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of providing the Crown Prince with surgical help in case of emergency, I was to be watched, or as Gerhardt now says, "controlled." The Professor had hoped to accompany His Imperial Highness to England; but as there seemed to be no necessity for this under the circumstances, it was arranged that Dr. Wegner should look after the illustrious patient's general health whilst I conducted the special treatment. Had it been openly intimated to me that it would be more satisfactory to the German Court, if the Crown Prince were also accompanied by a competent German laryngoscopist to report from time to time on the progress of the case, I should not have raised any objection. Instead of this, I was informed by Dr. Wegner, that by desire of the Emperor William, a young army surgeon (*Stabsarzt*) would go to England as *his* (Dr. Wegner's) assistant. His words were: "My eyes are not so good as they were, and it would be convenient to have a young surgeon with me in case tracheotomy should become necessary." It was only by accident that I discovered that Dr. Landgraf—the Stabsarzt in question—was one of Professor Gerhardt's assistants. This fact I learned from a well-known throat-specialist in Berlin, on whom I happened to call before leaving Berlin. This gentleman, moreover, told me that Dr. Landgraf was anything but a skilful laryngoscopist, and had, only a few weeks before, been unable to distinguish the true from the false vocal cords. I afterwards had ample opportunities of seeing for myself how thoroughly the young Stabsarzt deserved his reputation in this particular. I shall deal with Dr. Landgraf's so-called "observations" further on.

The Artificial Production of Cancer.—I must here make a few remarks on a subject which I should have been glad to avoid, viz., the influence of Professor Gerhardt's treatment on the nature of the malady from which the illustrious patient suffered. The fact however, that Professor Gerhardt has himself raised the question in his recent publication as to how far his own treatment was responsible for the unfavourable course of the illness, makes it impossible for me to pass over this subject.

Before returning to England I learned, on unimpeachable authority, certain facts as to Professor Gerhardt's previous treatment of the case, which made me feel more anxious about the future than I had up till then seen any reason to be. I have already said that the Professor himself had touched on the matter very lightly in my presence, and when he mentioned in general terms that he had used the galvano-cautery, I naturally understood him to mean that he had employed this powerful agent according to the recognized rules of surgical practice. When, therefore, I was informed that he had applied it red-hot point to the interior of the larynx *every day* for nearly a fortnight I could hardly bring myself to believe it. In all my experience I had never heard of any one applying the cautery to a patient's larynx oftener than once, or at most twice a week, and I hardly know which to be most astonished at in the present instance, the therapeutic energy of the physician or the endurance of the patient. Lest any of my readers should suppose that I had been misinformed, or at any rate that the statement just made was exaggerated, I may say that it is now confirmed by Professor Gerhardt himself in his recent deliverance.

Now no special knowledge is required to understand that a delicate organ like the larynx cannot be *brutalised* in this manner with impunity. The fact that the Crown Prince had been subjected to such barbarous usage at once explained the proneness of the parts to become congested without any apparent cause, which had previously rather puzzled me. Every one knows that local inflammation follows an accidental burn, and there is a peculiar sanctity about a similar injury inflicted by a surgeon which prevents its being followed by the natural consequences. It is for this very reason, that a sufficient interval should always be allowed to elapse between the applications of the galvano-cautery. No point in pathology is better established than the connection between local irritation, or chronic structural changes induced thereby, and the development of cancer. Whether this terrible disease be constitutional or not in its origin, there can be no question that the determining cause of its appearance in any given case may cause an injury (as a blow), or a condition resulting from an injury (as a scar), or the persistent application to a particular spot of something that keeps the tissue inflamed and "angry" (such as a jagged tooth which chafes the tongue). Workers in paraffin and petroleum are peculiarly liable to cancer of the parts which are habitually exposed to the action of these substances. It is well known that a particular form of cancer, which formerly was common enough in England, is now almost extinct, simply because, owing to the fact that the cause which produced it has ceased to exist, "sweeps" are no longer in demand at a good price. It had to be sifted; this operation necessarily involved a great deal of friction against the skin, whereby irritating particles were, as it were, rubbed into it, and "chimney sweep's cancer" was a frequent result. Nowadays it does not pay to sift the soot, and the disease to which it gave rise has disappeared.

Among causes of local irritation, heat is certainly one of the most active. By far the most common seat of malignant disease in men is the mouth, which is more exposed than any other part of the body to irritation by hot substances. Every surgeon is familiar with this fact. Whether it be a lower lip on which the hot stem of a clay pipe or the smouldering paper of a cigarette has rested day after day; or a tongue whose surface has been the frequent contact of acrid tobacco smoke or the mouthpiece of a foul pipe, or made raw by ardent liquors, or stung and blistered by fiery condiments, the cause is essentially the same, viz., the searing or irritation of the superficial covering by prolonged heat or pungent impressions. In Cashmir, where hot braziers are often placed beneath the abdomen and thigh, cancer of these parts is not uncommon, though all but unknown in either of these situations elsewhere.

It is highly probable that in addition to the local irritation some particular predisposition must exist in the tissues, though in what this consists we do not know. That in a large number of cases the tendency to cancer is hereditary there can be no question; and the truth of this would, I am convinced, be much more evident than it now is if the medical histories of families, as well as of individuals, were carefully inquired into and accurately recorded. Most men know what their father and mother died of; a large number are acquainted with the cause of the death of their grandfathers and grandmothers, but how few have any accurate knowledge as to the nature of the disease which carried off their great-grandfathers and great-aunts. This important and interesting subject cannot be pursued here, but it may be remarked that we know quite enough of the subject to enable us to say that where there is a history of cancer in a man's family, it would be well for him to avoid all causes of local irritation with especial care. Such a history existed in the case of the Crown Prince on the maternal side, for his mother's sister died of cancer, and his cousin, Prince Frederick Charles, had a malignant tumour removed from his face a few months before his death, which did not recur but might very likely have done so had he lived longer.

Now Professor Gerhardt himself tells us that at a very early period of his connection with the case he suspected that the affection was malignant, and that the manner in which he proceeded to deal with it simply incomprehensible, except on the supposition that his very anxiety made him reckless. It is certain that if the growth was not malignant from the first, Gerhardt, by his unmerciful use of the galvano-cautery, contrived to make it so. I do not say that he actually caused the cancer; no one has the right to dogmatise in medicine, which is still an inexact science in which nearly every fact is open to more than one interpretation. I do not believe, however, to say that the treatment adopted by Professor Gerhardt was at once unscientific and injudicious. He cannot escape from this dilemma: Either his treatment was too thorough, or it was not thorough enough. If he believed the growth to be benign, the repeated burning to which he subjected it was monstrous; if, on the other hand, he doubted its nature, that very doubt should have stayed his hand, and have led him to invoke surgical aid much sooner than he did. On twelve consecutive days, according to his own admission, did this physician burn the Crown Prince's larynx with a red-hot wire, and repeat on four subsequent occasions at short intervals. Finally, as if all this were not enough, he thought it necessary to sear the edge of the vocal cord with a flat burner! There is no record in medical literature, so far as I am aware, in which the cautery, a most valuable agent if properly handled, was so terribly abused.

Some statistics have lately been collected which clearly prove how rarely a benign growth becomes malignant, either spontaneously or when the *ordinary recognized methods of treatment* are pursued. What different statistical results would be obtained if the method of treatment pursued by Gerhardt were widely practised! Whether his ruthless cauterisation actually caused the development of the cancer or not, there can be little doubt that he is largely responsible for the perichondritis which played so important a part in this sad case. Although the inflammation of the cartilage did not show itself till some time afterwards, it is well known that the course of this affection is very slow, and at first extremely insidious. The *processus vocalis*, which was the first seat of the perichondritis in this case, is a point where the mucous membrane itself forms almost the sole covering of the cartilage. Hence the spot which was the object of Gerhardt's misdirected energy is one that is peculiarly vulnerable.

To sum up: if the growth was benign in the first instance, there is, in my opinion, only too much reason to think that Gerhardt's burnings must be held answerable for its subsequent transformation into cancer; if it was malignant from the first, the disease was undoubtedly aggravated by the treatment.

CHAPTER III.

THE CROWN PRINCE IN ENGLAND.

The Crown Prince in the Jubilee Procession.—On June 14th their Imperial Highnesses arrived in England. With the view of sparing the illustrious patient the fatigue of sitting more than was prudent in his condition, it had been arranged that he should stay at some quiet place outside of London, and take no part in the Court festivities beyond appearing on a few of the more important ceremonial occasions. Accordingly he took up his residence at Upper Norwood. I believe the impression made by his splendid appearance as he rode through the streets of London on June 21st in the Queen's body-guard of Princes; he was the most striking figure in that historic pageant, and was hailed by the enthusiastic crowd as a King of men by gift of nature as well as by right of birth. Few could have thought, on seeing him then, in the very prime of his magnificent manhood, that behind the hero of Königgrätz, Wörth, Sedan, and many a hard-fought field besides, there rode on that day of triumph a grimmer conqueror, who, before another year had passed, would have laid that stately form in the dust.

On the day of His Imperial Highness's arrival at Norwood I made a careful examination of his throat, and found that only a small portion of the growth, not more than one-third of its original bulk, now remained. The little tumour itself was red, but the mucous membrane immediately surrounding its base was almost natural in colour; there were, however scattered patches of hypersemia in different parts of the larynx. This slightly unhealthy condition of the lining membrane of the larynx, which, as I have already pointed out, was probably the result of the severe burnings by Gerhardt, caused the Prince to catch cold on the slightest exposure.

Dr. Norris Wolfenden.—Before the Crown Prince's arrival, I had informed Count Radolinsky that when His Imperial Highness came under my care, all local treatment would have to be carried out either by myself or by some competent specialist thoroughly acquainted with my methods. To this the illustrious patient at once consented, but considerable opposition was raised by Dr. Wegner, who said that Dr. Landgraf had accompanied His Imperial Highness for that very purpose. I reminded Dr. Wegner that he himself had told me that Landgraf was sent expressly that he might be at hand if tracheotomy became suddenly necessary; that the young man had been described to me simply as a military surgeon, and that I knew nothing of his ability as a laryngoscopist. Under these circumstances, I said it would be impossible for me to accept the assistance of Dr. Landgraf in carrying out the details of my proposed line of treatment, and I requested that my colleague, Dr. Norris Wolfenden, one of the Physicians to the Hospital for Diseases of the Throat, should be associated with me in the capacity of resident medical attendant on the Crown Prince. This was agreed to, and Dr. Wolfenden accordingly took up his residence at Norwood. On June 15th I received from him the following report:—"The larynx is large and well formed, but owing to the slope of the epiglottis, the view of the interior of the laryngeal cavity is not so easy to obtain as it is in an average case. The under surface of the epiglottis is slightly congested on the right side, and the cushion is rather full. The left ary-epiglottic fold is little puffy at its lower and posterior part. The left ventricular band is very slightly swollen anteriorly so that the outer border of the left vocal cord in this situation is just covered; the right ary-epiglottic fold is normal, and the interarytenoid fold towards the left side has lost its sharp definition; an enlarged vessel is seen on the right ventricular band, which is otherwise healthy. The left vocal cord is of a pale pink colour. At its posterior extremity there is a roundish growth about three millimetres in diameter and two in height. On whispering, both the false and the adductive action of the left vocal cord is seen to be feeble, but on loud phonation this movement shows no defect. The right vocal cord is healthy. In the subglottic region there is slight congestion, but no thickening is visible."

It will be seen, both from Dr. Wolfenden's very careful report and from my notes, that His Imperial Highness's throat was still somewhat congested, and I thought it necessary to get rid of this condition before further active measures were employed. With this object sedative applications, with nitrate of silver, were introduced into the wind-pipe, and after a few days the parts were brushed with a solution of perchloride of iron. His Imperial Highness came to my house nearly every day for treatment, and in the evening he was seen by Dr. Wolfenden. On June 25th the Prince had a rather sharp attack of catarrhal inflammation, which affected the whole of the throat, causing swelling and tenderness of the uvula, and giving rise to slight difficulty in swallowing.

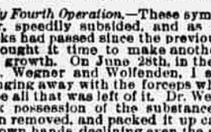

Fig. 4.—Sketch made June 28th, showing the larynx after complete removal of the growth. There is a very slight thickening and hypersemia of extremity of the left vocal cord. (For further explanations, see Fig. 1.)

My Fourth Operation.—These symptoms, however, speedily subsided, and as nearly three weeks had passed since the previous operation, I thought it time to make another attack on the growth. On June 28th, in the presence of Drs. Wegner and Wolfenden, I succeeded in bringing away with the forceps what appeared to be all that was left of it. Dr. Wegner at once took possession of the substance which had been removed, and packed it up carefully with his own hands, declining even the assistance of my assistant. He then sealed the little packet, which was conveyed by one of the royal messengers to Berlin, and handed to Professor Virchow for examination. The following is a translation of that gentleman's report:—

PROFESSOR VIRCHOW'S REPORT ON THE PORTION OF GROWTH REMOVED FROM THE LARYNX OF H. I. H. THE CROWN PRINCE OF GERMANY, BY DR. MORELL MACKENZIE, ON JUNE 28TH.

"At midday this day I received by special messenger from General Arzt Dr. Wegner, a sealed flask containing the small portion of the pathological growth just removed from the larynx of H. I. H. the Crown Prince. The object was in absolute alcohol in one piece, and though somewhat shrivelled was well preserved. It had a flat base of longish oval form, 5 millimetres long and 3 millimetres broad, upon which was a small semispherical granular surface, about 2 millimetres high. The latter surface had a grey colour, with a faintly ruddy tint; but the base was almost black. This was evidently from the action of some preparation of iron, for when moistened with hydrochloric acid the dark hue gave place to a faintly yellowish tint, which changed to an intense blue colour on the addition of a little cyanide of potassium. The paler portions of the growth also showed this reaction in a higher degree. We must assume, therefore, that the iron preparation affected the whole surface, but that only the underlying portions preserved the intense black tint, the superficial parts having become decolorised; further, that the flattish base represented the site of attachment of the portion in question, although its black colour might at first give the idea that it had been superficial (in the larynx), and therefore more exposed to the action of external operations.

"Further examination showed that the flattened base consisted of club-shaped, rounded papillary outgrowths lying in juxtaposition; moreover, that a whitish incision-wound, hardly one millimetre wide, ran nearly across the middle of the base, following the long axis pretty closely, and almost wholly concealed by the surrounding papillary outgrowths.

"Microscopical examination showed still more decisively than on the previous occasion that the surface of the adherent portion was almost wholly occupied by papillary outgrowths of various size. Only in the immediate neighbourhood of the surface of excision was there found a small zone of perfectly smooth superficial tissue; within the papillæ the large and hard epithelial cells, in layers and flattened towards the outer parts, represent by far the chief portion of the new formation; the connective-tissue framework was thin, soft, and vascular. No peculiar cell-formation was observed.

"The incised surface afforded an irregular soft and slightly vascularised tissue. *No deep layers of tissue, as after the first, and still more the second, operation, had been removed.* The section had been made very near the surface, so that only mucous membrane was removed. Thus only a little tissue, and that difficult to handle, was afforded for the purpose of an opinion on the structure of the underlying parts.

"No alveolar structure, or deposition, or penetration of epithelial masses could anywhere be perceived in this tissue. It consisted of young connected tissue, which had increased not towards the depths, but towards the surface, and contained elements some of which were proliferating. Nowhere did this proliferation reach the character of an independent centre of formation. *Thus this excised portion, in a still higher degree than was the case with the portions obtained by the previous operations, has shown itself to be a hard, compressed* wart growth, that has started, from a moderately irritated and *thickened surface*, and the examination of its base has not afforded *the least support for the idea of a new formation penetrating inwards.*

(Signed) RUDOLF VIRCHOW.

"*Pathological Institute, Berlin, July 1, 1887.*"

It will be seen that this report, so far as it went, was as satisfactory as those which had preceded it. As only tissue belonging strictly to the growth had been removed this time, no opinion as to the underlying structures could, of course, be given. On both the former operations, it will be remembered, Professor Virchow had dwelt with some emphasis on the fact that the forceps had brought away not only a complete section of the tumour, but portions of the structures on which it was seated, which would thus be seen to present no suspicious appearance. I think it right to insist on this, because both Gerhardt and Bergmann speak as if only shreds from the surface of the tumour—the outer husk as it were—had been submitted to Professor Virchow. The eminent pathologist's own words, in the report just quoted, as well as in the two preceding ones, leave no shadow of doubt on this point. It is impossible to get over his testimony, unless it be supposed that the creator of scientific pathology could not distinguish healthy from diseased tissue in a case where the merest beginner in microscopic work could do so without trouble. The notion is as preposterous as it would be to say that Gounod or Verdi could not distinguish a true note from a false one.

Visit to the Throat Hospital.—This seems the most appropriate place to mention a pleasant episode belonging to this period, though it has nothing to do with the medical history of the case. On July 13th, the Crown Prince paid a visit to the Hospital for Diseases of the Throat, Golden Square, an institution which, since I founded it in 1863, has relieved more than 105,000 patients. I was unfortunately too ill to be present on the occasion, but I was informed by the members of the Committee who had the honour of receiving the illustrious visitor that His Imperial Highness expressed himself greatly pleased with all he saw. He showed the greatest interest in the patients, to each of whom he spoke a few words of kindly encouragement. A little girl who had undergone the operation of tracheotomy was sitting up in bed nursing a doll. On being asked by the Crown Prince, "Which is the patient, you or the doll?" the little mite answered, "Sure I don't know which it is, my dear!" which delighted His Imperial Highness. There happened to be three German patients in the hospital at the time, and of them naturally the Crown Prince took special notice, asking each of them what part of Germany he belonged to, and a number of other questions. In the crowded out-patient room again he spoke to several of the sufferers waiting their turns to be attended to.

The Isle of Wight.—Very little reaction followed the removal of the last portion of the growth, and the august patient proceeded to the Isle of Wight, where Norris Castle had been placed at his disposal by the Duke of Bedford. For reasons which will subsequently appear I think it well to mention here that it was the Crown Prince himself who chose the Isle of Wight as a place of residence. He was very fond of the Island, and he liked Norris Castle, where he had stayed before, and which had the advantage of being close to Osborne. Dr. Wolfenden continued in attendance, and it was arranged that I should go down once a week.

A New Symptom.—His Imperial Highness much enjoyed his stay in the Isle of Wight, and although I thought the climate seemed to have a relaxing effect, he said he felt well, and was not tired after taking exercise. On the day of the great Naval Review (July 23rd) the Crown Prince talked a good deal, and was very hoarse for a day or two afterwards. On July 31st Dr. Wolfenden first noticed a slight swelling on the posterior surface of the arytenoid cartilages; this observation I confirmed at my next visit. The thickening was in the form of a yellowish ridge; it projected to the extent of about one millimetre, and extended across from the outer border of one cartilage to the corresponding part of the other.

The appearance of this new feature in the case caused me considerable anxiety, for I could not help fearing that it indicated inflammation of the perichondrium. If not disease of the cartilages themselves, I therefore warned the Crown Princess and other related personages that the possibility of the occurrence of serious perichondritis at some future date must be taken into account.

Galvano-Cautery as it should be used.—Towards the end of July there was some appearance of recurrence at the seat of the growth which I had removed. It did not project sufficiently for the blades of the forceps to catch it; I therefore determined to destroy it with electric cautery. This I did in a very careful manner, using an instrument specially constructed for the purpose by my assistant, Dr. Robert C. Myles, now of New York. The electrode, the tip of which was bent at a right angle so as to reach under an overhanging ledge, was guarded by two ivory plates fastened on with silk thread covered with hardened gum arabic, a substance which has been found to be an excellent non-conductor of heat. In this way the tip was left uninsulated to touch the part to which it was applied. It was thus impossible to burn any part of the larynx except the spot which it was desired to reach, nor could the heat of the incandescent point be felt by the parts which it did not actually touch, as often happens with other cautery instruments. Every provision against all conceivable accidents having thus been made, on August 2nd I applied the cautery, using the utmost gentleness in manipulation and merely touching the site of the growth with the point. The Crown Prince felt hardly any inconvenience from the application, which was not followed by any appreciable reaction. The next day a small flat eschar was visible at the spot which the cautery had touched, but Dr. Wolfenden informed me that there was no appearance of inflammation round it. Six days later I again applied the galvano-cautery with the same precautions as before, in the presence of the Drs. Wegner and R. C. Myles.

Scotland.—On August 9th the Crown Prince started for Scotland, accompanied by Dr. Wegner, Dr. Landgraf, and Mr. Mark Hovell, surgeon to the Hospital for Diseases of the Throat, who had succeeded Dr. Norris Wolfenden as Resident Physician, domestic circumstances preventing the latter gentleman from continuing his services. The Crown Prince went on to Braemar, attended by Mr. Hovell; whilst Drs. Wegner and Landgraf remained at Edinburgh, so as to be within reach in case of emergency. As there has, I believe, been a good deal of comment on this arrangement, I may here take the opportunity of stating that I had nothing whatever to do with it. My advice on the subject was not asked, and was therefore not given. The Crown Prince simply acquainted me from time to time with the arrangements which had been made. Whilst informing me that Wegner and Landgraf were to stay at Edinburgh, he told me that it had been settled that they should both pay him a visit at Braemar.

On August 11th, Mr. Hovell wrote to me that a small though, caused by the cautery, had come away, and two days later he informed me that the slight wound had healed. The growth thus destroyed never returned.

During His Imperial Highness's stay at Braemar a marked improvement took place in the condition of his throat. The redness of the mucous membrane was much less congested, and his voice became strong and almost natural in tone. Her Majesty the Queen expressed to Mr. Hovell the pleasure she felt at hearing the Crown Prince speak once more in his own voice. I visited the Prince at Braemar on August 20th, and found that the ridge on the posterior surface of the arytenoid cartilages had almost disappeared. I saw him again in London on August 31st, when I noticed that the left cord moved more freely than before, though its action was still imperfect. His general health at this time was excellent.

Plans for Autumn.—As His Imperial Highness had expressed a wish to go for some weeks to Toblach, in the Tyrol, of which place he had very pleasant reminiscences from a previous visit, and as I saw no objection to his gratifying this wish in that respect, it was arranged that he should go to the Austrian Alps. I advised him, however, if he found the climate of the Tyrol at all cold to go further south. He determined not to pass through Berlin, greatly as he should have liked to see the aged Emperor. As the Crown Prince himself pointed out, however, if he went to Berlin he would have had to receive visits from a very large number of people, and this would have involved an enormous amount of talking, which he feared would hurt his throat. In this decision there can be no doubt that from a medical point of view His Imperial Highness was entirely right; a visit to Berlin under such circumstances would have been only too likely to do him much harm. The Prince also told me that Dr. Wegner's place would be taken for a time by Dr. Schrader, as the health of the former was not quite satisfactory. And His Imperial Highness said that he himself was now so well that he did not require any other doctor with him but Mr. Hovel, with whom he expressed himself highly satisfied. For this reason, he added, Dr. Landgraf would be relieved of his duties of attendance on reaching Germany.

Gerhardt's Second Attempt to Improve Matters.—With the disappearance of the young "tabsarzt" from the scene I feel it necessary to say a few words on a subject I would have gladly refrained from touching on. The importance attached by my German critics, however, to what they call Dr. Landgraf's evidence compels me to alternative but to speak quite plainly on this matter. After Dr. Landgraf's first examination, the Crown Prince complained to me of his roughness and want of skill, and on many subsequent occasions His Imperial Highness assured me that after the young German surgeon had used the laryngoscope, his throat felt sore and tired for several hours. The Crown Prince, whose consideration for the feelings of others was of the most chivalrous description, bore with the infliction as long as he possibly could; but after a time he asked me if I could not give Landgraf a hint to be more gentle and to take less time in making his examinations. I ventured, however, to represent to His Imperial Highness that this would place me in a very invidious position, and that it would be said in Germany that I did not wish Landgraf to get a proper view of the larynx. I had two or three times the opportunity of seeing him examine the Crown Prince's throat, and his performance was almost as painful for me to witness as it was for the august patient to undergo. Just before his departure for Scotland His Imperial Highness again complained to me about Landgraf's clumsiness, and I felt it necessary to tell Dr. Wegner that if the young surgeon did not mitigate his style of examination, I was sure that the Crown Prince would send to Berlin for some less inexperienced laryngoscopist to replace him. Dr. Wegner begged me to use my influence with His Imperial Highness to prevent any step being taken which would have a most injurious effect on Landgraf's career, while he promised to warn the young surgeon to be more careful in future.

I confess after seeing how little familiar Dr. Landgraf was with the laryngoscope I did not attach any importance to whatever his observations. I shall refer to this matter again in dealing with Dr. Landgraf's separate report.

When the Crown Prince was staying in the Isle of Wight, Landgraf, who had then been some weeks in attendance, seems to have suddenly become distinctly aware that the left vocal cord did not move quite as it should do. This startling discovery he forthwith communicated to some of His Imperial Highness's suite, and it finally came to the ears of the Crown Prince, who was rather alarmed about the matter. When, however, I explained to him that the condition which Landgraf had just noticed for the first time* had existed from the date of my first visit to Berlin, he was perfectly satisfied! Again Landgraf appears to have mistaken the ridge outside the larynx behind the arytenoid cartilages which I have described for a swelling on the posterior wall, that is to say, inside the larynx below the level of these cartilages. On this, as I afterwards learned, he founded most alarming reports of cancerous infiltration spreading round the orifice of the windpipe, which, as we now see, have been duly deposited in the archives of the Prussian Kingdom!

I found that Dr. Wolfenden entirely agreed with me as to Dr. Landgraf's want of laryngoscopic skill. To him also the Crown Prince repeatedly complained of the German surgeon's examinations, and my colleague expressed to me his surprise that if it was thought necessary to send any one from Berlin, a more competent observer was not chosen.

When, in November, a report based on Landgraf's observations was drawn up at Berlin, I requested Dr. Wolfenden to give me his views on the subject in writing. The following is his statement:—

"I never considered Landgraf a person to be treated seriously. Whatever he may be as a surgeon, and of this I have no knowledge, he is certainly nothing of a laryngoscopist. His laryngoscopic examinations of the Crown Prince were prolonged, unskilful, and exceedingly tiresome, so much so that the Crown Prince made a complaint after the second examination at Norwood, and asked me whether he should not speak to Landgraf and request him to desist from examining his throat daily. The Crown Prince stated also that Dr. Landgraf's examinations were painful to him, and his manner objectionable. I had not the slightest confidence in the accuracy of Dr. Landgraf's observations, as he constantly imagined he saw things which were not present, and at the same time overlooked the most obvious phenomena. Notwithstanding this I never stood in his way, and whenever he expressed a desire to examine the Crown Prince's throat I always permitted him to do so before I myself applied any medicament."

It is with the greatest reluctance I have had to deal thus frankly with Dr. Landgraf, but so much has been made by my opponents of his testimony that I am compelled in self-defence to show exactly what value should be attached to it.

Possibilities of the Case.—Shortly before their Imperial Highnesses left England, I thought it my duty to lay before the Crown Princess my views as to the prospects of the Prince. I told the Princess frankly that although at that time the affection did not seem to me to be of a malignant nature, it might nevertheless turn out to be so. I fully explained to her what in my opinion the four possible developments of the case might be: 1. The tumour having been destroyed might not grow again, the affection being thus practically cured. 2. The tumour might sprout up again, and require to be removed or destroyed perhaps more frequently than once. 3. A condition known as "multiple papilloma" might result, which was dangerous if not properly treated, but not necessarily fatal. 4. The disease might be cancerous already, or cancer might develop later on. I impressed upon Her Imperial Highness that, although at that moment everything looked most promising, the possibility of an eventual unfavourable development must not be ignored. That I laid my views before the Princess in the most frank and complete way I have documentary evidence to show, and I am quite ready to swear to it on oath before the President of the College of Physicians and the German Ambassador acting together. With the Crown Prince himself I of course could not discuss the situation with the same freedom; whilst encouraging him as to his condition I was careful not to say anything of a misleading character.

CHAPTER IV.

TOBLACH—VENICE—BAVENO.

The Case enters on a New Phase.—The Crown Prince left London on September 3rd, and travelled by Frankfort and Munich to Toblach, which he reached on the 7th.

In Mr. Hovell's note-book, under the date of September 5th, I find the following note: "During the journey the Crown Prince's throat has certainly been more relaxed: on the 4th I noticed that the arytenoid cartilages were more congested and slightly swollen: on the 7th, on arriving at Toblach, this feature had almost entirely disappeared, but the right ary-epiglottic fold was slightly inflamed, just at the point where it joins the arytenoid cartilage, and this came to a slight ulceration. There is also some congestion of the epiglottic fold, and the right ary-epiglottic fold was also slightly puffy, though of normal colour. On the 8th the congestion of the right side had entirely disappeared, but there was a small hyperæmic spot just below the inter-arytenoid fold. There was no swelling whatever, however, in the situation of the ulceration. Slight thickening at the hinder part of the left vocal cord, rather farther back than the site of the growth which Sir Morell had destroyed. There was increased hoarseness, with some congestion of the larynx, which, however, soon subsided. On the 14th, an oblong swelling, about 5 millimetres in length and 3 in width, was noticed half an inch below the middle of the left cord and parallel with its margin. On the 18th the tumefaction at the posterior part of the cord had disappeared, but the new subglottic tumour was still visible."

On the 20th, when I arrived at Toblach, the swelling was nearly round, and measured more than half a centimetre in diameter, but projected very slightly from the side of the larynx. The Crown Prince looked well, and Dr. Schrader gave me a very satisfactory report as to his general health. When out walking, however, he seemed to get tired sooner than the rest of the party. Two days after my arrival he caught cold, and on the following day he was languid, had no appetite, whilst his temperature was 101° F., and the left ary-epiglottic fold suddenly became œdematous; but this condition, together with the febrile symptoms, disappeared in twenty-four hours. Although the œdema was apparently due to inflammation from taking cold, the possibility of its being caused by limited perichondritis was discussed at the time. It should be noted that the acute œdematous swelling just referred to seemed to be altogether independent of the hard swelling beneath the edge of the vocal cord, which became gradually smaller but did not entirely disappear.

A Deceptive Lull.—It had already been arranged that the Crown Prince should spend the winter in Italy, and Baveno was now decided on as the most suitable place for him. As the weather was becoming rather cold at Toblach, I advised His Imperial Highness to spend a week or two previously at Venice, of which he was very fond. He accordingly went there on September 29th, and stayed till October 6th, the condition of his larynx meanwhile steadily improving. On the 7th he went to Baveno, where Mr. Hentley had placed his beautiful villa at his disposal. Here I found the Crown Prince's throat in a very satisfactory state, except that the left cord did not move quite freely, and its posterior extremity was on a somewhat higher level than the corresponding portion of the right. I judged that some perichondrial inflammation had taken place about the anterior spur of the left arytenoid cartilage, and that this had pushed the vocal cord a little upwards, with that addition. There was no redness, however, at that spot, and I therefore hoped that the morbid process had been arrested. In the larynx itself there was at this time nothing beyond slight general congestion and the remains of the subglottic swelling which had been discovered on September 14th.

Hopes and Fears.—I then took leave of His Imperial Highness, not expecting to see him again for many months. That I did not however, even at that time take an entirely optimistic view of the situation is clearly shown in the following passage of a letter which I wrote to Professor Oertel of Munich on Oct. 21, in reply to one which I received from him soon after my return to London:

"With regard to your inquiries about the Crown Prince, I am happy to tell you that when I saw him at Baveno on my return to Berlin. There has never been anything at all characteristic of malignant disease as far as (the naked eye) appearance goes, so that my treatment has throughout been based on the observations of your great pathologist. Valuable, however, as Professor Virchow's investigations have been, they of course only furnish negative evidence, and I shall not feel quite safe from anxiety until six months have elapsed since the application of electro-cautery. I need scarcely assure those who know me that I have never been in the least unwilling to meet my German confreres, and should any unfavourable symptoms unfortunately develop, I should be the first to ask for the co-operation of one of your countrymen.

"With regard to the publication of bulletins, I quite agree with you that frequent official communications are desirable, as they often allay anxiety, and prevent the spread of false news. In the case of a private person, however, this question always rests with the patient, and it does not seem right that because the sufferer is of the highest rank his own feelings in the matter should be disregarded.

"Yours truly,

(Signed) "MORELL MACKENZIE."

Clouds Gathering.—Things went on well till about the middle of October, when Mr. Hovell's reports began to be less favourable. On the 17th the larynx became acutely congested, and ten days later the subglottic swelling was seen to be increasing in size, and the whole of the left side of the larynx was somewhat enlarged. On October 28th the surface of the tumour became slightly ulcerated, and the vocal cord above it was slightly swollen along its free edge. In spite of this the illustrious patient's voice was quite clear, and in the opinion of the Crown Princess perfectly natural. A mournful interest attaches to this remark of Her Imperial Highness, for this was the last time she was ever to hear the true sound of that beloved voice. The next day the Crown Prince became hoarse again, and on October 30th a new swelling was noticed beneath the right vocal cord, whilst the one on the other side was seen to be throughout quite subdued. Nevertheless, except the renewed hoarseness, there was little to indicate, either to the illustrious sufferer himself or to others, that a change for the worse had occurred.

On November 3rd the Crown Prince proceeded to San Remo, where a suitable residence, the Villa Zirio, had been prepared for him. On that day Mr. Hovell perceived that the subglottic tumour had grown considerably, being then rather more than one centimetre in diameter, and raised to the extent of about four millimetres. The extension of the growth since it was first observed had always been in an upward direction. On the morning of the 4th some œdema was seen at the base of the left arytenoid cartilage; this disappeared in the evening, but was again present on the following morning. As the symptoms now presented a decidedly ominous appearance, an urgent message was sent to me, on receipt of which I at once started for San Remo, which I reached on the evening of the 5th.

CHAPTER V.

SAN REMO—THE WORST FEARS CONFIRMED.

A new Growth appears.—On the morning of Nov. 6th I examined the Crown Prince's throat, which I found in exactly the condition described in the reports. The mucous membrane over the left arytenoid cartilage was moderately œdematous, and of a bright pink colour. The new growth was bright red in colour, rather more prominent in the centre than elsewhere, and ulcerated on the surface. Its appearance was altogether unlike that of the one which I had destroyed, and the other swellings which had from time to time shown themselves in the

Fig. 6.—Sketch made Nov. 6th, showing a large new growth *half an inch below* the left vocal cord, and a smaller one *below* the right cord.

larynx; it had in fact a distinctly malignant look. Without rising from my chair I informed His Imperial Highness that a very unfavourable change had taken place in his throat. He said, "Is it cancer?" to which I replied, "I am sorry to say, Sir, it looks very much like it, but it is impossible to be certain." I felt that evasive answers, which for the patient's own sake medical men are often compelled to give under similar circumstances, would in the present instance have been out of place. The Crown Prince received the communication with perfect calmness. After a moment of silence he grasped my hand and said, with that smile of peculiar sweetness, which so well expressed the mingled gentleness and strength of his character, "I have lately been fearing something of this sort. I thank you, Sir Morell, for being so frank with me. In all my long experience I have never seen a man bear himself under similar circumstances with such unaffected heroism. He showed not the least sign of depression, but spent the entire evening in the drawing-room at dinner time that evening he was cheerful without apparent effort, and chatted freely in his usual manner. A day or two afterwards, in reply to a question as to his general health, the Crown Prince said he had never felt better in his life, adding, with a smile, "In these circumstances, I really must apologise for feeling so well!" To appreciate the extraordinary fortitude displayed by this magnanimous man, it must be remembered that what he had heard was something much worse than a mere sentence of death. He believed at that moment that he was doomed to a painful death by suffocating agony worse than death. There is nothing more terrible than the struggle of a powerful constitution with the slow but relentless advance of malignant disease, when the life is as it were eaten out of a man bit by bit, and each day's sufferings are made the prelude by the anticipation of those that are to come. This was the prospect which the Crown Prince "looked forward to without fear, placing his trust in God," to use his own words; it was one which would have struck dismay into the heart of many a brave man who has never felt fear on the battlefield.

With the view of having the diagnosis confirmed by the evidence of the microscope it would have been more satisfactory to have removed a portion of the growth with forceps, and to have submitted it to Professor Virchow. Such a procedure, however, was clearly out of the question whilst the larynx was in so "angry" a condition as it then was; any additional irritation would have certainly made matters worse. It was fortunate for me that I did not attempt anything of the kind, for two days later, acute œdema of the upper opening of the larynx came on, both the false and the true cords being so markedly œdematous that, had I ventured to perform one,

A Consultation called.—In such a serious state of affairs it was of course desirable to have further medical aid, and I felt that I might fairly claim from medical skill in such a case, but that no opportunity of possible help, however slight, should be neglected.

The question was: Where should it be sought for? It was before everything essential to have the assistance of men who would bring absolutely unbiased judgments to the case. At Berlin, to which my thoughts naturally first turned, there was no one (setting aside Gerhardt and Tobold, who had already strongly committed themselves to an opinion on the matter) but Professor Bernhardt Fraenkel and Dr. Hermann Krause, the former of whom had formerly been a distinguished laryngologist, had long since given up the speciality, which has for some reason or other never flourished very vigorously in the Prussian capital. The want of official recognition by the University, from which it suffered till comparatively recent times, has probably been the chief cause of its feeble vitality in that city. At Vienna, on the other hand, which was the cradle of this department of medical science, the tradition has been kept up, and laryngology has always been well represented in the professorial body.

The Counsellors Chosen.—I now carefully weighed the respective merits of the three leading throat-specialists in the Imperial City. If I had been selecting an *operator*, I probably should have chosen Professor Stoerk; and if I had been dealing with a disease of such obscurity that wide experience was required, I should have invited Professor Schnitzler, but at that moment the *diagnosis* appeared only too clear. In the end I selected Professor von Schrötter, mainly in the hope that his extensive knowledge of respiratory affections would enable him to make some practical suggestions in connection with *tracheotomy*. Of the two available laryngologists at Berlin I chose Dr. Krause, with whose knowledge and ability I had been greatly struck at the International Medical Congress held at Copenhagen in 1884. On that occasion I was President of the Section of Laryngology, a dignity which was conferred on me as a special honour, contrary to the almost invariable custom at these gatherings where the presidential chairs are fil