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A COLLECTION OF CASES

OF

DIPHTHERIA AND CROUP,

ABSTRACTED FROM THE CLINICAL AND PATHOLOGICAL RECORDS OF THE HOSPITAL BY

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AND COMMUNICATED, WITH SOME OBSERVATIONS, BY

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At the present time, when medical men in this country are divided in opinion as to the question whether there is a membranous croup apart from diphtheria, and when a Committee of the Royal Medical and Chirurgical Society is endeavouring to supply an answer to this question, it has seemed to me that a summary of the experience of the hospital must be of some value. Accordingly, in the summer of 1876 I asked my then clinical assistant, Mr. Lamb, to collect from the volumes of Medical, Surgical, and Pathological Records, all the cases that he could find of croup or diphtheria or any other allied diseases, and these I now communicate, as they came to me, without selecting or excluding any.

Being a member of the Committee already referred to, I feel myself debarred from offering any lengthy remarks, and from endeavouring to draw a final conclusion with regard to the point at issue. But I may express the opinion that, if there is a membranous croup which is not due to the diphtheritic contagion, its existence must be proved by the collection and comparison of large series of cases, rather than by

detailed pathological investigations in regard to individual instances, such as would bring to light any histological distinctions between the two diseases. For, if I did not hold such an opinion, I might feel bound to offer an apology for reporting the cases contained in this paper without any details as to the microscopical characters of the affected tissues; characters which were, indeed, in many instances, left undetermined, but which have in others been very fully described by the successive Demonstrators of pathology, who recorded the cases as they occurred.

My idea of the problem to be solved is, in fact, this: it must be admitted that the diphtheritic poison is capable of giving rise to a plastic inflammation of the larynx, apart from the existence of any similar affection of the pharynx. But there is good reason to believe that during epidemics of diphtheria the cases in which this occurs are in the highest degree exceptional. If, therefore, it can be shown that in the practice of a general hospital the cases of plastic laryngitis, of uncertain origin, bear a large proportion to the total number of cases of diphtheria, there will be a strong probability that the majority of the former cases are dependent upon some other cause than the diphtheritic poison.

Another argument for the independent existence of a membranous croup is one which I believe to have been first used by Dr. Moxon; namely, that it not unfrequently happens that a plastic laryngitis occurs as the result of injury to the throat from the introduction of boiling water into the fauces, or in other ways. I therefore append notes of the cases in which such an affection has been observed, as also of those in which false membranes have been found in the larger air-passages secondarily to some other disease of the larynx or of the trachea.

Certain minor inferences, bearing upon the main question, can doubtless be drawn from the following series of cases; but I will leave those to be considered afterwards.

The cases may be naturally arranged in the following classes:

I. Those which were more or less clearly proved to be cases of diphtheria.

II. Those of membranous laryngitis, of doubtful

ORIGIN AS REGARDS DIPHTHERIA, BUT NOT DIRECTLY CAUSED BY LOCAL INJURY TO THE THROAT, NOR SECONDARY TO ANY DISEASE OF THE LARYNX OR TRACHEA.

III. THOSE OF LARYNGITIS, HAVING A CLINICAL RESEMBLANCE TO THOSE OF CROUP, BUT IN WHICH NO FALSE MEMBRANE WAS PROVED TO EXIST.

IV. THOSE OF MEMBRANOUS LARYNGITIS, WITH OR WITHOUT PHARYNGITIS, DIRECTLY CAUSED BY LOCAL INJURY TO THE THROAT, OR SECONDARY TO PRE-EXISTING DISEASE OF THE LARYNX OR TRACHEA.

CLASS I. CASES WHICH WERE MORE OR LESS CLEARLY PROVED TO BE CASES OF DIPHTHERIA.[1]

These again may naturally be subdivided into three sections :—

1. *Cases in which there was no evidence that the morbid process extended to the air-passages.*
2. *Cases in which the air-passages were involved, the fauces being at the same time affected to a marked extent.*
3. *Cases in which the air-passages were mainly attacked, the fauces being affected in a very slight degree only, if at all.*

Section 1. *Cases of diphtheria in which there was no evidence that the morbid process extended to the air-passages.*

CASE 1. *Diphtheria.*—Emma B. G—, æt. 5, Brockley Road, admitted March 13th, 1870, Clinical, Dr. Moxon.

Past history.—Parents have four other children who are well. No evidence of diphtheria in neighbourhood.

March 3rd.—Thought to have caught cold.

5th.—Nose was running, sore and red.

7th.—Throat sore.

8th.—Some white material seen on fauces ; throat worse.

10th.—Some pieces of membrane removed on making an application to the throat.

12th.—Throat noticed to be swollen externally. Has taken very little food.

[1] For the present I assume that all cases in which there were false membranes on any part of the fauces were cases of diphtheria. In the sequel it will appear that this may fairly be disputed.

13th.—On admission, looks very ill; nostrils sore and covered with purulent secretion; breath fœtid; neck swollen; a thick white membrane seen on both fauces. Urine sp. gr. 1022, albuminous; temp. 100·3°; pulse 140; resp. 38.

14th.—Morning temp. 101·2°; pulse 136; resp. 24. Evening temp. 100°; pulse 136; resp. 24. Much in the same condition.

15th.—Morning temp. 99·3°; pulse 124; resp. 20. Evening temp. 98·9°; pulse 114; resp. 18. Urine highly albuminous, many granular casts to be seen under the microscope. Breathing obstructed.

16th.—Temp. 98·6°; pulse 132; resp. 22. Evening temp. 98·5°; pulse 144; resp. 24.

17th.—Sank gradually from exhaustion.

Post-mortem not allowed.

Note.—From this case the sister of the ward caught diphtheria, which was followed by paralysis of the palate.

Case 2. *Diphtheria.*—Ann C—, æt. 25, Orpington, Kent, admitted March 15th, 1875, Miriam, Dr. Moxon.

Previous history.—A nursemaid in the same family had diphtheria a week before this girl became ill; she is now recovering; house was badly drained.

On the 12th felt her throat sore.

On the 14th and 15th had great difficulty in breathing and pain in swallowing.

On admission, soft palate and fauces of a bright red colour; both tonsils covered with a dirty white membrane, which is with difficulty peeled off. No albumen in urine, sp. gr. 1030, full of lithates. Temp. 102·2°; pulse 120; resp. 24. Slight glandular enlargement on left side of neck. Purgatives administered.

Temperature and pulse gradually went down, till on the 22nd they were, temp. 98°; pulse 92; resp. 24. Urine sp. gr. 1030; a slight cloud of albumen noticed for the first time; there was still a slight patch on left tonsil.

23rd.—Tonsils clean; slight difficulty of speech.

24th.—Urine still contains a slight trace of albumen.

26th.—When drinking, fluid regurgitates through the nose.

April 2nd.—Went out to-day quite recovered. Has a peculiar nasal twang of the voice.

Case 3. *Diphtheria.*—Mary M—, Green Street Green, Orpington, æt. 37, admitted May 5th, 1875, Clinical, Dr. Taylor.

Previous history.—There was one case of typhoid fever in the house where she is cook. There have been three cases of diphtheria there lately.

On March 29th the nursemaid died from paralysis of the heart (?) after diphtheria. The housemaid, Ann C—, was in the hospital here in March and left cured, with paralysis of the soft palate, which still remains (see Case 2). There were no bad smells in the house, their master had the drains all attended to after the death of the nursemaid.

Last Friday night she began to feel ill with sore throat and a lump on one side; in the middle of the night on looking at her throat she observed a patch on one side of the soft palate; tonsils were also swollen.

On admission, on right side of soft palate there is a layer of plastic lymph, which on removal leaves a bleeding surface; the membrane is soon reproduced. There are yellowish sloughs on tonsils and pharynx. Urine sp. gr. 1015; no albumen. Temperature 99·8°; pulse 100.

May 10th.—There is considerable improvement in the fauces. No membrane or slough anywhere about; still some ulceration of the left tonsil.

16th.—Went out quite well; there was a little thickness in the speech.

Case 4. *Diphtheria.*—Jane R—, æt. 22, Dulwich, admitted May 15th, 1875, Bright, Dr. Moxon.

Present illness.—On May 10th had a bad headache and could not sleep; subsequently she had sore throat.

On admission, glands at angle of jaw enlarged. Tonsils and uvula inflamed and red, with patches of membrane on them.

15th.—Temp. 102°; pulse 100; resp. 22. Urine, sp. gr. 1020; no albumen.

18th.—Pulse 90; temp 98·4°; resp. 20. Albumen in urine.

20th.—Albumen still present in urine. Membrane has become detached.

31st.—Albumen still present. Voice less distinct. She now speaks through her nose; food comes up through her nose when she swallows; she vomits at times.

June 11th.—No albumen in urine, sp. gr. 1012. Voice not so nasal.

14th.—Complains of dimness of sight in right eye.

16th.—Sight not any better. Went out this afternoon.

CASE 5. *Diphtheria.*—Ann C—, æt. 3, admitted June 4th, 1875, Clinical, Dr. Hilton Fagge.

Previous history.—No children suffering from sore throat in the neighbourhood. Brothers and sisters healthy.

On May 27th child fretful; refused food.

June 2nd.—Came to out-patients' room. Argent. nit. applied to throat.

On admission, glands at angle of jaw enlarged; has nasal catarrh; viscid secretion escapes from mouth. Tonsils and uvula covered with false membrane. At the back of pharynx there is a greyish-brown slough, extending down the throat. Has herpes on lips. Urine albuminous, sp. gr. 1010, no casts or blood, is acid, and contains a quantity of pus. Temp. 99·6°; pulse 140.

8th.—Vomits after medicine and food. Temp. 98·4°; pulse 120; resp. 24.

10th.—Submaxillary glands very much enlarged and tender. Urine less albuminous, contains uric acid crystals.

11th.—Throat looks better; ulceration on tonsils cleaner.

12th.—Was taken away.

CASE 6. *Diphtheria.*—M. A. M—, æt. 17, admitted into Lydia ward under Dr. Habershon's care, November 15th, 1869. She gave a history of gradual loss of strength and health over a period of some months. She had had amenorrhœa for five months, and had well-marked chlorosis. She complained of sore throat, but not so as to attract special attention to that part. Her prominent symptom was debility, so that she could not sit up in bed even when raised. She had had shivering the day before her admission. There was no albu-

men in her urine. The temperature remained at 102°—103·5°; her pulse at 112—124. She became very delirious the day before her death and finally unconscious for some time.

Post mortem.—Back of pharynx was deeply congested, with a thin, very closely adherent membrane, of greyish colour; this did not extend into the œsophagus. The same condition was seen on the edge of the soft palate and uvula, on the anterior surface of the epiglottis, and edge of the glottis; not extending into the larynx. In the large intestine there was the same diphtheritic condition. Kidneys 12 oz., pale, pyramids hardly distinguishable from cortex.

Case 7. *Diphtheria (?) associated with sloughing of penis.*—Henry E—, æt. 38, admitted February 23rd, Samaritan, Mr. Cooper Forster. Has had syphilis.

On admission, his throat is sore, and there is a large ulcer on uvula and soft palate. He has purpuric rash over his body. The penis is very swollen, red, and infiltrated; anterior part is of a dusky-brown colour, and seems to be sloughing all over; there is a large sore on the front of glans, extending all around. He died on March 8th.

Post mortem.—Membrane in pharynx, also on both surfaces of epiglottis. Soft palate thickened and sloughy looking. Right tonsil had pus in its substance.

Case 8. *Exophthalmic goître; diphtheria caught in the hospital from another patient with the same disease.*—Alice W—, æt. 26, admitted June 26th, 1872, Clinical, Dr. Pye-Smith. She was admitted for Graves' disease. Her general health improved until the 21st of July, when she had a shivering fit; shortly afterwards she got very hot, and then perspired freely; felt her throat sore, and was unable to swallow without pain.

July 22nd.—Throat feels sore; the tonsils and uvula are enlarged and very red; complains of great heat and pain in her limbs and back, also in her head. Temp. 102·2°; pulse 140; resp. 36.

23rd.—Has a patch of grey membrane on and behind each tonsil, which can be taken away with a sponge.

26th.—Submaxillary glands are enlarged and painful.

Patient went out on the 9th September. She had quite recovered from sore throat.

Note.—A child had died from diphtheria, under Dr. Pye-Smith's care, in the same ward, on July 20th. See Case 27, of Rosaline P—.

Case 9. *Diphtheria caught in the hospital.*—R. P—, æt. 7½, was admitted into the Clinical ward on June 27th, 1866, for chorea. Soon afterwards she was attacked with diphtheria of the throat, and died on July 7th.

On post-mortem examination the fauces were deeply reddened and patched with false membranes; there were also two superficial ulcers with defined margins. The larynx was healthy.

Note.—The bed occupied by this patient was the same, but doubtless with different bedding, in which a child, æt. 11, had died of diphtheria eight days before. There had been no post-mortem examination of that case, and the clinical report has been mislaid, so that all that can now be learned of the symptoms is that the immediate cause of death was exhaustion, and not any affection of the larynx.

Case 10. *Diphtheria caught in the hospital.*—Eliz. V—, æt. 23, admitted August 4th, 1876, Clinical, under Dr. Pye-Smith for epilepsy. She continued having fits till August 15th. The report from that time states:

August 15th.—Had no fit last night.

18th.—Has a great number of fits. Complains greatly of her head. Pulse 84; temp. 100·2°.

22nd.—Had a seton passed through her neck on Friday night; has had no relief; pain in her head is worse and extends down to her shoulders. Pulse 84.

23rd.—Took the seton out to-day, she was in such great pain. Her speech is getting very thick, and she is very giddy, not being able to stand. Pulse very small.

25th.—Very giddy, can hardly stand. Pulse 100.

26th.—Has great pain in her head and neck. Had no more fits. Temp. 100·4°; pulse 120.

28th.—Complains of sore throat; pharynx is injected; some of the cervical glands enlarged. Pulse 90; temp. 100·4°. Had a fit last night.

29th.—Throat sore, cannot swallow; tongue white; bowels costive. Pulse 88; temp. 100·2°. Had a fit last night.

30th.—This morning there is a small white patch on left tonsil; patient is in bed. Temp. 101·4°; pulse 100.

31st.—Patch on tonsil has increased in size, extends to uvula; tongue is considerably furred; has great pain; can hardly move her head. Temp. 102·8°; pulse 102.

September 1st.—There is some membrane also on uvula and pharynx now. Pulse 110; temp. 102°; resp. 26.

2nd.—Large patches of lymph on each tonsil. Temp. 102·4°; pulse 110; resp. 30.

4th.—Can scarcely open her mouth. Temp. 104°; pulse 128; resp. 28.

5th.—In same condition. Pulse 108; temp. 102·4°.

6th.—Is slightly delirious to-day. Temp. 102·4°; pulse 106.

7th.—Was delirious last night, jumping out of bed. Temp. 101·8°; pulse 100. Is asleep now. Does not take any nourishment; enemata ordered.

8th.—Tongue and throat cleaning; no membrane on uvula now. Temp. 100·4°; pulse 106.

9th.—Patient is doing well now. Very little lymph on tonsils. Pulse 100; temp. 99·8°.

11th.—Temp. 98·4°. No lymph on tonsils.

12th.—Tongue clean. Temp. 98·6°; pulse 88.

15th.—An abscess formed at back of neck.

16th.—Abscess was opened. Continues to improve daily.

21st.—Has not had a fit since August 28th.

October 3rd.—Commenced having epileptic seizures again.

November 29th.—Patient left the hospital to-day much improved.

Note.—The diphtheria in this case was distinctly traced to the case of Martha H—, æt. 5, who had died in the same ward a few days before Eliza V— was attacked. (See Case 23.)

Case 11. *Diphtheria of skin.*—A patient under Dr. Hicks' care in Mary ward was admitted, five weeks pregnant, with albuminuria and dropsy. A few weeks later she aborted spontaneously. After about five days she became feverish and had pain in the lower part of the abdomen. On examination

Dr. Hicks found the fold between the right thigh and the swollen labium covered by a large diphtheritic patch, four inches long by two broad. Although this afterwards became less in extent she grew every day more prostrate, and died of peritonitis ten days after her miscarriage.[1]

Case 12. *Diphtheria of genitals caught in the hospital.*—While the patient whose case has just been referred to was dying, Dr. Hicks removed a fragile calculus from the urethra of a woman who had just been admitted into the same ward. She went on well for about three days, when she complained of tenderness in the urethra, and became feverish. On examination the parts which were abraded were found covered by a diphtheritic layer running up to the bladder. In a few days cystitis came on, and afterwards symptoms of pyæmia, so that she was in a sinking state when her husband removed her to her own home.

Case 13. *Diphtheria of throat caught in the hospital.*—After the cases just related three other women in the same ward were affected with unhealthy inflammation after operations. At the same time an elderly woman was under treatment for malignant disease of the bladder. She was attacked with severe sore throat, with high feverishness and slight diphtheritic exudation. She recovered from these symptoms, but afterwards died of the cancer.

Case 14. *Diphtheria of throat caught in the hospital.*—Towards the termination of this series of cases, which all occurred within a fortnight, a woman, aged about 70, was admitted with an ovarian tumour, which was tapped; the opening afterwards discharged fluid which on the third day became offensive. The pulse was about 110 and the temperature 97°. Dr. Hicks examined the throat and found that, although she had no distress there, the whole fauces were covered with a thick diphtheritic layer. She continued to have a cold skin and slow pulse for three days, when she died.

The following cases are introduced for the sake of completeness, but it must be admitted that their clinical value is very doubtful.

[1] See Dr. Hicks' paper in vol. xvi of these Reports, p. 167.

Case 15. *Double pneumonia; pellicular inflammation of fauces; enteritis.*—Francis S—, æt. 24, a doctor's coachman, admitted under Dr. Habershon into Stephen ward, November 12th, 1868; had been ailing four months. On the Monday before admission had been intensely hot, and on admission had signs of pneumonia. The symptoms increased, he got "prune-juice" sputa, and lastly diarrhœa for two days.

Post mortem.—Larynx healthy. The fauces and soft palate covered with a separable pellicular layer of fibrin, which ceased at least half an inch below the opening of the larynx by an edge whose outline was irregular, with a rounded advancing and receding line, and some rounded patches beyond, where the pellicle could be easily separated, and left the epithelial covering of the mucous membrane perfect and like that around; but in the fauces higher up the removal of the false membrane seemed to leave the corium bare; this removal was, however, exceedingly easy. The soft palate was affected on both sides.

Kidneys fourteen ounces, rather pale and coarse-looking, with stellate veins larger than normal; but the organs were essentially healthy.

Case 16. *Diphtheria; enteric fever.*—John Mc—, æt. 19, 18, Lisson Street, Edgware Road, admitted February 24th, 1876, under Dr. Moxon in John ward. Has had syphilis. On admission, urine, sp. gr. 1026, yields a thin cloud of albumen. Temp. 103·7°; resp. 36; pulse 112.

February 25th.—A well-marked diphtheritic membrane on fauces. The fever went through its usual course.

March 7th.—Diphtheritic membrane gone from fauces.

He was discharged on April 9th.

Note.—While this patient was in the ward, Case 22 occurred.

Case 17. *Diphtheria of fauces; pyæmia; amputation of arm after injury.*—Geo. F—, æt. 13, admitted January 19th, 1867, Mr. Birkett, Lazarus.

History.—Compound fracture of arm, caused by a dray passing over it.

24th.—Amputation.

27th.—Sore throat; no appetite; fever.

He died on February 6th.

Post mortem.—Abscesses in brain and lungs. Larynx healthy. There was a thick white pellicle over fauces extending down œsophagus nearly to stomach, and there ending in a soft mucus. There was incipient suppuration in calyx of kidney.

Case 18. *Contracted kidney; gout; hypertrophy of heart.*—John J—, æt. 38, admitted December 9th, 1874, Dr. Fagge, Stephen. Died February 11th, 1875.

Post mortem.—Epiglottis œdematous, mucous membrane of pharynx near it inflamed and covered with a thin layer of lymph. Kidneys small.

Case 19. *Bright's disease; croupous inflammation of fauces; softening yellow tubercle in liver and spleen.*—Margaret H—, æt. 16, admitted January 7th, 1874, Dr. Pavy, Clinical. Died February 16th.

February 9th.—Croupy breathing; purulent discharge at back of pharynx.

11th.—Hæmorrhage from mouth; membrane coughed up.

Post mortem.—Very slight œdema of aryteno-epiglottidean folds, not sufficient to cause any obstruction. Soft palate had a large membrane upon it, which stripped, leaving the surface beneath normal.

Case 20. *Lymphoma of lymphatic glands, mediastinal tissue, pleura, liver, kidney, epididymis; hypertrophy of spleen, œdema glottidis, &c.*—Thomas S—, æt. 12, Dr. Taylor, Clinical, admitted June 25th, 1873.

July 8th.—Tonsils hard, enlarged, and painful.

28th.—Dyspnœa.

August 1st.—Died as if choked.

Post mortem.—Pharynx inflamed and covered with portions of ashy-grey membrane, diphtheritic in character; no noticeable enlargement of structure of tonsils. Entrance into larynx of a reddish-purple colour and much swollen. Kidneys somewhat mottled, but apparently healthy.[1]

Case 21. *Dysentery; peritonitis; diphtheria.*—Emily A—, æt. 34, Dr. Moxon, Clinical, admitted July 3rd, 1872.

[1] This case is published in detail in the 'Path. Trans.,' vol. xxv, p. 246.

On admission pharynx and fauces covered with flakes of false membrane.

Post mortem.—On either side of larynx a mass of greyish substance, apparently diphtheritic membrane (there had recently been a fatal case of diphtheria in the ward, and another patient had caught the disease and recovered). If this was diphtheritic membrane it was remarkably loose, and the mucous membrane beneath must have completely recovered itself; in one part the membrane was adherent. Palate and larynx were quite healthy. Kidneys healthy.

CASE 22. *Diphtheria caught in the hospital.*—Wm. B—, æt. 45, Kennington, Clinical, Dr. Moxon, admitted March 18th, 1876.

18th.—Fell into a tub of water just previous to admission. When admitted he was stone cold, and partially insensible.

27th.—Complains of his throat having been sore since last night. There is a patch of greyish-white membrane above the uvula; there is also a small patch on the left tonsil. Urine pale, no albumen, sp. gr. 1018. He fancied he caught cold last night; had a shivering fit.

28th.—Membrane has not increased. There is much more glandular enlargement on left than on right side.

29th.—Patient this morning has a good deal of erysipelas about the face. Left eye quite closed. Throat much better.

April 1st.—White patches seen on left tonsil, which leave a bleeding surface when scraped off. Temp. 102·2°; pulse 86; resp. 32.

The patient gradually recovered. No albumen in urine at any time. He left the hospital on April 9th.

NOTE.—The patient whose case forms Case 16 was in the same ward during the whole of W. B—'s stay there.

Section 2. Cases of diphtheria in which the air-passages were involved, the fauces being at the same time affected to a marked extent.

CASE 23. *Diphtheria; plastic inflammation of pharynx, larynx, and trachea; bronchitis; collapse of lung.*—Martha

H—, æt. 5, Dr. Fagge, Clinical, admitted August 13th, 1876, died August 18th. The child had been ill a week with febrile symptoms and catarrh. When admitted spots were seen on tonsils and pharynx; she suffered from extreme dyspnœa; the urine was albuminous. Tracheotomy was performed, relief was very great, and it seemed probable on the 16th and 17th that the child would do well. It was afterwards learnt that the child had been in a house where another had died of diphtheria.

Post mortem.—The posterior wall of pharynx was most extensively covered with a whitish-grey, pearly, nearly adherent layer of granular membrane. This could not be picked off with the edge of the knife. The posterior angle of the nasal septum seemed also to be covered with a similar membrane. Larynx lined with false membrane in its whole length; this over the epiglottis was firmly adherent; towards the vocal cords it could just be scraped off with a knife; it left the mucous membrane rough. Below the vocal cords it had completely detached itself. There were some loose pieces of lymph in the larger bronchi. Mediastinal glands not distinctly swollen.

Note.—To this case, Case 10 seemed clearly traceable.

Case 24. *Diphtheria affecting pharynx and larynx.*—Harriet J—, æt. 2½, Wandsworth Road, London; Clinical, Dr. Fagge. Admitted August 8th, 1876. Was taken ill on Thursday with slight spasmodic cough; was worse during the night; suffocating spasms came on every few minutes, accompanied with slight hooping. There had been no diphtheria or hooping-cough about the place. On admission, throat cannot be seen; child has spasmodic coughing every few minutes. Pulse 120; temp. 100·4°. At apices of both lungs mucous crepitant râles.

9th.—Is much worse this morning; urgent dyspnœa. Temp. 101·1°; pulse 140. 12.20 p.m.—Tracheotomy performed; child died ten minutes after.

Post mortem.—Membrane found in larynx and pharynx. Lungs collapsed.

Case 25. *Diphtheritic laryngitis.*—Elizabeth B—, æt. 1¾, admitted August 30th, 1875, Dr. Taylor, Addison. Had hooping-cough; ricketty. Fourteen days previous to admission had

cold and croupy cough. Ten days before admission one of her sisters died of diphtheria. When admitted had no laryngeal symptoms at all.

September 2nd, 2 a.m.—Woke up with a bad cough. When examined at 4 p.m. there were patches of whitish membrane on the soft palate between uvula and tonsil; dyspnœa marked; cough croupy. Tracheotomy performed at 10 p.m.

3rd.—Temp. 102·8°; resp. 60; pulse 180. Temperature continued high. Slight trace of albumen. Died September 4th.

Post mortem.—Cervical glands enlarged at angle of jaw. Membrane firm and tenacious in small bronchial tubes. Small ulcerations on uvula and free edge of soft palate. No membrane here or in pharynx. Ulceration on epiglottis, which was inflamed, red, œdematous. Trachea was covered with creamy material; on removing this the mucous membrane appeared; it was absent below. At bifurcation of trachea there was a distinct membrane, which extended far into bronchi.

Case 26. *Diphtheria of pharynx and larynx.*—Sarah C—, æt. 24, Long Lane, Clinical, Dr. Taylor, admitted September 15th, 1873. Ten days before admission had sore throat, attributed to getting wet through. There were no cases of sore throat in her neighbourhood. Has had rigors.

On admission great dyspnœa, and blueness of face and hands. Temp. 102·4°; pulse 154. The tonsils and uvula were very red, covered irregularly by white, loose, milky-looking secretion. A shred adherent to uvula was dirty white, firm, thick, and more closely resembled diphtheritic membrane than the material on the tonsils. With the laryngoscope the epiglottis and aperture of the larynx were seen to be bright red, velvety, not very œdematous, with the same secretion as on the tonsils. The glands at the angle of the jaw were not swollen. The front of the neck below the jaw was swollen, rather tense, the œdema reaching down over the sternal notch on to the chest. Urine albuminous.

16th.—Tracheotomy was performed.

17th.—Died.

No post-mortem examination was allowed.

Case 27. *Diphtheria of palate, larynx, trachea, and sto-*

mach ; pneumonia.—Rosaline P—, æt. 4½, admitted July 16th, 1872, Dr. Pye-Smith, Clinical.

On admission, has recently had measles and scarlatina. Taken ill on 14th with headache, coryza, cough; said to have had the cough more or less since birth; breathing rapid; patches of ulceration on tonsils. Temp. 101·2°; pulse 130; resp. 30. 10.30 p.m., tracheotomy.

19th.—Albumen in urine.

Death occurred on the 20th.

Post mortem.—Soft palate covered with ashy-grey lymph; some separable without much difficulty. In right tonsil a cavity, would have held a pea, lined with lymph; margin rounded; appeared old. Base of tongue and entrance of larynx similarly affected; disease did not extend into œsophagus beyond just the entrance of larynx. Whole larynx was affected, being lined with the same grey rugged lymph. On left side, below vocal cord, was a small excavated ulcer. Trachea presented lymph in slight degree. Bronchial glands swollen and enlarged. Part of œsophagus was healthy. In the stomach, within a radius of two and a half inches from cardia, there was a number of small ulcers, some with a thin membrane on them similar to that in throat. Kidneys healthy, but congested.

Note.—From this case the disease spread to another patient (see Case 8).

Case 28. *Diphtheria.*—Annie G—, æt. 4, Dr. Habershon, Esther, admitted September 3rd, died September 4th, 1867. One of four children attacked with diphtheria, all of whom died. No further history was taken.

Post mortem.—Cervical glands enlarged. A thick false membrane, easily separable, extended down larynx and trachea. There was nothing like organic union between it and mucous membrane; mucous membrane rough; false membrane on fauces, both surfaces of soft palate, and pharynx. It could not be thought that the membrane had extended from pharynx to larynx, as the mucous membrane of the former was nearly all clear. Kidneys congested.

Case 29. *Diphtheria of pharynx and larynx.*—Richard

R—, æt. 39, Dr. Gull, John, admitted March 22nd, 1862. Was taken ill two days before admission. Had lost two children with diphtheria. (Coachman to Mr. Duke, of Kennington.)

On admission, membrane on pharynx. Urine albuminous; casts.

Post mortem.—Pharynx, back of tongue, nostrils, and larynx had been affected. All these surfaces were excoriated, and exuded a purulent mucus. Tonsils enlarged, soft, sloughy; on part of soft palate a thin membrane. Walls of pharynx thickened by inflammatory exudation. Muscle appeared red and swollen. The epiglottis and glottis were swollen, and presented raw surfaces in parts. Air-passages showed more or less plastic inflammation throughout. On vocal cords and in trachea were small pieces of membrane with purulent material. The pus extended into small tubes. Lungs congested, spotted as if apoplectic. In left lung patches of hepatisation, surrounded by hæmorrhage. Kidneys congested. Under the microscope they were seen to be acutely inflamed, the tubules being filled with dark albuminous products.

Case 30. *Diphtheria of pharynx and larynx.*—Josephine B—, æt. 16 months, Clinical, Dr. Pye-Smith, admitted May 20th, 1874, and died the following day.

On admission, great dyspnœa. Over the soft palate and uvula can be seen a pale yellow membrane. Child was placed in a tent and Vin. Ipecac. given to vomiting. Tracheotomy was performed, and the child obtained relief. Temp. 103·8°; pulse 190; resp. 44.

Post mortem.—Epiglottis thickened, injected, with a thin layer of lymph on it. Larynx and trachea full of brownish pus. On washing this a thin layer of membrane remained, which was easily detached. Mucous membrane of fauces, tonsil, uvula, &c., was all of a yellowish hue, not from distinct exudation, but from thickened and changed epithelium. Kidneys healthy.

Case 31. *Diphtheria of pharynx and larynx.*—Charlotte R. B—, æt. 2 years 4 months, Dockhead, Miriam, Dr. Wilks, admitted November 21st, 1873. Six days ago became hoarse, then had dyspnœa and cough.

On admission, temp. 100·8°; pulse 150; resp. 44. In the afternoon tracheotomy was performed. Evening temp. 104·8°; pulse 180; resp. 66.

November 22nd.—Died at 2 a.m.

Post mortem.—Complete layer of lymph on right tonsil; could easily be separated, leaving the surface entire; another patch on the lateral and posterior walls of pharynx. The whole larynx was stuffed full of lymph, closely adherent to vocal cords; whole trachea was lined with lymph, easily removable; mucous membrane was congested. Bronchial glands large, soft, and swollen. Kidneys healthy.

Case 32. *Diphtheria affecting larynx.*—Ellen J—, æt. 10½, admitted December 18th, 1860, died 20th, Dr. Rees, Miriam. Spots on skin, hæmorrhage from bladder and bowels. Throat affected. Died suddenly. Had been ill ten days. Three other children in the same house had died with similar symptoms. Scarlatina in neighbourhood.

Post mortem.—Pharynx sloughing. One tonsil enlarged from effusion of blood in substance. The same condition affected upper part of larynx and vocal cords. Both sides of epiglottis and vocal cords covered with lymph; below healthy. Lungs healthy. Kidneys healthy. Ecchymoses in various organs.

Case 33. *Diphtheria of tonsils and respiratory passages.*—Emily R—, æt. 5½, admitted October 19th, 1873, Miriam, Dr. Habershon.

Previous history.—Is an only child, had wheezing come on two days ago; no history of playmates having croup.

On admission, has difficulty of breathing. Temp. 99·8°; pulse 160; resp. 66. There is a white patch on the right tonsil. At 10·30 p.m. tracheotomy was performed. There was relief to the breathing.

23rd.—Died.

Post mortem.—Larynx lined with inflammatory products from epiglottis downwards, membrane separable very easily. There were thick masses of the same material on the whole laryngeal surface of the wound. Membrane extended into both bronchi. There were a few small patches of lymph on

pharynx and right tonsil, separable with less ease than from the larynx.

Case 34. *Diphtheria of fauces and larynx.*—Thomas F—, æt. $2\frac{1}{4}$, admitted June 2nd, 1869, Dr. Moxon, Clinical. Died the same day. Ailing four or five days; brought in a dying state; tracheotomy.

Post mortem.—False membrane from posterior nares down the back of soft palate, round uvula, in fauces, on tonsils, down as low as cricoid, and no lower, then over epiglottis to larynx, where it filled up the passage to larynx, then down the trachea, as low as bifurcation. It was easily removed in trachea, with difficulty in larynx; on fauces it stuck so tightly that it could not be got off without injury to surface.

Case 35. *Diphtheria of fauces and larynx.*—Amelia Mc—, æt. 4, Petersham, Dr. Pavy, admitted October 18th, 1872.

Previous history.—Two days ago mother noticed that it was in a fever, with some perspiration and great difficulty in breathing.

On admission, there is a loud wheezing, with both expiration and inspiration, and a clear ringing cough, with loud crowing inspiration. There is a yellowish-white membrane at back of fauces. Temp. 102°; pulse 150; resp. 50. At 1.30 tracheotomy was performed, to the immediate relief of the child.

19th.—Temp. 105°; pulse 116; resp. 36. Evening temp. 102·9°; pulse 152; resp. 30.

20th, 11 a.m.—Temp. 100·8°; pulse 136; resp. 32. Each time the canula is withdrawn there is a deposit of lymph on it, which when washed away with water forms a distinct cast of the tube.

22nd.—Spits up blood and mucus, with a few shreds of membrane. 11 a.m., temp. 103°; pulse 100; resp. 32. 9 p.m., temp. 100·7°; pulse 152; resp. 40.

26th.—Fits of coughing come on every half hour, they are very slight, and hardly disturb the child. There is a small patch of membrane on the left tonsil.

30th.—Tracheotomy tube was removed.

November 20th.—Patient left well.

CASE 36. *Diphtheria of tonsils and larynx.*—Emily F—, æt. $2\frac{1}{2}$, admitted November 14th, died December 17th, 1872, Dr. Habershon, Miriam. A month ago swallowed with difficulty.

Tracheotomy. Resp. 32; temp. 101·3°; pulse 140. No albuminuria.

Post mortem.—Entrance of larynx swollen, patches of lymph in larynx and tonsils. Kidneys healthy, congested.

CASE 37. *Diphtheria.*—James M—, æt. 3, Mary, Dr. Wilks, admitted July 21st, 1869.

Previous history.—On July 18th his mother noticed that he was continually dribbling, and thought it was his teeth. On the 19th his skin was hot, and he had a croupy cough.

On admission, there is great dyspnœa. There is some exudation on and behind the right tonsil and uvula. Has a cough. Temp. 100·8°; pulse 120; resp. 32.

21st.—Passes his water under him.

22nd.—Tracheotomy performed.

24th.—Died.

CASE 38. *Diphtheria of palate and larynx.*—Richard H. B—, æt. $2\frac{3}{4}$, Dr. Moxon, Clinical, admitted July 7th, 1876. Dyspnœa. Tracheotomy.

Post mortem.—False membrane in fauces, soft palate, tonsils, larynx, trachea, and bronchi, could be drawn out easily in casts from bronchi and their divisions, and was not adherent to mucous membrane. Cervical glands enlarged. Kidneys congested; excess of epithelium in tubes.

CASE 39. *Diphtheria of pharynx and larynx.*—Sarah C—, æt. 18, admitted April 14th, 1865, died 15th, Dr. Rees, Esther.

Post mortem.—Body that of a stout young woman. Soft palate, tonsils, pharynx, covered with patches of false membrane, which gave a fœtid odour. The epiglottis, larynx, and trachea were covered with a firmly adherent continuous layer of lymph. Lungs congested, surface ecchymosed, lobular pneumonia.

CASE 40. *Diphtheria of pharynx and larynx.*—Wm. W—,

æt. 6, Dr. Gull, John, admitted March 19th, 1864, died 20th. Tracheotomy on admission; lived several hours.

Post mortem.—Tonsils swollen; from lower parts of tonsils membrane continuous to epiglottis. Membrane on both aspects of epiglottis and in larynx and trachea. Lungs congested, a little lobular pneumonia.

CASE 41. *Diphtheria of pharynx and larynx.*—Joseph M—, æt. 4½, Dr. Rees, Esther, admitted April 14th, 1863, died April 15th. Had symptoms of sore throat and croup for a week.

Post mortem.—False membrane firmly adherent on tonsils and soft palate; mucous membrane congested. There was a layer of false membrane on epiglottis, larynx, vocal cords, and trachea; this was easily separable; mucous membrane was pale beneath. Lungs: purulent fluid in bronchi; caseous mass, size of a marble, in lower lobe of lung; no tubercle.

CASE 42. *Diphtheria.*—Wm. M—, æt. 29, Petersham, Mr. Birkett, admitted August 7th, 1861, died August 8th.

Post mortem.—Tonsils enlarged, covered with false membrane as thick as a shilling, very fœtid ulcers around. Membrane extended down larynx into trachea and bronchi, and was lost in purulent mucus. Lungs congested. Kidneys of a deep colour.

CASE 43. *Diphtheria, with scarlatina, pyæmia, albuminuria.*—Emma N—, æt. 26, Dr. Pavy, Miriam, admitted February 28th, died March 1st, 1872.

Post mortem.—Larynx œdematous, surface covered with diphtheritic kind of membrane; two ulcers; fauces purple, injected, diphtheritic; kidneys congested.

CASE 44. *Cystic carcinoma of ovaries. Plastic laryngitis and pharyngitis, caught in the hospital.*—Jane C—, æt. 41, Dr. Pavy, Addison, admitted November 6th, 1873, died January 26th, 1874.

Post mortem.—Thick membrane on epiglottis; extended from pharynx through larynx and trachea into smaller bronchi. Mediastinal glands enlarged. Kidneys healthy.

Case 45. *Diseased spine. Diphtheria, caught in the hospital.*—George S—, æt. 16, Mr. Cock, Naaman, admitted March 21st, died April 10th, 1862. Abscess in back, which was opened. Died from diphtheria.

Post mortem.—Double psoas abscess. Palate, pharynx, and exterior of glottis were covered by a false membrane, which on removal left a red surface. Glottis and epiglottis were swollen; membrane was continuous over them from throat; membrane extended as far as vocal cords. Trachea, bronchi, and lungs healthy.

Case 46. *Diphtheria of pharynx and larynx, caught in the hospital.*—Clara H—, æt. 14, Dr. Moxon, Bright, admitted October 18th, 1874. In Dorcas some months previously for talipes equinus.

History.—Her throat became sore a few days before she was transferred. There had been a similar but less severe case in the ward (Dorcas) just before. When admitted into Bright, her throat was swollen and tender; she could swallow liquids only. Throat presented a sloughy, greyish-looking membrane, which could be peeled off, leaving a raw bleeding surface. This was formed again during the night, more dense than before; she then coughed up a tubular cast of membrane. Urine 1022; large quantity of albumen. Temp. 100·4°.

October 23rd.—Died exhausted.

Post mortem.—Epiglottis injected; epiglottic folds injected and œdematous; laryngeal surface of epiglottis healthy. Vocal cords injected and ragged from ulcerations on both sides. The laryngeal aspect of thyroid had two small, symmetrically placed, thin flakes of membrane; and a rough velvety state of trachea without any membrane extended to bifurcation. Soft palate injected and swollen; tonsils large; no disease nor membrane.

Case 47. *Diphtheria of pharynx and larynx, caught in the hospital.*—Henry H—, æt. 42, Mr. Cock, Accident. Admitted August 10th, 1864, for compound fracture of leg. Amputation was performed; stump healed; patient remained in a feeble condition. A few days before death became very ill; cause was not very apparent till he was found to have a

diphtheritic throat. He made no complaint, but rapidly sank, and died November 26th.

Post mortem. — Palate, tonsils, and pharynx, down to œsophagus, covered by false membrane. The glottis was quite closed by œdema. A membrane began below vocal cords and continued down trachea into bronchi; it formed a complete lining to air-passages, and was not continuous with membrane in pharynx. A large abscess in left thigh; os femoris laid bare. Lungs congested. Commencing lardaceous change in liver and spleen. Kidneys in first stage of nephritis. Urine in bladder highly albuminous.

Section 3. *Cases in which the air-passages were mainly attacked, the fauces being affected in a very slight degree only, if at all.*

Case 48. *Diphtheria; tracheotomy; artificial respiration; death.*—Clara H—, æt. 18 months, Bermondsey, Clinical, Dr. Taylor, admitted September 1st, 1876. Child has not been well for several days, difficulty of breathing came on the day before admission. It did not begin with sore throat. No history of contagion. 4.15. p.m.—Much dyspnœa, with sinking-in of chest; white patches on tonsils, tongue, and labia minora. 5 p.m.—Dyspnœa increased; cough croupy. 5.30 p.m.—Tracheotomy, death.

Post mortem.—Membrane on larynx. Membranes with superficial ulceration on labia minora.

Case 49. *Diphtheria of tonsils and larynx.*—Eliz. D—, æt. 12 months, Avenue Road, Camberwell, Dr. Pavy, Miriam, admitted January 9th, 1875.

Previous history.—Three days ago was taken with cold and violent cough. Yesterday had great dyspnœa.

On admission, tonsils are enlarged; tongue red; no lymph on palate; tracheotomy performed.

January 10th.—Temp. 102·4°; pulse 160; resp. 56.

11th.—Resp. 76; has had convulsions. Died at 5.30.

Post mortem.—The tracheotomy wound was ash-coloured; surface was coated with a granular layer; recent pleurisy. The

epiglottis was covered on both its surfaces with a soft layer of yellowish false membrane. Isolated patches of the same existed upon the tonsils, also present on the whole interior of larynx down to tracheotomy wound, and to an inch below; here it presented an irregular mass which greatly obstructed the channel, terminating below abruptly. Rest of passages normal. Bronchial glands inflamed. Kidneys healthy to eye, epithelium granular under microscope.

Case 50. *Diphtheria of trachea, spreading to tracheotomy wound.* — Mary R—, æt 4¼, Borough, Southwark, Clinical, Dr. Moxon, admitted March 5th, 1875.

Previous history.—No other cases of croup in family. Fourteen days ago caught cold and had hoarseness. Last night dyspnœa came on.

On admission at 1 p.m., walked into the ward. At 4 p.m. breathing became more difficult and noisy, there was more lividity of face. Tracheotomy was performed and the breathing became free. 7 p.m.—Temp. 101·8°; pulse 160.

March 6th.—Temp. 100·8°; pulse 140; resp. 32. On removing the tube a plug of membrane was expectorated.

7th.—Temp. 102·8°; pulse 192; resp. 28. Again expectorated membrane.

8th.—Morning temp. 102·1°; pulse 164; resp. 56. Evening temp. 103·4°; pulse 160; resp. 39. Masses of membrane and mucus were expectorated.

9th.—Temp. 102·4°; pulse 142; resp. 44. Around the opening in the trachea there is a kind of diphtheritic membrane, and the skin for some distance is of a bright red colour.

10th.—Died at 10 a.m.

Post mortem.—Whole tracheal surface was covered with yellow slime, which came off in shreds and flakes. Mucous membrane was very rough, vascular, and had minute ecchymoses. Rings against which tracheotomy tube had rested were exposed by ulceration of the mucous membrane. No membrane could be found in any part save the trachea.

Case 51. *? Diphtheria, affecting epiglottis chiefly.*—Thomas A—, æt. 1½, admitted April 22nd, 1871, Dr. Pavy, Miriam. A week ago had fever and sore throat.

22nd.—Great dyspnœa. Pulse 128; resp. 40; temp. 102·4°.

23rd.—Tracheotomy and death.

Post mortem.—A few patches of lymph on laryngeal surface of epiglottis. Mucous membrane of larynx, trachea, and bronchi swollen. In right tonsil small extravasations of blood, no membrane.

Case 52. *? Diphtheria, affecting larynx and tonsil.*—Thomas K—, æt. 3, admitted September 9th, 1874, Clinical, Dr. Taylor.

Present illness.—Last night was taken with a croupy cough.

On admission, occasionally has loud crowing inspiration and cough. Was placed in a tent, and Vin. Ipecac. was given till vomiting was produced. Temp. 100·4°; pulse 120; resp. 36.

September 10th.—There is a white patch on left tonsil. 8 p.m.—Tracheotomy was performed; obtained some relief.

12th.—Temp. 99·9°; pulse 144; resp. 38. Urine sp. gr. 1030, albumen one sixth.

The tube was removed about the 20th. The wound closed shortly afterwards, and the child was discharged cured on October 31st.[1]

Case 53. *? Diphtheria, affecting the larynx, and slightly the tonsils.*—Alice D—, æt. 3½, Clinical, Dr. Owen Rees, admitted October 18th, 1872.

Previous history.—A week ago got wet and caught cold, complained of pain in the face and coughed. Two days ago would not take her food, and breathed with difficulty; at times the dyspnœa was most severe.

On admission, at 1 p.m., dyspnœa was so urgent that tracheotomy had to be performed. Pulse 132; temp. 100·4°; resp. 44.

Died on the 20th.

Post mortem.—False membrane in larynx, adherent to vocal cords; in parts could scarcely be stripped off. Tonsils swollen; patches of lymph about them.

[1] This case has been recorded in the volume of these Reports for 1875 p. 513.

CASE 54. *? Diphtheria, affecting the larynx, and slightly the pharynx.*—James D—, æt. 2, admitted September 18th, died September 19th, 1872, Dr. Fagge, Clinical.

Child died while tracheotomy was being performed.

Post mortem.—The laryngeal aspect of the epiglottis was covered with whitish membrane, tough, and with difficulty detached. This extended down the larynx and trachea. Mucous membrane injected. Tonsils both rather worm-eaten-looking and ulcerated; ulcers had thick indurated bands, did not look recent. There was a slight membrane over posterior aspect of pharynx and about tonsils.

CASE 55. *? Diphtheria, affecting the air-passages and slightly the tonsil.*—Alfred F—, æt. 4¾, admitted July 10th, 1871, dying, Dr. Fagge, Clinical. Has been ailing since 3rd of July.

On 8th had difficulty of breathing.

10th.—Tracheotomy; lived ten hours.

Post mortem.—A thick, tough, false membrane from entrance of larynx down to bronchi; separated readily; no pus. Mucous membrane pink-red; a small patch of membrane on tonsil.

CASE 56. *Diphtheria, affecting larynx and slightly the tonsil.*—Henry W. B—, æt. 7, Miriam, Dr. Owen Rees, admitted October 21st, 1867. Tracheotomy was performed on the morning of admission. 5 p.m.—Pulse 160; resp. 36.

October 22nd.—Has had several attacks of dyspnœa this morning. Several pieces of false membrane have come away through the tube.

23rd.—Another large piece of membrane came away in the form of a tube. Pulse 150; resp. 40. Died at 10 p.m.

Post mortem.—On tonsil false membrane not removable without abrasion; membrane in larynx, trachea, and bronchi easily separable. Cervical glands enlarged.

CASE 57. *? Diphtheria, affecting the larynx chiefly.*—James C—, æt. 5, Clinical, Dr. Taylor, admitted August 28th, 1874, died the same day.

Previous history.—Parents have two other children who are healthy; neither has suffered from croup. Patient has had cough for five days; this increased in severity yesterday.

On admission, has cough, suffers from dyspnœa, breathing is stridulous. Tonsils are enlarged, and have a grey layer of exudation on their inner surfaces; glands in neck enlarged. Temp. 102°; pulse 160; resp. 28. Tracheotomy was performed during the afternoon.

Note by Dr. Taylor.—"The tonsils when I saw them had not the appearance usual in diphtheria; they were large, firm looking; neither so pale as in mere chronic enlargement, nor so red as in acute inflammation. They appeared to be old enlarged tonsils, slightly inflamed; there was no exudation or membrane on them."

Post mortem.—Tonsils enlarged, left contained a little pus. Upper part of larynx filled with a detached mass of membrane, extending down to true cords; not below. It might have been easily removed. A little blood clot below tracheotomy wound. No inflammation of lungs.

CLASS II. CASES OF MEMBRANOUS LARYNGITIS OF DOUBTFUL ORIGIN AS REGARDS DIPHTHERIA, BUT NOT DIRECTLY CAUSED BY LOCAL INJURY TO THE THROAT, NOR SECONDARY TO ANY OTHER DISEASE OF THE LARYNX OR TRACHEA.

CASE 58.—Henry T—, æt. 14 months, Bermondsey, Clinical, Dr. Habershon, admitted October 28th, 1875.

Previous history.—Got wet through two weeks ago; has had a cough since; ran about till 27th. Two nights ago became worse, with rattling in throat; mother thought he would choke. At 4.30 yesterday afternoon began to suffer from intense dyspnœa, and was brought to the hospital. No false membrane could be discovered on the fauces; tracheotomy was performed.

October 28th.—Temp. 103°. 9 p.m.—Temp. 103·5°; pulse 180; resp. 62. 12 p.m.—Temp. 106°.

29th.—The child is lying apparently easier. No blueness of face, but natural aspect. Temp. 102·8°; resp. 72. 2.30 p.m.—Temp. 102·4°; resp. 62; pulse very feeble. 5 p.m.—Child died quietly.

Post mortem.—Bronchial tubes contained pus; mucous membrane over arytenoids and over pharyngeal aspect of

cricoid cartilage injected; that of interior of larynx soft and velvety, and covered with a separable false membrane below the vocal cords for some distance; above the cords there was but little evidence of disease. Trachea very small, narrowed by thickened mucous membrane; could not have admitted a pencil; contained muco-purulent fluid. Wound was three quarters of an inch long, and reached up to cricoid cartilage. No membrane in pharynx.

Case 59.—Richard W—, æt. 16 months, Clinical, Dr. Pye-Smith, admitted June 9th, 1874.

Present illness.—On Friday last, June 5th, some cold water was spilled over him. On the following day he did not breathe as well as usual. On the 7th he had a "barking" cough. As this got worse, and there was dyspnœa, he was brought up on the 9th.

On admission, has a cough. Pulse 160; resp. 30; temp. 100·6°. A warm bath was ordered, and a mixture containing ♏x of antimonial wine.

June 10th.—Tonsils are red and a little swollen; no false membrane visible. There are no enlarged glands in the neck.

In the afternoon there was great dyspnœa; tracheotomy was performed. After this the breathing was easier. 9 p.m.—Temp. 101·3°; pulse 142; resp. 54.

12th.—Died.

Post mortem.—The rima and whole cavity of larynx from epiglottis downwards to two inches below the thyroid was full of a delicate, easily detached membrane; beyond this the trachea and larger bronchi were full of pus. The mucous membrane beneath was minutely injected and thickened and velvety, in a state of acute inflammation. Mediastinal glands fleshy and ecchymosed. Pharynx healthy; no lymph on it. Kidneys healthy.

Case 60.—Eliz. H—, æt. 3, Miriam, Dr. Habershon, admitted November 8th, 1873.

Previous history.—Last night the child slept in a cold, damp room, and after a restless night the mother noticed about 5.30 this morning that her breathing was wheezing and loud, with an occasional brassy cough.

On admission, temp. 102·4°; pulse 152; resp. 52. Has brassy cough; dyspnœa; no albumen in urine. Tracheotomy was performed at 10.30 p.m. The effect of the operation was very good; respiration became easy, the lividity of face disappeared, and the child was soon asleep.

November 14th.—Died.

Post mortem.—Epiglottis normal. Below vocal cords a thin layer of lymph extended as far as the bifurcation of the trachea; this could easily be detached. Organs healthy.

Case 61.—Eliz. D—, æt. 1, Borough, Clinical, Dr. Wilks, January 9th, 1873.

Previous history.—Mother has another child at home who is quite well. Yesterday mother noticed that the child was restless, had catarrh, and difficulty of breathing.

On admission, has cough of a metallic character, paroxysms of dyspnœa, and running from the nose. Temp. 101·1°; pulse 140; resp. 52. 1.40.—Tracheotomy; breathing was relieved.

10th, 11.30 a.m.—Temp. 102·8°; pulse 200; resp. 56. In the afternoon the child coughed up a plug of membrane. There was no albumen in the urine. Died in the afternoon.

Post mortem.—Epiglottis on both sides covered with closely adherent membrane, not continuous, could not be detached without loss of substance; subjacent tissue healthy. In larynx above vocal cords there were some similar patches of membrane, none below; lining membrane of larynx was greatly swollen. Pharynx healthy. Kidneys healthy.

Case 62.—Arthur J. B—, æt. 2, Clinical, Dr. Pavy, admitted March 5th, died March 8th, 1872. Taken ill with croup on day of admission; had great dyspnœa. Tracheotomy; afterwards rallied. Breathing became worse on the evening of 7th.

Post mortem.—Larynx lined as high as the upper edge of epiglottis with distinct membrane, scraped off without difficulty; below the wound this passed into a more purulent-looking and liquid substance; but even this had a membraniform under-surface. It extended along the whole trachea and down each bronchus as low as the second division. When removed

the membrane beneath was deeply injected. All the organs healthy.

Case 63.—Mary P—, æt. 2½, admitted July 24th, 1868, Dr. Habershon, Lydia.

Was in a state of extreme dyspnœa; no inflammation of the lungs. In a dying state, if not actually dead, when tracheotomy was performed, and could not be roused again.

Post mortem.—Cervical glands healthy. The lungs were mottled over with dark purple patches; these being airless lobules, which sank in water. The epiglottis was swollen; the larynx much so, and having a thick fibrinous cast; this could not be separated from the mucous membrane without bringing it away. There was an easily removable false membrane in the trachea on its hinder surface for half its length; below this was bloody mucus in some quantity as far as the bifurcation. The tracheal false membrane was microscopically composed of close-set corpuscles, making a mass compact by reason of the closeness of the packing. When placed in a solution of nitrate of potash and left for two days in a covered test-tube it entirely disappeared. Mouth, pharynx, œsophagus, healthy. Kidneys quite healthy looking.

Case 64.—Ellen C—, æt. 1, Dr. Fagge, Clinical, admitted June 15th, 1868. After having a cough for nine days had been attacked by croup, and treated with emetics; the disease not being arrested and urgent dyspnœa supervening, she was brought to the hospital and tracheotomy was performed. This gave complete relief, until nearly midnight, when a sudden attack of suffocative dyspnœa occurred, and she died.

Post mortem.—Both lungs in an extreme state of atelectasis. Air-cells were only visible in anterior half. Other parts were airless and sank in water. Lungs congested. Larynx: epiglottis thickened and swollen; posterior surface of epiglottis was covered with thin layer of false membrane, anterior free. The glottis was almost completely obstructed by false membrane; this membrane extended one and a quarter inch below the cricoid cartilage. The mucous membrane beneath the false membrane was much swollen. The tracheotomy tube had pushed the false membrane before it and not pierced it;

the false membrane hanging down, and forming a valve, had probably obstructed the orifice of the tube. Mouth, pharynx, and œsophagus were healthy.

Case 65.—Wm. John C—, æt. 5, Dr. Rees, Clinical, admitted October 7th, 1868.

Previous history.—Fourteen days before admission had a cold with slight cough ; this caused no anxiety till three days previous to admission, when the peculiar character of his respiration attracted attention. Medical aid was not called till the day before admission, when he was leeched and had emetics.

On admission, had croupy respiration; dyspnœa, pulse 153. Was able to swallow. Tracheotomy was performed two hours after admission; this relieved the dyspnœa and some pieces of membrane were expectorated. Died on the 9th from asphyxia.

Post mortem.—All the tubes contained prolongation of false membrane. From below larynx through the trachea into bronchi was a tubular croupous membrane, which extended in branches through the bronchi into the smaller tubes. Mouth and pharynx healthy. Kidneys healthy.

Case 66.—Edward H—, æt. 3, Dr. Habershon, Clinical, admitted January 9th, 1868.

Previous history.—For a week or two had slight cough and wheezing, was worse yesterday. On admission very ill; trachea was opened in the evening. Was better in the night and on the following day, but the croupy difficulty returned on the 11th. Died with convulsions.

Post mortem.—Cervical glands slightly enlarged, red, and succulent. *Lungs :* in right many lobules empty of air. Small tubes full of pus even in upper part of lungs, a slight patch of broncho-pneumonia. The large tubes were choked with muco-pus in large masses. In the upper half of trachea there was plastic membrane; this was very thick and tough around the vocal cords and reached one and a half inch above the glottis, ending in an uneven edge. The arytenoid surface, pharynx, and tonsils were quite free. Laryngo-tracheotomy had been performed. Kidneys healthy.

Case 67.—Eliz. B—, æt. 10 months, Dr. Fagge, Miriam, admitted September 22nd, 1867. No report has been preserved.

Post mortem.—False membrane extended from larynx into bronchi; it was firm and closely adherent to mucous membrane. Would tear rather than part from the mucous membrane, which when exposed was red and raw. No membrane elsewhere.

Case 68.—Admitted March 19th, 1865, under Mr. Poland, Charity. Tracheotomy on admission. Died March 21st.

Post mortem.—Throat healthy. Plastic lymph in larynx and trachea, very soft and easily detached, coming off in shreds; also on under surface of epiglottis. Lungs collapsed in part. Kidneys healthy.

Case 69.—James E—, æt. 3, Dr. Barlow, Lydia, admitted July 31st, 1864. Died same day on the operating table.

Post mortem.—Mucous membrane of larynx slightly red, no false membrane. False membrane commenced just above the artificial opening, and extended to near the bifurcation.

Case 70.—William S—, æt. $2\frac{1}{2}$, Dr. Hilton Fagge, Clinical, admitted August 13th, 1876. The child died almost as soon as admitted, and no clinical report was taken.

Post mortem.—There was a very little lymph, in a definite broad patch on each side, just below the vocal cords. None on fauces or trachea. Slight œdema of larynx. Lungs healthy.

Case 71. John C—, æt. $2\frac{1}{2}$, Dr. Gull, Martha, admitted January 4th, 1856, died January 5th.

Post mortem.—Whole of surface of trachea from superior vocal cords to bifurcation of trachea was covered with a tenacious white membrane, which could easily be removed as a tube; mucous membrane beneath congested.

Case 72.—John B—, æt. 4, Mr. Birkett, Martha, admitted May 5th, 1864. Tracheotomy on admission. There was a firm adherent false membrane in larynx, trachea, and bronchi,

Whole of air-passages acutely inflamed. Throat not at all affected. Lungs and spleen healthy.

Case 73.—Sarah Ann H—, æt. 4, Dr. Gull, Lydia, admitted June 16th, 1857. Tracheotomy on admission.

Post mortem.—Throat and external surface of epiglottis healthy. Under surface of epiglottis, larynx, trachea and bronchi, covered with membranes, which adhered in shreds and were with difficulty detached. Posterior part of right lung consolidated in part. Other organs healthy.

Case 74.—Ada M—, æt. 6, Dr. Pavy, Lydia, admitted January 19th, 1858. Five weeks before admission scarlet fever was in the house, and the child had sore throat; no eruption, nor ill enough to keep indoors. Six days ago caught cold, had cough and dyspnœa.

On admission had all symptoms of croup.

On 20th tracheotomy; died suddenly on 23rd.

Post mortem.—Inflammation of whole of air-passages. Under surface of epiglottis, together with larynx, trachea, and bronchi, entirely covered with a firm fibrinous exudation. Membrane was lost in purulent mucus; the membrane was with difficulty detached from epiglottis, but could be removed as a tube lower down. Right upper lobe of lung hepatized. A few tubercles were found; some of the bronchial glands were strumous. All other organs healthy.

Note.—This child's sister, æt. 8, was admitted with croup, December 12th, 1857. Tracheotomy was performed, and she was sent out well on December 17th.

Case 75.—John William W—, æt. 6, Bethnal Green, admitted March 7th, 1871, under Dr. Wilks into Clinical ward.

Previous history.—Is one of eight children, none of whom have suffered from any throat affection. Yesterday complained of feeling poorly, so was kept from school. Child was sick, and breathing became noisy.

On admission had cough, dyspnœa, expectorated flaky membranes. Pulse 140. Urine not albuminous.

8th.—Tracheotomy was performed, and breathing became easier.

10th.—No albumen in urine.

11th.—Child died.

Post mortem.—Tracheal wound just below cricoid and through three rings. False membrane in larynx, trachea, and bronchi. Mucous membrane reddened.

CASE 76.—Harriet D—, æt. 1¾, admitted December 10th, 1869, under Dr. Rees into Lydia, died December 15th. Cough, &c., for a month.

Post mortem.—Acute plastic laryngitis; membrane adherent to vocal cords; membrane brittle, hard, and detached with difficulty; none in the trachea.

CLASS III. CASES OF LARYNGITIS HAVING A CLINICAL RESEMBLANCE TO THOSE OF CROUP, BUT IN WHICH NO FALSE MEMBRANE WAS PROVED TO EXIST.

CASE 77.—Richard P—, æt. 2½, admitted January 28th, 1868, under Dr. Habershon into Miriam ward.

Past history.—Had a cold last week.

The present attack came on at twenty minutes before 2 o'clock this morning. The child suddenly started up in bed and struggled for breath. It was brought to the hospital at 7 p.m., and tracheotomy was immediately performed, the child being nearly asphyxiated; it soon came round. The mother does not know of any diphtheria or other throat affection being in the neighbourhood.

29th.—The child is sleeping. Resp. 48; pulse 120.

30th.—Child died with severe convulsions.

No post-mortem examination seems to have been made.

CASE 78. Alfred E—, æt. 11 months, admitted October 6th, 1869, under Dr. Owen Rees into Miriam ward.

Previous history.—Three weeks ago patient had scarlet fever. Had recovered from it, and seemed quite well by Monday, September 27th. On the 29th the child had a slight cough and difficulty of breathing.

On admission, much distressed. Breathing very rapidly, loud crowing sound accompanying each expiration. Temp.

102° ; pulse 180 ; resp. 52. At noon tracheotomy was performed. During the operation the child vomited freely and appeared much relieved.

7th.—Died. No post-mortem examination seems to have been made.

Case 79.—John C—, æt. 4½, admitted March 9th, 1867, under Dr. Wilks into Clinical ward.

The child had had a cold for some days. On the 7th it was worse, and kept at home. It was admitted with symptoms of laryngeal obstruction. No membrane was seen. Urine not mentioned. Tracheotomy was performed. The child recovered, and was discharged on April 20th.

Case 80.—Chas. S—, æt. 6, admitted July 12th, 1867, under Dr. Moxon into Miriam ward.

Past history.—Has had cold for some days past. Breathing became difficult on the 12th.

On admission, fauces are red; no false membrane to be seen. Pulse 152.

13th.—Tracheotomy was performed.

16th.—No albumen in urine.

August 7th.—Went out well.

Case 81.—Matthew C—, æt. 6, admitted March 17th, 1867, under Dr. Wilks into Miriam.

Previous history.—On March 11th complained of slight sore throat. Has just got over an attack of measles. Since then his breathing has got worse.

On admission, suffers from great dyspnœa, and makes a hoarse noise in larynx. There is no false membrane to be seen. Improved daily. Went out on April 7th.

Case 82.—Daniel C—, æt. 18 months, admitted February 23rd, 1869, under Dr. Owen Rees into Lydia.

Was taken out by parents somewhat relieved.

Case 83.—Daniel S—, æt. 2, admitted April 16th, 1874, under Dr. Taylor into Clinical ward.

Has had cough since April 4th. No history of infection, or of others in the family having the disease. Respiration difficult.

Temp. 99·2° ; pulse 120 ; resp. 44. Gradually improved, and went out on May 1st.

Case 84.—Charles J—, æt. 7 months, admitted March 24th, 1874, under Dr. Moxon into Clinical. Always had cough. Four days previous to admission had croupy cough and dyspnœa; had emetics and poultices.

On admission, croupy cough, great dyspnœa. Child is drowsy. Nasal catarrh. Temp. 100°; pulse 136; resp. 47. Child gradually improved, and went out well on April 14th.

Case 85.—Laura S—, æt. 7, admitted October 23rd, 1874, under Dr. Habershon into Miriam ward. Nineteen days ago she first lost her voice and began to have difficulty in breathing and nasal catarrh. She improved for a time, but became worse three days before her admission. She was then suffering from well-marked symptoms of croup. The temperature was 101°. There was no enlargement of the tonsils, and the fauces appeared normal. About 2 p.m. death from suffocation appeared imminent, and tracheotomy was therefore performed. At 9 p.m. the urine (which seems not to have been tested before) was found to contain albumen. She went on perfectly well. The tracheal tube became from time to time clogged with mucus, but no membranes were at any time observed. The quantity of albumen found in the urine was much less on the 24th than on the previous day, and on the 25th the renal secretion was normal.

She was discharged well on November 24th.[1]

Case 86.—J. M—, æt. 2 years and 2 months, admitted, January 3rd, 1874, under Dr. Pavy, Clinical.

Previous history.—On Christmas Day was taken very ill with wheezing and drowsiness. On the following day she was much worse, and the medical man (Dr. Bonny) said she had diphtheria. Expectoration was mixed with blood.

On admission, child was suffering from dyspnœa, no membrane was found in throat and larynx on examination with the laryngoscope. Urine was free from albumen. Pulse 144. Dyspnœa was so urgent that tracheotomy had to be resorted

[1] This case has already been recorded by Mr. Howse ('Guy's Hosp. Rep.,' xx, p. 510).

to. Just before the operation, temp. 97·8°; pulse 168; resp. 36. In the evening, temp. 101°; pulse 160; resp. 52.

January 4th.—Patient is breathing comfortably. Temp. 102·7°; pulse 184; resp. 52. Patient was in the hospital till February 27th, and was readmitted February 28th, owing to râles being heard in chest.

Went out well March 27th.

Case 87.—William P—, æt. 6, admitted August 26th, 1876, under Dr. Fagge into Clinical. Has been ailing for the last week; two days before admission had croupy voice.

On admission, has croupy voice and slight dyspnœa. No membrane can be seen. Right lung dull at apex. Temp. 100°; resp. 40.

27th, 10 a.m.—As there was great dyspnœa tracheotomy was performed, which was followed by marked relief. 12.30. —Resp. 32; pulse 132. Child is not making any noise in its breathing. Continued to improve daily; tube was removed on September 5th.

Discharged September 25th.

Case 88.—Isabella C—, æt. 15 months, Woolwich, admitted February 21st, 1876, under Dr. Moxon, into Clinical.

Past history.—The child and two others have just recovered from measles. Had a cough through the course of measles.

On admission, has paroxysms of ringing cough. Fauces and soft palate are a little injected; no deposit. Temp. 98°; pulse 150; resp. 38.

22nd.—Temp. 99·1°; pulse 130; resp. 40. Evening, temp. 97·4°; pulse 140; resp. 40. The brassy cough gradually diminished in the frequency of its paroxysms.

March 1st.—Went out.

Class IV. Cases of Membranous Laryngitis, with or without Pharyngitis, directly caused by Local Injury to the Throat or secondary to pre-existing Local Disease.

These may be naturally subdivided into—

1. *Cases due to injury;*
2. *Cases secondary to disease.*

Section 1. *Cases of membranous pharyngitis or laryngitis due to local injury of the throat.*

Case 89. *Scalded throat.*—John K—, æt. 2, admitted March 31st, 1875, into Charity, under Mr. Cooper Foster.

About 8 p.m. on March 30th child drank some boiling water, and an hour afterwards the tongue, palate, and throat, were very much swollen, and the child could not speak. About 11 p.m. suffered from dyspnœa; this got worse by the next morning, when he was admitted.

On admission tracheotomy was performed; breathing was relieved. Pulse 160; resp. 60.

April 3rd.—Spat up some large pieces of membrane and was relieved.

5th.—Tube removed. Wound widely gaping, covered with slough; parts around much inflamed. Pulse 140; temp. 100·8°.

7th.—Pulse 128; temp. 105·2°. Great dyspnœa. Died after a slight convulsion.

Post mortem.—Larynx was healthy down to wound, which formed a very irregular wide opening of ash-grey colour. Below it the trachea for one inch was lined by a thin membrane, not very separable. Where the tube had pressed, one of the tracheal cartilages had ulcerated through.

Note.—The child's mother said that before the accident it had a croupy cough, but one did not know how much value to attach to this statement.

Case 90.—Bernard F—, æt. 12 months, admitted October 13th, 1873, under Dr. Habershon into Clinical.

Past history.—A week ago the baby's brother, a child 2½ years old, put a burning stick in his mouth; this caused a blister at the side of the tongue.

On the 9th and 10th it had epistaxis, on the 12th convulsions. When admitted the baby looked pale and thin; its pupils were dilated. Temp. 106·6°. Pharynx, tonsils, and back of tongue ulcerated and red in parts, at others covered with a white membrane. 4 p.m.—Temp. 105·2°; resp. 60. 9 p.m.—Temp. 104°; resp. 60.

14th.—Breathing hurried, difficult, and wheezing. Throat covered with membrane. Temp. 106°. It died the same day.

Post mortem.—Larynx healthy. The soft palate had two ulcerated openings extending quite through it, the largest would have admitted a crow-quill. The buccal surface of soft palate looked discoloured, and had on it a small quantity of adherent lymph. The openings in soft palate were evidently traumatic. Kidneys healthy.

Case 91. John H—, æt. 3, admitted August 22nd, 1872, under Dr. Pye-Smith, Petersham.

Previous history.—Child had been quite well until the 20th, when he swallowed a piece of hot potato, which lodged in his throat for some time; he afterwards complained of sore throat and of pain at the epigastrium; he was sick and had great difficulty in breathing during the night. There is no diphtheria in the neighbourhood.

On the 21st he was brought to the hospital, but was not admitted.

On 22nd he was taken into the ward.

On admission, breathing is difficult, face flushed. The uvula is much swollen and with the fauces is covered with a white membrane, which cannot be removed. Temp. 102·2°. In the evening tracheotomy was performed.

23rd.—The child is much easier this morning.

24th.—Died of asthenia.

Post mortem.—Tonsils and root of tongue presented flakes of lymph; some was separable, leaving a red mucous membrane; entrance of larynx swollen. Interior was lined with lymph, forming a more or less perfect tube, pushed aside where tracheotomy wound was. Whole trachea was more or less lined with lymph, and intensely injected.

Case 92. *Scald of throat; tracheotomy; death.*—Mary A—, admitted February 18th, 1868, under Mr. Birkett, into Martha.

February 17th.—Drank hot water from a bottle.

On admission child was in a comatose state; tracheotomy was immediately performed. Pulse 190; resp. 64.

20th.—Pulse 170; temp. 101·1°; resp. 38.

21st.—Pulse 168; temp. 101°; resp. 48.

Died on the 22nd.

Post mortem.—Epiglottis and epiglottidean folds œdematous, covered by a thick whitish layer of false membrane, which extended to posterior wall of pharynx. Tracheotomy wound in median line, through upper rings of trachea, below cricoid cartilage. Slough of anterior part of membrane of trachea, where the tube pressed. Kidneys healthy.

Case 93. *Scald of throat; tracheotomy; death.*—Jane H—, æt. $2\frac{1}{4}$, admitted February 12th, 1874, under Mr. Durham, into Dorcas. The child was admitted suffering from a scalded throat. It had a cough previously, said to be whooping-cough.

February 15th.—Cough was first noticed in the hospital to-day. This got rapidly worse, and breathing was impeded.

18th.—Cough was much worse, and noticed to be of a croupy character.

19th.—Breathing became urgent. Tracheotomy was performed.

21st.—Temp. 100·8°; pulse 160. Anterior part of tongue has superficial ulcers on it. Membrane has been seen at the back of the fauces to-day, none anteriorly. The wound looks a little sloughy.

23rd.—Died.

On post-mortem examination membrane was found on the pharynx and larynx, and down as far as the minute branches of the bronchial tubes.

Case 94. *Cut throat; plastic tracheitis and bronchitis.*—Thomas C—, æt. 24, admitted June 9th, 1873, with throat cut, under Mr. Durham, into Accident. Temp. 99·8°; pulse 100.

24th.—Temp. 101·3°.

28th.—Died suddenly at 8 p.m.

Post mortem.—Wound of larynx above upper border of cricoid cartilage. Above this the surface of larynx was healthy; below, it was almost universally covered with an ashy-grey membranous layer, which could with difficulty be got off. Plastic membrane extended down the bronchi to minute tubes on one

side. Lower part of right lung was hepatised. Pharynx healthy. Kidneys healthy.

Case 95. *Inflammation of air-passages from scald.*—Caroline N—, æt. 3, admitted May 17th, 1867, under Mr. Cock into Dorcas, died May 30th. Drank scalding water from a teapot; tracheotomy.

Post mortem.—Plastic lymph in pharynx and larynx, traceable into smallest bronchial tubes; in pharynx it was adherent to mucous membrane.

Case 96. *Inflammation of glottis from boiling water; tracheotomy.*—Wm. C—, æt. 5, admitted January 20th, 1862, under Mr. Birkett into Martha, died 21st. Drank out of a kettle of boiling water on 19th.

Post mortem.—Uvula and soft palate swollen and thickened. Œsophagus unaffected. Glottis and epiglottis swollen; covered with a layer of lymph; a little lymph within glottis. Lungs congested in parts.

Case 97. *Scalded throat; tracheotomy; broncho-pneumonia.*—Caroline D—, æt. 2½, admitted April 12th, 1860, under Mr. Birkett into Esther, died 16th. Four hours before admission drank boiling water from a kettle. When child was brought in breathing had ceased; tracheotomy was performed, and child brought round. Appeared to go on well for two days.

Post mortem.—Glottis swollen, not closed; lymph firmly adherent in patches to the edge, also to epiglottis and parts external. In some places a slight breach of surface or minute ulceration. The under surface of epiglottis was covered with a delicate layer of lymph, and this continued into the bronchial tubes; it formed a distinct membrane, and was easily separated; below, it was lost in muco-purulent fluid. Lungs partly consolidated; bronchial glands enlarged and soft.

Case 98. *Bean in the bronchus; tracheotomy.*—Geo. K—, æt. 3, admitted May 6th, 1859, under Mr. Forster into Charity. On 5th child had a bean in its mouth, which entered trachea. No urgent symptom till following morning, when he was brought with severe dyspnœa and lividity; no air entered right lung. Tracheotomy was performed and child shaken. Died three days after accident.

Post mortem.—Right lung collapsed, air-passages acutely inflamed, glottis swollen, and larynx and trachea covered with a membranous lymph, as in croup, but to less extent, and below this mucus. Bean swollen and impacted in right bronchus.

Case 99.—*Scalded throat; tracheotomy.*—John C—, æt. 1½, admitted May 2nd, 1858, under Mr. Bryant into Esther. Drank boiling water from a kettle on May 1st. Difficulty of breathing came on the following morning Tracheotomy performed. Died May 6th.

Post mortem.—Tongue was slightly excoriated; glottis and epiglottis swollen from exudation; opening in trachea was below cricoid cartilage; whole of air-tubes inflamed and filled with secretion; that of trachea could be taken off in films.

Section 2. Cases of membranous pharyngitis or laryngitis secondary to pre-existing disease of the air-passages or of the lungs.

Case 100.—*Membranous laryngitis secondary to tubercular ulceration of larynx.*—Arthur N—, æt. 30, admitted under Dr. Wilks into Stephen ward, March 11th, 1874; he died on April 5th.

On post-mortem examination, which was made by Dr. Goodhart, the larynx was found ulcerated at the back of the vocal cords. The epiglottis was covered with yellow lymph on its laryngeal surface. The trachea and bronchi were healthy; the lungs were affected with acute tubercular phthisis.

Case 101.—*Membranous laryngitis secondary to cancer of the pharynx.*—Charlotte W—, æt. 32, admitted into Esther ward, under Mr. Cock, February 7th, 1856, died March 6th. She had some difficulty of swallowing for a few days before death.

Post mortem.—The larynx and trachea were acutely inflamed, being lined with a complete layer of lymph as in croup; this was thin and closely adherent; it ceased at the bifurcation.

Case 102.—*Membranous laryngitis apparently secondary to tracheotomy for syphilitic disease of the larynx.*—Charles H—, æt. 32, admitted into Lazarus ward, under Mr. Birkett, on September 17th, 1856; he had frequent attacks of difficulty of breathing, and on the 29th tracheotomy was performed. He seemed relieved, but bronchitis came on and he died on October 4th.

Dr. Wilks made a post-mortem examination, when, besides chronic syphilitic disease of the larynx and right bronchus, the whole of the air-passages below the tracheotomy wound were found to be acutely inflamed. They were covered with mucus, and when this was washed away a coating of lymph was seen, adherent to the mucous membrane. The inflammation seems to have been most intense round the opening in the trachea, where the mucous membrane showed numerous minute points of pus.

Case 103. *Membranous laryngitis, associated with acute pneumonia.*—Isaac J—, æt. 42, admitted into Philip ward, under Dr. Rees, on May 17th, 1860, and died the next day.

Dr. Wilks made a post-mortem examination and found that the right lung was almost universally in a state of purulent infiltration; the tubes in it were filled with lymph. The larynx was deeply injected and lined with secretion, and showed small patches of lymph here and there. The pharynx also was of a dark colour, from extensive congestion. At the upper part of the œsophagus also there was a white patch, but this had probably been caused by a piece of caustic, which had fallen off while the man's throat was being touched with nitrate of silver.

Case 104. *Acute membranous inflammation of the air-passages, consecutive to chronic pneumonia.*—Eliza J—, æt. 32, admitted into Miriam ward, under Dr. Fagge, on April 4th, 1867.

She said that on March 25th she went into a shop to purchase something, but found that she could not speak. Next day she was ill, and on the day after that she took to her bed. She never recovered her voice.

On admission, her temperature was 101°. She had dys-

pnœa, loss of voice, and pain in swallowing and when pressure was made on the larynx. Tracheotomy was performed at 6 a.m. She was much relieved by the operation, but afterwards gradually sank and died at 6 a.m. on the 6th.

Post-mortem examination by Dr. Moxon.—There was recent pleurisy. The lower lobe of the right lung was consolidated and shrunken by interstitial pneumonia of old date. The tubes there were completely filled to their minutest ramifications by nearly solid plugs of fibrin, with only very small channels in their centres. From these tubes up through the right bronchus to the entrance of the larynx there was a continuous false membrane, which was tubular in the upper part of the air-passages and about one sixteenth of an inch in thickness. Just below the arytenoid aperture it became very thick, and at the rima glottidis there was no passage at all. The membranous cast tore vertically to the surface; it was made up of fibrils like those of blood-fibrin; there were few corpuscles in it.

The pharynx was healthy.

Imperfect as these records are, they at least enable us to form some judgment as to the extent to which the doctrine that all membranous croup is diphtheria would, if adopted by the physicians of the hospital, modify their interpretation of the cases coming under their observation.

And, in the first place, I think that the cases in Class IV negative the *à priori* argument that the mucous membrane of the air-passages is not likely under simple (or non-specific) irritation to take on an inflammatory process attended with the formation of false membranes. There are recorded sixteen instances in which a membranous laryngitis was developed as the result of scalds by hot water, after the entrance of a foreign body into the trachea, after a cut throat, after tracheotomy for various conditions, or secondarily to some disease of the air-passages. Some of the cases in question might, indeed, be plausibly attributed to infection from tracheotomy instruments, if we were to suppose those instruments to have been previously employed for cases of diphtheria, and to have been insufficiently cleaned. Mr. Howse has told me

that he believes this to have occurred in Case 89, which came under his observation at the time. But this explanation goes only a very little way.

Secondly, the cases in Class IV show that, great as is the anatomical difference in structure between the pharyngeal mucous membrane and that which lines the larynx, it is no barrier to the transference of morbid action from the former to the latter surface. The same thing is notoriously true as regards diphtheria. But if a plastic laryngitis may be set up by extension downwards from the pharynx, one does not see why a membranous pharyngitis may not be consecutive to a similar affection of the air-passages; in other words, there is no reason for supposing that a simple membranous croup (if such an affection exists) may not be attended with the formation of false membrane upon the fauces.

Thirdly, the cases of laryngitis recorded in Class III, in which no false membranes were proved to have been formed, do not appear to have differed notably in their clinical features from those in Class II, in which false membranes were discovered after death, or expectorated during life. So far as the imperfection of these Reports enables us to judge, there is only one case (Case 77) which presented any of the characteristics of "stridulous laryngitis" in "spurious croup." It seems to me that this affection, as it is described by French writers, has a fair claim to be considered a separate member of the nosology, its distinguishing features being its liability to return again and again in the same patient, and the suddenness of its commencement, with symptoms which from the very first are of the most alarming character, but which quickly subside and never lead on to a persistent attack, lasting for several days without intermission. Unless, however, we insist upon these characteristics, I can perceive no valid reason for drawing a boundary line between those cases of croup in which membranes are, and those in which they are not, found to exist. In many of the former cases they are not discovered until a post-mortem examination is made. Now, the latter cases are seldom, if ever, fatal: I cannot find in our records a single case of croup in which the patient died and no false membranes were found.[1] If, on other grounds, mem-

[1] Since this was in type I have made a post-mortem examination in a case of

branous croup can be shown to be always a laryngeal diphtheria, the distinction between the two sets of cases is of course necessary. But unless this can be done, to suppose that such a distinction exists is almost the same thing as to assume that a disease, when it is fatal, is attended with morbid changes essentially different from those which characterise it when recovery takes place. And I submit that this is altogether without precedent in pathology. Considering that in every instance in which false membranes are found in the air-passages, they shade off into muco-purulent matter in the trachea or bronchi,—and that, in some instances, there are only small shreds of lymph imbedded in such secretion within the larynx itself,—it is surely very improbable that the presence or absence of false membranes forms an absolute distinction between two entirely different diseases. My own opinion is that the cases in Class II and those in Class III should be associated together under the common name of croup, assuming always that it is not proved that those in Class II belong to diphtheria.

Fourthly, we now come to the question as to the relation between the cases in Class II and those in Class I; and at first sight there seems to be a very marked contrast between them. In Class I we have a highly infectious disease, of which albuminuria is a very frequent symptom, and which is often attended with swelling of the cervical glands. In Class II we have a disease which seems not in a single instance to have arisen in contagion, nor to have spread to other patients: in only one of the nineteen cases in this class was albuminuria noticed to have been present; and I think there is only one in which the glands are said to have been swollen.

But I am bound to say that a closer analysis of the cases in Class I throws some doubt upon the validity of the distinctions to which I have just referred; and I must acknowledge my indebtedness to Dr. Greenfield—one of my colleagues on the Croup and Diphtheria Committee, and the Secretary to the Committee—for having suggested to me in

croup, in which death occurred after fifty-one hours' illness, and in which the larynx was perfectly healthy, but the trachea and bronchi contained a soft viscid muco-purulent material, without even any shreds of false membrane in it.

conversation certain objections which might fairly be made to them.

The first point is the preponderance of children among those cases in Class I, in which diphtheria spread to the air-passages. Among the cases contained in Section 2 of Class I there are twenty patients who came into the hospital suffering from diphtheria; five who caught it while in the wards. The latter were adults; but of the former twelve were under the age of five years, four between the ages of five and fifteen, and four above fifteen years old. And all but one of the cases in Section 3 were those of children under five years. Again, there has not been a single case in which a child below that age has died of diphtheria in the hospital, and has been found to have its larynx free on post-mortem examination. This excessive liability of children to be affected with the laryngeal form of diphtheria, at the very age which has been generally supposed to be that at which croup is most apt to occur, may certainly be made a point in favour of the identity of the two diseases.

Again, we find a difference in the extent to which the cases in Sections 1 and 2 respectively can be brought into connection with other cases of diphtheria, either as having caught the disease from them or given it to them. Among the fifteen indisputable cases of diphtheria in the former section there are eleven in which such a connection can be traced. But of the twenty-five cases in the latter section there are only eight in which the existence of a contagious or epidemic influence is recorded. One therefore is not surprised to find that not one of the cases in Section 3 afforded an instance of the manifestation of such an influence. It undoubtedly seems as though diphtheria were less contagious in proportion as the fauces are less severely affected. The comparatively rapid course and early fatal termination of the cases in which the disease extends to the air-passages suggests itself as an explanation, but I doubt whether it is a satisfactory one. The only way of interpreting the cases in Class I by which one could avoid this conclusion would be by supposing that a non-specific membranous croup may be attended with the formation of extensive patches of false membrane on the fauces; in other words, that a large number

of the cases in Section 2, and almost all those in Section 3, are not instances of diphtheria at all. This is a question to which I shall presently return.

But, if it be true that laryngeal diphtheria is comparatively little contagious, one can hardly attach much importance to the fact, which at first sight appeared so striking, that no contagion can be traced in any of the cases of membranous laryngitis in Class II, which I have classified as of doubtful origin.

Another point on which I was at first inclined to lay great stress is that no instance of membranous laryngitis, apart from pharyngeal diphtheria, has occurred among those cases in which the disease has arisen by contagion in persons already in the hospital. But it may be argued that if laryngeal diphtheria is peculiar to children, one would hardly expect to find it developing itself in the wards of a hospital like Guy's, in which the great majority of the patients are adults. Still there are some children in almost every division; and I think that some importance may fairly be attached to the fact just stated. The experience of a hospital specially devoted to children's diseases would be of great value.

Other points of distinction failing us, we can fall back upon the general numerical ratio between the cases of recognised diphtheria and those of membranous laryngitis admitted into the hospital, and we may ask whether there are not too many of the latter to be set down as instances of an exceptional variety of the former disease. Now, so far as I know, the only trustworthy statements as to the frequency with which diphtheria when epidemic attacks the larynx without at the same time affecting the pharynx or tonsils are those of Bretonneau and Guersant.[1] Guersant ('Syd. Soc. Memoirs,' p. 216) says that the number of such cases may perhaps amount to a twentieth of all cases of diphtheria, but he implies that unless the fauces are inspected from the very

[1] Since this was written I have read Dr. Yeats' account of an epidemic which occurred at Auchtergaven in Perthshire ('Ed. Med. Journ.,' 1876). Among 183 cases there were 15 in which laryngeal symptoms were present from the commencement, but in which there was no visible affection of the fauces, when they were first brought under notice; and in 6 of these the pharynx remained free during the whole progress of the disease.

commencement of the disease the presence of slight membranes upon them is apt to be overlooked. Bretonneau relates only one case of what he believed to be purely laryngeal diphtheria among the forty-five recorded in his papers on the subject; and in that instance (p. 165 of Syd. Soc. translation) there is really no proof that the disease was diphtheria rather than simple croup. He goes on to say that it was the second time, and in the proportion of one to thirty, that he had met, after death, with diphtheritic inflammation limited to the air-passages.

At Guy's Hospital we seem to have had nineteen cases of membranous laryngitis to fifty-seven of diphtheria. It is true that the reports of many of the former cases are imperfect; but I do not think it is likely that the clinical clerks have often failed to note down the presence of false membranes upon the fauces, where any have been detected; and as their absence has for years past been regarded as the crucial distinction between the two diseases, they are certain to have been looked for. But whatever deduction should be made, on the score of incompleteness, from the cases of membranous laryngitis, a large deduction must also be made from those of diphtheria before a fair comparison can be instituted. For in ten of the latter cases this disease arose by contagion in persons already in this hospital; and Class I includes several other cases of which the real nature is altogether doubtful. Now, I do not see any reason why diphtheria should attack the larynx more often when it is sporadic than when it is epidemic. I, therefore, must regard the relatively large number of cases of membranous laryngitis as a weighty argument in favour of the separate existence of a membranous croup.

Hitherto I have argued the question on the basis that the presence of patches of false membranes on the fauces proves a case to be one of diphtheria. But, after all, this is an assumption, and one which, as I have already shown, is rendered improbable by the fact that in the cases in Class IV the pharynx and the larynx have frequently been found to be simultaneously affected. Between the years 1839 and 1849, long before epidemic diphtheria was prevalent in London, Dr. West found that the velum and tonsils presented false membranes in a

considerable proportion of his cases of croup. I am not at all sure that the real solution of the difficulty may not be found in abstracting from diphtheria a considerable number of the cases in Section 3, and even some of those in Section 2, of Class I. We should then get rid of the puzzling anomaly that the disease seems to be so much less contagious when it mainly affects the larynx than in the ordinary pharyngeal variety.

It is possible that a further head of evidence in regard to the question of the relation of membranous laryngitis to diphtheria may be found in the proportionate number of males and females especially attacked by these diseases. All writers say that croup is more common in boys than in girls. This is confirmed by the cases in Class III, as regards the affection in which no false membranes are developed. But diphtheria is equally prevalent in the two sexes. If, therefore, males should preponderate among those who suffer from membranous laryngitis, one would be disposed to associate it with croup; if not, one would rather take it for a form of diphtheria. Now, in Class II there is no excess of boys; but it is curious that they do preponderate among the cases in Section 3 of Class I.

Let me recapitulate, in somewhat different language, the main conclusions to which the facts recorded in this paper appear to lead us:—We find that the attempt to separate from diphtheria a membranous croup in which the fauces remain entirely free from false membranes is beset with difficulties. The cases (which must then be called cases of diphtheria) in which the air-passages are attacked, the palate and tonsils being but slightly affected, occur almost exclusively in children; and they are seldom, if ever, infectious, whereas pharyngeal diphtheria is highly infectious. But when one has once admitted that the different forms of diphtheria present different degrees of infectiousness, and that each of them occurs with special frequency at a particular period of life, one is debarred from insisting on the sporadic character of membranous laryngitis, and the fact that it never arises in the wards of a general hospital, as proof that it is distinct. It is otherwise if we draw the boundary line, not between the cases in Class I and those in Class II, but within Section 2 of

Class I itself; allowing that the non-specific, simply inflammatory, affection may be attended with the formation of false membranes even on the fauces. Such a view does away with the very improbable supposition that laryngeal diphtheria differs from the ordinary form of the disease in being peculiar to children, and in possessing little or no infectiousness; and I think that it commends itself to us on other grounds also.