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CASES OF DIPHTHERIA OCCURRING IN BOSTON.

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BY HENRY K. OLIVER, MD.

ON the 19th of November, 1859, I was called to a child of — McCarthy, living at 119 Cambridge St. The family, consisting of husband, wife—both intelligent persons—and six children, the eldest aged 11 years and 5 months, and the youngest a child in arms, had occupied their present rooms for the previous eight years. These rooms were in the third story, and three in number; a large one in front, one as large as the front room at the rear, and one smaller between, all communicating with each other, and used, the front as a kitchen, sitting-room, &c., and the two others as sleeping rooms. The drains, privy, &c., were represented as in good condition. The entries and the rooms themselves were more cleanly kept than usual among the Irish. Four children, in two beds, slept in the rear room. The two youngest slept with their parents in the middle room. General health of parents and children very good. Have good food, and in sufficient quantity. Three years previously, all the children—five in number—had scarlet fever severely, under the care of Dr. Townsend. In one of them the disease was fatal. In all, the throat was a great source of complaint. At the same time, four children of other families in the house were ill of the same disease.

The four eldest have attended school regularly; the three youngest the primary school, and the eldest a higher school, and in a different locality. No case of disease of the throat is known to have been in the schools or in the vicinity of present residence.

To anticipate a little. Elizabeth, aged 11 years and 5 months; Anna, aged 8; George, aged 5, and Isabella, aged 3 years, had the disease in the order in which they are named. Of these, Anna, Elizabeth and George died in the order in which they are named, after being sick respectively 4 days, 3½ weeks, and 7 weeks. The

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baby probably had the disease slightly. James, aged 10 years, did not show the slightest symptom, although he continued to sleep with his brother for some time after the latter was taken ill. It may be proper to premise here, also, that three children of a family residing on the same floor, and adjoining one of the rooms, escaped the disease. They were not, themselves, allowed communication with the McCarthy children, but the mother came in regularly to inquire after their health.

My attendance was sought for Anna, as before mentioned, on the 19th Nov. Elizabeth was considered convalescent. The history of the disease in the former was given as follows. She complained, on the 17th inst., of sore throat. The face was swollen. Not much fever. "In bed and out." Appetite small. Has taken only liquids, and with much difficulty. At the time of my visit, the child was up and dressed. The face and sides of throat red, hot and much swollen. Mouth, half open, showing the tongue somewhat swollen, and with a thick, dirty coat. Breath offensive. Breathing quickened, but not labored. Saliva running freely from mouth. The swelling of the parts rendered it impossible to get a view even of the soft palate.

Never having seen a case of diphtheria, I was naturally puzzled at the appearances before me. My first inquiry was, whether the child had been taking mercury, as she looked like a subject of severe salivation. No remedies of any kind had, however, been employed. I prescribed an emollient wash for the mouth, and ordered cold applications to be made to the throat. On the 20th, the symptoms were not alleviated, but the child seemed no worse. She was up, and walking about. On the 21st, she came up to the breakfast table between eight and nine o'clock, looked at the food, and then turned and lay down on the bed. A short time after, the mother's attention was drawn to her by an appearance of lividity, and, as she seemed to grow ill very fast, a physician was sent for, who arrived soon after the death of the patient, which occurred at 9 $\frac{1}{2}$ o'clock. The death was quiet; as was described, "a quiet sinking away."

At this sudden termination of the disease, my attention was directed to Elizabeth, who, although apparently well, still, judging from her speech, evidently had some trouble in the throat. She had already been sick two weeks, but without medical advice. The chief complaint had been the throat, with occasional pain in the right ear. Swallowed with difficulty, and chiefly liquids. Coughed considerably; expectoration stringy and difficult. At times manifested a disposition to lie on bed during the day. On examination of the throat, I found a white patch on the soft palate of right side, of about the size of the finger nail. On close and repeated examination, this appeared more like a slough than a false membrane. Its edge appeared to be partially detached, and there seemed to be loss of substance beneath. The parts around the patch

were of deep crimson color, which extended to tonsil and greater part of soft palate. A gargle of tannin was ordered, and, in my inability to attend the subsequent day on account of illness, Dr. C. G. Page took charge of the patient. Dr. P. touched the throat with a solution of nitrate of silver, gr. xv. to the ounce, and "a portion of the slough and shreds of a membranous character were thrown off." The slough was touched on four successive days with the solid nitrate, and chlorate of potash given internally, when, the throat being in good condition, and the child seeming well, Dr. Page discontinued his visits.

About a week subsequent, namely, on the 1st of December, I was summoned by the message that the child had become very ill. Upon my arrival at the house, I learned that she had kept the bed the day previous, somewhat dejected. There had been considerable thirst, and some vomiting. I found her in bed, uneasy, and asking for water continually. Countenance somewhat livid. Pulse very small and irregular, 188. Hands and feet cold. Throat well, except slight redness. No slough to be seen. Tongue covered with a thick, black coat. No cough. Breathing quick, but not labored. Ordered wine freely.

Dec. 2d, 11, A.M.—No sleep. Great uneasiness. Thirst the same. Has taken the wine freely and retained it. Vomited only once. Hands and cheeks cold; says she feels hot. Tongue black, with white curdy spots. Says "head swims." Has been wandering somewhat. No pulse. Died at 11½ o'clock.

An autopsy was allowed, and in my absence again, Dr. Page made it the day following, Dr. Minot being present. The chest and throat only were examined. In the left cavity of the pleura about two ounces of serum. Lungs rather red, but hardly to be called congested. Trachea red in patches; portions of mucous membrane at irregular intervals covered with a plastic exudation, in some places quite thick and strong, but in others soft and easily wiped off. Some congestion of pharynx. Epiglottis normal.

George, aged 4 years and 8 mos., was the one next attacked. The first symptom noticed was vomiting, which occurred on the 24th Nov., a little more than two weeks from the commencement of the disease in the child first attacked. Up to that time he had been as well as usual. Was able to take his breakfast and dinner on the 25th, but seemed feverish and coughed somewhat. The throat was also somewhat swollen. On the 26th, there was some fever, and the skin was red. No slough on membrane or tonsils. Solution of chlorate of potash was ordered.

27th.—A small spot on left tonsil, which was touched with solid nitrate. Feverish. Pulse 120. Skin red at times, like scarlatina. Wanders somewhat. Tongue with thick white coat, and papillæ red.

28th.—Slough larger; touched with the solid nitrate.

29th.—Slough seems to have extended back to posterior fauces.

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30th.—Slept well last night, and seems better to-day. Occasional complaint of ear.

For two or three weeks subsequent to the last date, the child seemed pretty well, though rather weak, especially in the lower limbs, walking with considerable difficulty at times. The throat got well, and ceased to be a source of complaint. Stimulating liniments and friction along the spinal column were employed, and tinct. ferri muriat. given internally. But trifling benefit, however, was noticed in the lower limbs.

For a few days previous to his death, which occurred on the 10th January, he seemed sleepy, and kept his bed most of the time, occasionally, however, crawling out on to the floor. The lower extremities had become very much weaker, and the child could not stand upright. On the day of his death his father left him, apparently no worse, at 2½ o'clock, to ask some question of me at my office. He returned, in about an hour, to find his child dead. During his absence, the mother heard her name called; she turned, and, noticing a queer expression of the eyes, went to the bed, when the little one died, almost instantly, before her. There was no struggling for breath, or convulsion of any kind. The next day Dr. Jacob Bigelow saw the body, and received the history of the case and of those which had preceded it. His opinion will be found below.

Isabella, aged 3 years, was not attacked with any prominent symptom, but fell ill very gradually. About the 1st December was the time that attention was first drawn to her. The throat was the seat of complaint, though no lesion or exudation was visible. There were, also, some complaint of right ear, some difficulty of swallowing, and slight cough. The tongue was coated, and the papillæ red. Respiration quiet. Cold applications to throat, emollient gargles, and the tinctura ferri muriatis internally, were the remedies employed. Dejection of spirits and an inclination to lie down were reported occasionally, and great prostration was a prominent symptom throughout. Gradual improvement, however, took place, when the mother, being worn down with constant watching, consented to have the child removed to the Hospital, which it entered 18th January. At that Institution gradual improvement took place until the 5th February, when she was discharged, "well."

In the case of the child in arms, it was never certain that the disease was present at all, although there were some symptoms about the throat, leading the mother to make applications there, and some degree of debility, lasting a considerable time. It took wine and tonics.

Without designing to enlarge upon the subject of diphtheria, it will be interesting to inquire whether these cases throw any light upon the origin or nature of the disease. With regard to its origin, in this instance, as in so many others, the question must remain undecided. The locality, although tenanted by poor families,

was, in cleanliness, so far above very many others in the vicinity, that the whole blame cannot reasonably be laid to a malarious influence. Moreover, as before stated, no other person in the house, young or adult, was attacked with the disease. Add to this the fact that the victims were, up to the time of their illness, in the possession of robust health, and the source of the trouble is made still more obscure. Writers on the subject of diphtheria, moreover, express widely opposing opinions with regard to the influence of local causes. Dr. Edward Ballard (*Med. Times and Gazette*, July 23, 1859) gives statistics of the connection of diphtheritic sore throat with local causes of disease. The conclusion is, that, in more than half the houses which were examined, there was some defect or other in the sanitary arrangements, or in the surroundings of the patient. On the other hand, Dr. Geo. Bottomly, in the *British Medical Journal*, July, 1859, says that in the months of July and August, 1856, there were fifty cases, of the most malignant form, in the Orphan Asylum under his charge. This institution stood alone, in a most healthy situation. The rooms were lofty and spacious, and every attention paid to ventilation. He adds, "that does away with the supposition of its being confined to ill-drained, low and swampy situations." Dr. Thos. H. Smith (*British Medical Journal*, July, 1859) says, "It has not, in my experience, selected the most malarious spots, but when it has done so the cases have been most urgent."

Another mooted point is, whether diphtheria has any relation to scarlatina. All of these children had had this disease, three years previously, and a second attack is admitted to be very rare. Dr. Willan only met with a single instance in 2000 cases, and Bouchut says that he has never met with a well authenticated case at all. In one of the children there was, it is true, an eruption resembling scarlatina, but it was short lived and not too distinct. Dr. Bigelow inquired particularly in this regard, and was not at all disposed to connect the symptoms with the disease in question. His remarks were, that he had never before seen similar cases, but that they resembled, more than anything else, the malignant sore throat of scarlet fever.

Was the disease croup, or had it any relation to this affection? In no one instance was the breathing labored. The speech was clear, except in the first child, where the great swelling of the mouth rendered any enunciation impossible. Except in the latter instance, also, in which the immediate cause of death is doubtful—it may have been toxemic in nature, or it may have been œdema of the parts—there was no appearance of asphyxia. Death occurred quietly, though suddenly, and after the lesions in the throat had been resolved. The membrane found upon the mucous membrane of the tonsils, was not the tough membrane of croup; and that found lining the air-passages, at the *post-mortem* examination of the eldest child, was, in general, cheesy in character, and in neither

the larynx nor in the secondary ramifications of the bronchi, into which it extended, was it of a character liable, or in that quantity sufficient, to obstruct the passage of air. It will be noticed that in the second case mention is made of a slough, and not of a membrane. I have, however, since reading Bretonneau's remarks in this regard, who says that "the supposed sloughs are not portions of gangrenous mucous membrane, but exudations upon its surface," chosen to consider it rather a membrane than a slough. Mr. Hutchinson also, in the *Medical Times and Gazette*, says the same thing, and gives a case in point, in which he peeled the supposed gangrenous portion easily, and without causing bleeding, from a deeply red, shining, but otherwise unaffected tissue beneath.

The manifestly contagious nature of the disease under consideration is a no less strong reason for separating it from croup. In Dr. Bullard's cases, out of 47 families, there were only 15 in which the other members all remained healthy; and in no case where separation from the sick person had been effected early in the disease, has he noticed that it has spread to the separated individuals. Of course, it may be argued, on the other hand, that all the members of a family are equally exposed to the operation of local causes of disease. In the cases here recorded, however, three children living on the same floor were all exempt, being carefully kept from associating with the children attacked.

All writers, I think, agree in this, that diphtheria is a constitutional disease, having its lesion in the throat. The sudden fatal termination in these cases, when convalescence seemed well-established, is a reasonable proof of this. In relation to croup, however, there has not been, as yet, any reasonable ground for believing it anything more than a local disease. Moreover, some other symptoms, such as the partial paralysis, the soreness of the throat in swallowing, the fœtor of the breath, and the enlargement of the glands of the neck in diphtheria, tend still more to separate the two diseases. In conclusion, it may not be improper to say that during the whole course of the malady in this instance, the idea of croup never entered the mind of any of the gentlemen who attended or saw the cases.

CROUP—TRACHEOTOMY—RELIEF FOR A TIME—DEATH.

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CASE I.—Dec. 12, 1855, I saw Master C., aged 6 years, who was suffering from the symptoms of aggravated tonsillitis. He had had enlarged tonsils for two years, and the previous spring part of one had been removed, to give relief to the mechanical difficulty of breathing. Fearing complete suffocation if there was much tumefaction, I at once put him upon a vigorous course of