection with the asthmatic attacks." It is best always to be very reserved in expressing anything to the patient as regards the influence and local treatment may have upon the asthmatic attacks. Where the clinical picture gives us decided belief in a causal connection between the nose and the asthmatic phenomena, "it is in these cases only "when the patient himself wishes it, after he has vainly tried every other "treatment, that one ought to begin the rhino-surgical treatment; but the "result will probably be negative with regard to the asthma, though it "may otherwise do the patient some good by curing his nose." These remarks are eminently judicious, and our experience leads us to endorse them. Only by carefully selecting the patients upon whom rhino-surgical treatment is really likely to be of service, shall we avoid the discredit of "meddlesome surgery" and the reproach of Kurz, that in asthma one has to do with a real sufferer who is not merely an appendix to his nose.

Not until we look further ahead, from this organ to the general nervous system, shall we accomplish successful results. Underlying all these intra-nasal conditions is a physiological perversion of the nervous tissues, which demands as careful treatment as the polyps, hypertrophies, etc., which accompany it. The era of indiscriminate gouging, chiselling, sawing, snaring, and galvano-cauterising is fortunately passing away. Hasty enthusiasm is giving place to more scientific and rational ideas

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but there is much yet to be learned and unlearned, and the surgeon who has the real interest of his speciality at heart can scarcely find any better subject for study and teaching, than the rational limitation of rhino-surgical treatment. While all must acknowledge the brilliant results which have followed the progress of modern rhinology, it is quite open to some one to produce an instructive essay upon the abuse of the galvano-cautery, snare, saw, etc.

THE TREATMENT OF ŒSOPHAGEAL STRICTURE.

DR. A. FORT, of Paris, claims great success from the treatment of fibrous stricture of the œsophagus by the combined method of linear electrolysis and dilatation. On the 12th March, 1889, M. Dujardin-Beaumetz presented to the Academy of Medicine in Paris a patient with this condition, cured by Fort within three weeks. At the commencement of the treatment he had only been able to swallow some drops of soup, but three weeks after could take every kind of food, and the œsophageal opening, which formerly measured only 5 millimètres, was enlarged to admit a bougie of 12 millimètres diameter. Since that time Fort has treated nineteen œsophageal strictures, eleven of which were organic, and eight fibrous. After treatment varying from nine to thirty days, seven of the patients with fibrous stricture could be considered cured, and allowed the passage of bougies of 18, 19, and 20 millimètres. All at the end of the treatment could swallow all kinds of food. In the cases of organic stricture the treatment has, of course, not been curative, but has ended in relief, permitting alimentation, and prolongation of life. Instead of applying the treatment in one sitting, as in the case of urethral electrolysis, Dr. Fort counsels its employment in several sittings, on account of the possibility of accidents arising from the thinness of the œsophageal walls, and also that patients do not support the instrument for a longer period than three minutes, which, however, allows of subsequent dilatation.

The instrument to be used consists of an œsophageal sound traversed by a metallic conductor, ending with a platinum plate at the extremity. This should be introduced without force, being simply glided to the point of constriction. This sound is attached to the continuous current negative pole, the positive pole being applied to the thorax in front of the stricture. The number of milliampères should be indicated by a galvanometer, and the arterial pulsations should be counted. The situation of the stricture should be previously ascertained, as a guide to the length of the instrument required. Twelve cells of a Chardin pile are employed, giving a strength of from 15 to 30 volts (milliampères) according to the subject. No pain is experienced during the operation. After 30 to 150 seconds, when the instrument can no longer be borne, the current is interrupted, and the sound carefully withdrawn. After a few minutes' rest, a bougie is introduced, of diameter a little greater by some millimètres than the stricture.

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Three or four operations are performed thus: at two to five days interval, and after three or four sittings, it becomes possible to introduce bougies of 19 to 20 milliampères diameter, on each occasion taking care not to electrolyse portions of the stricture already operated upon previously. Proceeding thus, for a stricture of 5 millimètres diameter, at the first sitting a platinum plate of 10 millimètres in height may be employed, and an œsophageal bougie be subsequently introduced of 12 millimètres diameter; at the second sitting, the platinum plate may be 14 millimètres in height, and the œsophageal bougie 15 millimètres in diameter; and at the third, a platinum plate of 16 millimètres in height, and a bougie of 19 millimètres diameter.

No accident, hæmorrhage, lesion of the walls of the œsophagus, etc., has followed these operations. This method, which has been attended with such good results in the hands of the originator—results which have been witnessed by independent practitioners—certainly seems worthy of most attentive and thorough trial. If we have, in this method, as the author's published results would lead us to believe, a mode of dealing more or less successfully with œsophageal strictures, we cannot fail to appreciate the importance of Dr. Fort's work. Our methods of dealing with this formidable disease are so very unsatisfactory, that Dr. Fort's treatment by linear electrolysis and dilatation combined, is to be welcomed as a very important therapeutical step, and we can only hope that further experiment will endorse the favourable conclusions arrived at by the originator.

THERAPEUTICS AND DIPHTHERIA.

Ehnbom (Stockholm).—*Fatal Poisoning of Chlorate of Potash from Syringing the Throat with a 2 per Cent. Solution.* "Svenska Laekare Saelskapets Foerhandlinger," May 21, 1889.

A GIRL, aged five, with diphtheritic scarlet fever, was taken to the Catharine Hospital in Stockholm, and the pharynx cleaned four or five times daily with a 2 per cent. solution of chlorate of potash by means of a syringe. Marked symptoms of poisoning by the drug began to appear on the seventh day after the admission of the patient to the hospital; on the eighth day the administration of the drug was discontinued, but the symptoms of poisoning continued, and death occurred on the tenth day. The *post-mortem* examination showed decided signs of poisoning by chlorate of potash. The nurse, who had applied the injections, had never noticed the child swallowing any of the solution. *Holger Mygind.*

Browne, Lennox (London).—*The Cocaine Habit in Diseases of the Throat and Nose.* "Brit. Med. Jour.," June 1, 1889.

THE author again directs attention to the injurious local effects of persistent application of cocaine to the naso-pharyngeal and laryngeal mucous

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