
Scrofulous Diseases Of The External Lymphatic Glands: Their Nature, Variety, And Treatment (Continued)

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mouth, salivary glands, fauces, and intestines; and that it has no such action upon the liver at all.

From the philosophic certainty given by the preceding considerations, we turn to direct experiment, and find in Dr. Beale's *Archives of Medicine*, No. 3, a most important series of observations made upon a dog by Dr. Scott. The first operation was to open the abdomen, and establish a direct communication between the bile-ducts and the abdominal wall, by which means all the hepatic secretion was passed into a receptacle provided for the purpose; and the greatest care was taken to guard against all possible sources of fallacy. The amount of calomel administered in the four experiments was three, six, ten, and twelve grains respectively. The following was the result. The daily average for two days prior to the first dose of calomel was 1960 grains of fluid bile; the daily average for two days after the calomel was 1358. The calomel on this occasion did not purge, but it *reduced the biliary secretion one-third*.

When six grains were given, the dog was purged twice within four hours. Prior to the dose, the daily average of fluid bile was 1639 grains; after the dose, the amount was 518 grains. The calomel had *reduced the biliary secretion nearly two thirds*. After ascertaining that the reduction in quantity was not due to other causes, a third experiment was tried.

Before giving the third dose of calomel, the daily average of bile was 3044 grains. Ten grains of the drug were used; it was uncertain whether it purged the dog, but it reduced the fluid bile to 2720 grains.

On the fourth occasion, twelve grains of calomel were given, and the dog was purged copiously. Prior to the drug being taken, 2658 was the daily average; after it, the secretion only reached 1724. *The bile was diminished one-third*.

The results then were, *that in every case the hepatic secretion was diminished by calomel, and the diminution was most conspicuous when the drug acted as a purgative*. Taking together the two experiments where no purging ensued, *the diminution was one-fifth of the whole*; taking those where purging was present, *the loss of bile amounted very nearly to one-half* (4297 to 2242)—a conclusion which strict analogy has previously led us to expect.

Against these experiments, one objection only can be taken; viz., that Kölliker had made three observations previously, in one of which the bile seemed to be increased, while it was diminished in *two*. Giving the full value to this objection, the conclusion we must still come to is, *that the chances are six to one that calomel will diminish the hepatic secretion, and that it will diminish it proportionally to its purgative action*.

With this mass of evidence before us, it is impossible for us to subscribe to the popular belief that calomel increases the secretion of the liver; and, as the action of this drug does not essentially differ from that of other mercurials, we conclude they operate much in the same way. Truth, in this instance, appears to lie in a directly opposite quarter to that in which it is generally supposed to do.

But it will naturally be asked, "Now that you have deposed mercury from the province where it held sway so long, what other province will you assign to it? What does mercury do?" Any one can answer the question for himself by taking the drug systematically. We may sum up the experiences thus. Taking calomel and blue pill as the type for other preparation, mercury depresses the nervous system, producing sickness, faintness, and a tendency to tears; it irritates the stomach and bowels, producing anorexia, flatulence, griping, and purging, with thin, watery, and diluted stools, instead of rich and solid ones; it diminishes the red particles of the blood, and reduces greatly all muscular power; it promotes suppuration, commonly gives rise to inflammation of the salivary glands, and ulceration or gangrene in the mouth.

Such is the dark side of the picture; yet there is a bright side too. I am not arguing against the use of the metal, but against its abuse. That mercury is a powerful weapon in the physician's armoury, I readily allow; but it is the Congreve rocket of medicine. When properly aimed and true in flight, nothing is equal to it; yet it is sometimes so erratic in its course, and its effects are so different to those it was intended to produce, that it is gradually losing the confidence of those who cultivate philosophic precision.

We may often assist our conclusions respecting one thing by putting it in apposition with another. Calomel, it is said, specially irritates the liver. Do we know any other drug likely to do so? Arsenious acid, so far as we know, irritates *every* organ it comes in contact with. Taylor tells us that, when given in large doses, a much greater amount is found in the

liver than in any other part of corresponding bulk; yet no one has ever attributed to this material an effect on the hepatic secretion similar to that which they attribute to mercury. The corollaries to be drawn from this are too obvious to require enunciation.

SCROFULOUS DISEASES OF THE EXTERNAL LYMPHATIC GLANDS:

THEIR NATURE, VARIETY, AND TREATMENT.

By P. C. PRICE, Esq., Surgeon to the Great Northern Hospital; the Metropolitan Infirmary for Scrofulous Children at Margate; etc.

III.—TUBERCULOUS DISEASE OF THE EXTERNAL LYMPHATIC GLANDS.

[Continued from page 795.]

Pathological Changes. Tubercle may occur in the lymphatic glands under two distinct forms, either as semitransparent, grey, crude granulations, or as more or less yellowish lardaceous material, similar to that which so constantly involves the lungs. Although grey, semitransparent, crude tubercle is found affecting the structure of lymphatic glands, still it is of very exceptional existence. Louis states that, in all his examinations of tuberculous glands, he never once met with it, though Rokitsky admits that it may coexist with yellow tubercle, which is, *par excellence*, the form which invades these special organs. I think I have never myself recognised grey tubercle alone, or even mingled with the yellow, in any of the lymphatic glands I have examined; and, from the observations of those still more experienced, I am inclined to believe that its presence is seldom to be determined.

When tubercle invades the structure of lymphatic glands, it is, as just mentioned, in that form identical with the yellow caseous deposit formed in the lungs of phthisical patients. In most structures, this kind of tubercle presents itself as *tubera* or rounded bodies; but, as Mr. Simon has truly observed, tubercular deposit in the lymphatic glands does not show itself at first in a spherical or tuberous form.

It may be seen under various phases, according to the size and nature of the gland-organ it involves, the condition of the individual in whom it occurs, the length of time it has existed, and the influences to which it has been exposed. At an early period of its existence, more or less of the glandular structure appears to be infiltrated or patched with the foreign material in the shape of a yellow, or yellowish-grey, cheesy, half-dry substance, which, to a greater or less extent, leads to destruction of the organ.

Although the word *infiltration* has been used as descriptive of the manner in which tubercle involves the glandular structure, yet at a later period, provided unhealthy action continues, the morbid material so completely transforms the natural tissue that the term inadequately conveys the process that takes place. But, beside the gland-tissue immediately implicated by the deposit, that in close relation with it oftentimes assumes a more or less altered condition. Slight vascular excitement seems to pervade the still healthy structure, preparatory, as it were, to admitting the deposition of the tuberculous substance. Thus, on splitting open a gland known to be in an advancing tuberculous state, the proper structure will be found more or less implicated in various places. Sometimes the foreign material is merely seen scattered about in lines or patches; on other occasions, small patches are extending by a more extensive grouping; while not unfrequently nearly the entire gland is plugged up by the masses which appear to be undergoing a general fusion.

Prior to the deposition of tubercle in a previously healthy gland, some slight enlargement generally ensues; but it is not till a later period that the size of the organ is very perceptibly increased. Enlargement may depend either on the swelling of the true glandular tissue, the result of direct irritation, or from real accession of bulk by reason of the tuberculous formation. Frequently such enlargement is dependent on both circumstances combined; for otherwise it would be difficult to account for the extraordinary size to which the lymphatic ganglia thus affected sometimes attain. The true tissue of an implicated gland is frequently so involved, as the disease advances, as to be entirely displaced by the morbid exudation, and so form around it merely a distinct capsule or zone, which becomes in

turn destroyed as more extensive implication ensues. Tubercle deposited in the form thus described is susceptible of various transformations, which may be included under the following heads: withering, calcification or cretification, and softening, with subsequent liquefaction.

Under certain conditions, a special alteration takes place in the tuberculous deposition of lymphatic glands, which consists of what has been termed *withering*, or a conversion of the foreign material into a shrunken, dry, shrivelled mass. Such a change has been considered by Baudelocque and others to have occurred in instances in which iodine has failed completely to reduce the glandular enlargement which has been supposed to accrue from tuberculous deposition. Such a process is, however, more frequently seen taking place in the metamorphosis of grey tubercle, which, as before mentioned, is of comparatively infrequent occurrence in the lymphatic system.

Calcification or cretification occasionally leads to incomplete resolution of tuberculous glands; but it is uncommon to see such change occur in those glands which have an external or superficial situation, although a more or less gritty condition is sometimes to be observed. Cretification or mere ossification, as is well exemplified in several preparations in the Museum of the Royal College of Surgeons and various metropolitan hospital museums, is much more frequently seen taking place in the bronchial and mesenteric ganglia.

Among one or two isolated examples of calcification of tuberculous deposit occurring in superficial absorbent glands, I find mentioned in my notebook the case of a gentleman who has had one or two of the lymphatic glands situated beneath the base of the lower jaw on either side involved by tubercle at various periods during the past five or six years. The glands on the right side were first affected, and, after enlarging, ulcerating, and suppurating for some time, gradually became destroyed, but not till numerous portions of a chalk-like substance had come away, mingled with the discharge. In the course of the time mentioned, the glands on the other side became similarly destroyed. But this is almost a solitary case, and it is seldom that the surgeon is able to record such a definite one. Lebert mentions but two; and Baudelocque only one, and in this instance the glands so involved were situated in the armpit.

Instances of complete osseous transformation of cervical glands in a tuberculous state have been occasionally recorded, but I have never seen a case out of many hundred examples of glandular tuberculosis which have fallen under my notice.*

By far the most common form of alteration that ensues in tuberculous absorbent glands situated near the surface of the body is softening, ending in liquefaction, suppuration, or phthisis, as it is called by some authors. Experience teaches that, in the majority of cases in which the disease is severely marked, the general health bad, and the constitutional powers low, by reason of indifferent and scanty supply of diet and exposure to vicissitudes of temperature, there exists an especial tendency to this kind of destruction. In one hundred and forty tabulated cases of apparently tuberculous disease of the cervical glands which occurred in children in the Children's Infirmary at Margate, up to the age of sixteen years, no less than eighty-two cases suppurated; and it is probable that, had the remaining fifty-eight continued under observation for several months longer than they did, ulceration and suppuration would, in a certain number, have supervened. At any period after the deposition of tubercle, this process may commence; but it is generally protracted; and sometimes months, and even years, elapse before it exhibits a tendency to commence. I have, however, seen instances in which rapid destruction ensued, by reason of softening and liquefaction of the tuberculous matter, just as is sometimes met with in cases of rapid, or what is vulgarly known as "galloping", consumption. Softening of a tuberculous mass usually commences near its centre, provided no inflammatory or destructive changes are taking place in tissues bordering its margins. The process and its subsequent stages are thus described by Mr. Paget: "In the proper softening of tubercle, one sees its central part become first soft, so that, when cut across, it looks cracked and crumbling, and may be pressed away from the surrounding firmer part, leaving a little central cavity. In further stage of degeneration, it becomes liquid, like thin pus, with flakes or grumous particles in a pale yellowish turbid fluid; and as the

change makes progress, the whole tuberculous mass may be reduced to the same liquid state." (*Op. cit.*, vol. ii.)

Such is the process that usually takes place; but it is often modified. The softening and liquefaction may be partial, affecting merely a single island of tuberculous matter, and not reaching to other isolated patches; or, so soon as liquefaction has commenced, the fluid portion of the softened mass may be absorbed with such soluble products as are held in solution, the insoluble parts being left as foreign material in a more or less oily, chalky, and cheesy condition. Should such be the case, it is probable that the affected gland, with its coverings and connecting tissues, will show but slight signs of irritation or inflammation, at least, not sufficient to endanger ulceration and suppuration.

More frequently, however, by the destructive processes that ensue, the affected gland is converted into a more or less complete abscess; and this having obtained, Nature endeavours to get rid of the product of disease. Coincident or somewhat subsequent to these changes are certain alterations in the tissues situated external to the diseased gland. The cellular bed in which it reposes shows signs of irritation and inflammation, which are soon propagated to the adjacent skin. Adhesions between the tegumentary, cellular, and glandular tissues, now ensue, accompanied by a more or less general destructive action, which eventually admits of thinning and perforation, so as to allow the escape of the liquefied contents of the destroyed gland.

The various progressive steps of cellular and tegumentary inclusion have been well described by the late Mr. William Goodlad, who paid great attention to the subject (*On the Diseases of the Absorbent System, etc.*: 1814). The rapidity with which the structures adjacent to the affected gland are involved varies in accordance with the amount and character of the glandular mischief. Sometimes it is exceedingly rapid; at other times, and more frequently, slow, but steadily progressive.

Ulceration, or the natural mode of allowing communication between the external tissues and the affected gland, may take place in two distinct ways, either at several points on the surface, or by the formation of a large ulcerative opening at that part in which the covering textures have become thinnest. The former process is the one usually observed in cases in which the disease has been of a decided chronic and tardy character, although it may occur when the morbid action has been more rapid and decisive, as is well observed in a case of a patient, a boy, aged sixteen years, under my care at the Blenheim Free Dispensary. The glands, five or six in number, on both sides of his neck, became suddenly enormously enlarged, and, after remaining so for about six weeks, showed symptoms of destructive inflammation; and within a few days rapid ulceration took place in the greater proportion at various points on the surface, which admitted the oozing out of a thin grumous-looking semipurulent fluid, with shreds of tenacious lymph.

When a larger portion of the integument is destroyed, the constitutional and local disturbance is generally much greater. I have frequently seen the most unhealthy-looking sores formed in this way, which have not healed till the entire diseased gland has been removed, and appropriate remedies applied, with renovation of the general health.

The recognition of the discharged contents of a suspected tuberculous gland is not always so clear as to enable the pathologist to decide as to the positive existence of tuberculous or merely simply modified inflammatory products. The analogy between these morbid productions is often so strong that even microscopic aid is sometimes insufficient to distinguish them; while discriminative recognition of the degenerative forms of scrofulous lymph is still more difficult. Tuberculous matter from the cervical glands has been frequently examined chemically. Its elementary components consist of carbon, hydrogen, nitrogen, and oxygen, which exist, according to M. Scherer, in the following proportions:—C⁴⁶, H⁷⁸, N¹³, O¹⁴. (*Chemische und Microscopische Untersuchungen zur Pathologie*. Heidelberg: 1847.)

Tuberculous matter examined quantitatively by MM. Lombard and Thénard gave the following results:—

Animal Matter	98.25
Muriate of Soda	1.75
Phosphate of Lime	
Carbonate of Lime	
Iron	Traces
	100.00

* MM. Henry and Gmelin found that the cretaceous substance into which tuberculous matter of the lungs and lymphatic ganglia degenerates to be composed of carbonate and phosphate of lime, phosphate of ammonia and magnesia, and some animal matter.

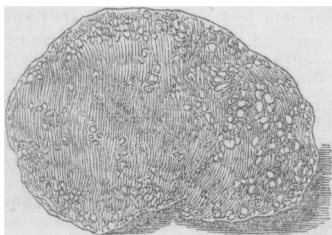
This analysis must not, however, be looked upon as very satisfactory, and exhibiting the true chemical composition of tubercle in its various transformations. It is only an approximate rendering of the components of crude tubercle. The animal matter, which forms by far the largest proportion of tuberculous deposit, consists of fibrine, albumen, and gelatine, in varying proportions, the former and latter being generally in greater quantity.

The microscopical analysis of glandular tubercle is almost analogous with that occurring in the lungs. If a portion of ordinary yellow tuberculous deposit be placed under the lens, more or less granular matter, mingled with molecular oil, will be seen. Considerable quantities of imperfectly formed exudation-cells, of various shapes, more or less irregularly developed, will be detected in the basis-substance, mingled with nuclei or cytoblasts of different forms and conditions.

The above description is well illustrated in the beautiful drawings of Schröder Van der Kolk. This account merely, however, refers to tuberculous deposit as it is found in glands ere it undergoes various transformations and alterations; for there will then be discovered fresh conditions, in accordance with the nature and character of the metamorphosis.

Before adverting to the ulcerations which occur in connexion with suppuration of tuberculous glands, it may be well to give passing consideration to the liability possessed by already implicated glands to assume a tuberculous condition. When speaking of enlargement of lymphatic ganglia through simple inflammatory changes, it was remarked, that not unfrequently such a state was rendered more serious by reason of a subsequent development of tubercle. I have now before me a specimen illustrating this susceptibility. The gland is from the cervical region, and was removed from a female, on account of the pain and disfigurement it occasioned. It existed for some years. On opening it after its removal, a beautiful illustration of tuberculous deposits was afforded. The inflamed condition of the altered structure of the gland in relation with the tubercle, and the ulcerated spots which the foreign material had caused, by reason of its deposition creating irritation, etc., was easily traced. I have seen several similar specimens, but in no other were these various changes so well displayed.

The accompanying woodcut shows, as far as a wood-engraving can do, the appearances presented by the tuberculous matter infiltrated through the gland.



There is but little doubt that, in a certain proportion of instances in which tubercle involves lymphatic glands, the primary mischief has chiefly consisted in chronic hypertrophy from vascular derangement, and that eventually a more precise morbid action has obtained, in the shape of tuberculous invasion, owing to constitutional and extraneous causes. It is also more than probable that many glands hypertrophied from an excessive accumulation of parenchyma, independent of vascular excitement, in truly scrofulous and eventually tuberculous subjects, become implicated with tubercle in the same way; or else how is it that such hitherto permanent glandular swellings disappear very commonly by unexpected suppuration, presenting all the appearances of tuberculous destruction?

Ulcerations connected with Scrofulous and Tuberculous Glands.

It has already been observed, that when a tuberculous gland has so far progressed towards suppurative destruction that a retention of its contents becomes impossible, Nature provides an outlet for the pent-up material, by admitting an extension of the morbid process in the covering tissues. Such is recognised under the term *ulceration*; and the manner in which it proceeds has been briefly considered. The two different ways in which it obtains have also been noticed, and it now remains only to remark on the nature of such ulcerations.

When a tuberculous gland has been eaten into or opened by the process of ulceration, provided the material it contains be ready for elimination, and the abscess is thoroughly emptied, contraction gradually ensues; cicatrization soon, under favourable circumstances, follows; and a mere scar, partaking more or less of a so-called scrofulous character, alone remains to mark the mischief that has taken place. Although very frequently Nature extends a helping hand to afford removal of the pent-up material of a destroyed gland, yet her well intentioned motives are frequently accompanied, or at least followed, by results which give rise to trouble, suffering, and deformity. In such instances are established those thick, indurated, unhealthy looking ulcerations, which are, unfortunately, of such common occurrence.

When specific indurated ulcer forms in relation with a tuberculous gland, the following processes occur. As long as a lymphatic gland continues in any way implicated with tuberculous deposit, and only partially destroyed, and its contents eliminated by means of the ulcerated exit that has formed, it is probable that a more or less patent communication will exist between the integument and the remaining gland-cavity, if contraction and healing do not take place, by reason of the cessation of all morbid action. At first, the ulcerated opening will usually appear as a more or less direct communication with the gland; the margins not presenting, perhaps, any very unusual appearance. By degrees, however, they become thickened and indurated, and rise above the surface of the integument to the height of the one-thirty-second to the one-eighth, or even the one-fourth of an inch; and proportionably increase in breadth. If of long standing, they assume a greyish, purplish, or even dark brownish colour; the tint being, I have found, much influenced by the special diathesis of the patient and the influence of extraneous causes. To the touch, they are flabby, or more or less hard. When their margins are irritated, they exude a peculiar sanious discharge, and, according to the amount of local disturbance, exhibit more or less inflammatory tendencies. Sometimes, however, instead of showing any vascular excitement, they remain livid, torpid, and cold. It may be that, during intervals of cessation of elimination from the still suppurating cavity, an effort has been made to close the ulcerated opening or openings; and that the overlapping, pale, unhealthy edges, have become united. So slight, however, is the bond of union between the flabby lips, that a free communication is soon restored for the evacuation of the enclosed material. These thickened and indurated margins very commonly are of such rapid growth that they bridge over a lazy suppurating gland, and, still increasing in size, admit within themselves ulcerating and suppurating processes. I have frequently seen this; and I believe it is a more common cause of additional trouble than is generally imagined. When several glands, a cluster, or even an entire chain, are involved in tuberculous destruction, a series of these unsightly, oftentimes painful, and troublesome indurated ulcerations of the integument, may occur. I have over and over again seen the most distressing instances; and, in one wretched object I had for a very long time under treatment, there was scarcely more than a few inches of sound skin from the chin to the second ribs, by reason of the crowding together of these painful and tedious ulcerations. I have mentioned pain as a distinguishing feature of this condition. It is oftentimes, however, slight; but occasionally it is very severe, especially at those periods when fresh disturbance is lighted up from various causes.

For months, or even years, this condition may continue; but at length morbid action ceases in the deeper seated parts, the health improves, the vital powers are renovated, and the blood regains a more normal condition. Gradually an improved state of the general system allows healthy action to take place in the diseased integument, and slowly the indurated sores disappear, and cicatrization closes the seat of so much mischief. This is accomplished in various ways, dependent on the extent of mischief, the tone of the general system, and the treatment which has been adopted. The processes of destruction and repair are hand in hand at work. Ulceration, suppuration, absorption, granulation, etc., combined, at length lead to contraction and cicatrization. The breach of continuity between isolated portions of healthy skin is again restored, and the patient is rid of a painful and distressing affection, although in the comparatively perfect reparation that has taken place, a lasting mark still remains. Imperfectly as the above description conveys the general characters of such ulcerations, still there are various features connected with their existence that have not been alluded to, but which will be touched upon when adverting to the treatment that is required in the different stages

of the affection. The cicatrices that result from the healing of such ulcerations have specific characters. They are generally more or less furrowed, wrinkled, bridled, and puckered. They vary in size in accordance with the amount of mischief that has existed, and the way in which resolution has taken place. Sometimes they present a very peculiar appearance on one or more of the bridges; or at the bottom of a pit formed by arches of skin thrown across from one part of the cicatrix to another, often exist small buttons, or even threads of integument, surmounted with a black spot, which appears to be an abnormal secretion from an altered follicle. Closely allied in appearance are some of the slighter cicatrices after burns, especially on the face and neck. Nature having restored the damage committed by disease, seems intent on lavishing her powers of reparation to an almost unnecessary degree, and thereby giving occasion to art to undo what she has so generously performed. Before quitting the subject of ulcerations of the integument in relation with tuberculous glands, it may be well to remark that although it is not an ascertained fact, yet, in all probability, these morbid productions partake more or less intimately of the nature of tuberculous formations and destructions. Though, I believe, the microscope has not definitely settled this point, still from the analogy they present to the tuberculous ulcerations of mucous tissues, it is but fair to view them in this pathological light.

[To be continued.]

TEN YEARS OF OPERATIVE SURGERY IN THE PROVINCES.

By AUGUSTIN PRICHARD, Esq., Surgeon, Clifton, Bristol.

I.—OPERATIONS ON THE FACE, TONGUE, PALATE, NECK, AND CHEST.

[Continued from p. 797.]

Tracheotomy. CASE XXXIII. A. L., aged 7, had suffered severely in her throat from scarlet fever, and as the eruption was subsiding sloughing set in, and signs of suffocation came on. I was called at two in the morning to see her, and found her apparently moribund, and the surgeon who had been in charge of the case had not completed the operation of opening the windpipe. There was no time to lose, for she threw herself back as if she were dead; I therefore seized the trachea with a tenaculum through the tissues which lay upon it, for an opening in the skin had been already made before my arrival, and slit it up with a pair of scissors, when out rushed the pent-up air, allowing the heart and lungs a chance of acting once more. I enlarged the wound to introduce a piece of gum elastic catheter which I had brought in my haste, and a little blood found its way into the trachea, producing great irritation and temporary suffocation. She fell asleep in five minutes, and awoke when I introduced the silver tube that had been procured in the meantime, and then at once fell asleep again. At eight o'clock in the morning I found the tube choked with mucus, and removed it, placing a small slip of stick across the wound so as to keep it open. In this way she breathed fairly during the day, and was cheerful and able to swallow some milk, but at night I found her in a suffocating state, and with great difficulty enlarged the wound once more, and after a minute or two of great anxiety as to whether she was alive or dead, I passed in the double tube, and she fell asleep. The apparatus to generate steam, with a long tube extending to her bed, was at once put into requisition, and kept at work for the next ten days. On the fourth day, after taking out the inner tube to clean it, a piece of false membrane forming a cast of the trachea and of a tubular shape escaped, after which the breathing was more free. The tube required to be cleaned at intervals varying from three to six hours, and I was obliged to keep two pupils with her day and night. On the fifth day she ate a mutton chop, and began to take some quinine. On the eleventh day we noticed the first signs of returning voice, and a day or two before that date some air had passed through the mouth. Her breathing being quiet, the tube was allowed to remain, and it became gradually closed with thick mucus, the respiration having resumed its natural course. On the thirteenth day I removed the tube. Her respiration was easy but slow, and her appetite excellent. The wound was almost healed, and her voice quite restored on

the seventeenth day, and she was soon cured; and when I last heard of her, some years after the operation, she was well, and a very minute scar remained.

CASE XXXIV. B. C., aged about 25, accidentally inhaled through a tube the vapour of sulphuric acid, at nine o'clock in the morning. Symptoms of choking came on at once, and increased steadily and slowly all the day until evening, when spasms, with inability to swallow, occurred. His mouth inside was charred, partly black and partly white. I operated at nine in the evening of the same day, and as the case allowed of a more deliberate proceeding than some others, I tried the forceps (armed with pointed blades) known as Thompson's instrument for performing tracheotomy; with the undesirable effect of finding that I could press back and flatten the trachea with apparently no prospect of opening it. I then opened it with the aid of a tenaculum and bistoury, and introduced the double tube, through which he at once breathed readily and freely, with a marked expression of relief in his countenance. Ice was ordered for his mouth. From the time of the introduction of the tube he had no more spasms. On the third day, he was much improved, and could swallow easily; on the fourth, the charred epithelium separated from the mucous membrane of the mouth and pharynx, leaving the surface quite clean; on the seventh day I removed the tube, and, finding he could breathe easily, drew together the wound in the trachea; and on the fourteenth, he was discharged cured.

CASE XXXV. A. J., aged about 30, was suffering from chronic laryngeal disease of a syphilitic character, and the breathing was gradually becoming more difficult, until, one day, suffocation appeared imminent. I operated at eight o'clock in the evening, and experienced the greatest difficulty in inserting the tube; for besides the violent struggling of the choking patient, there was another obstacle, namely, a thick white deposit, like the contents of a steatomatous tumour, pressing in front of the larynx, and causing it to lie unusually deep. The tube was introduced through the crico-thyroid membrane as nearly as could be supposed; but the case was so urgent, that there was every fear of her dying upon the table before the operation could be completed. When the tube was fairly in the trachea, the pent-up air rushed out, having the odour of sloughy tissues, or of dead bone. Then immediately she breathed freely and easily; and all who were present were struck with the marked change in the expression of her face, from that of excessive and horrible distress to instant relief and ease; and instead of the frightful struggle that had been going on, in which the patient with death upon her side had been strenuously fighting against the efforts of the surgeon, she lay after the lapse of one minute in absolute tranquillity and repose. Were it possible to describe a scene like this with the pen, so as to give a vivid and photographic picture of what was passing, to a non-professional reader it would appear incredible and strangely exaggerated; but my experienced readers will be able to remember many a similar contest, in which they have come off victorious, and will recall the varied feelings of great anxiety, and of thankfulness and pleasure at the relief afforded by the successful issue of such an operation.

From this time she rapidly improved; and many sloughs separated, and came out of the opening from which the tube had been removed. The wound gradually closed, and she went out in the course of a month, breathing tolerably freely, but quite in opposition to the distinctly expressed advice of the surgeon under whose care she had been admitted, and in whose absence I had performed the operation just described.

Within a week after she left, she was brought back, in a moribund state, having taken cold; and before anything was done she died of suffocation.

CASE XXXVI. W. A., aged 51, a fine healthy man, had suffered from diphtheria for a week before I saw him; and at that time he was breathing fairly, that is, with some oppression, but without any very obvious signs of obstruction; his symptoms becoming more marked, it was determined as a last resource to perform tracheotomy. Although a tall man, the space between the thyroid cartilage and sternum was short, and, probably in some measure in consequence of external irritants which had been freely applied, the softer tissues were unusually vascular. After opening the skin, I laid hold of the trachea with the tenaculum, and slit up two or three rings, when a few drops of blood trickled into the windpipe, and before I had fairly introduced the silver tube, so much choking came on that he fell back exhausted, and I was in great alarm lest he should be dead. Upon rapidly thrusting the tube into the wound in the trachea, and dashing cold water on his face, he breathed again,