Clinical researches on different diseases of the larynx, trachea and pharynx, examined by the laryngoscope : preceded by historical remarks on the practical use of the laryngoscope / by Lewis Türck.

CLINICAL RESEARCHES

ON

DIFFERENT DISEASES OF THE LARYNX, TRACHEA AND PHARYNX,

EXAMINED BY THE LARYNGOSCOPE

PRECEDED BY

HISTORICAL REMARKS ON THE PRACTICAL USE OF THE LARYNGOSCOPE

BY

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The present „Clinical researches“ with the exception of the additions in the notes, are a translation of these readings and lectures, made by Dr. Charles Dickin.

A more detailed statement of my clinical observations accompanied with numerous chromo-lithographical representations by the renowned artist Dr. Elfinger, will soon appear in German.

The „Historical remarks“ are translated from the two first chapters of the French edition (1861) of my „Practical method of Laryngoscopy“ (1860).

Although I have abridged the historical part of the original German edition of the just mentioned work to a few pages, and restricted myself to republishing an extract of declarations, which relate to my priority, the same thing was not allowed me in the French edition, and I now find myself induced to lay before my English readers, also a detail of the matter.

Finally, I must call the attention of the reader who wishes to make use of the laryngoscope himself, to my just mentioned „Practical method,“ illustrated with many drawings, as well as to my „Late improvements of laryngoscopical and rhinoscopical apparatus.“ *(Allg. Wr. Med. Ztg. Nr. 28, 32 and 35, 1861.)*

Vienna, August 1862.

The Author.

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ERRATA.

Page	3	line	21	from	above	*for*	„Nr. 14“	*read*	„Nr. 11.“
„	—	„	25	„	„	„	„April 10.“	„	„April 12.“
„	—	„	28	„	„	„	„28.“	„	„29.“
„	—	„	34	„	„	„	„Nr. 32“	„	„Nr. 52.“
„	24	„	23	„	„	„	„The tuberculous ulcers of the epiglottis“ *read* „The ulcers of the epiglottis in tubercles of the lungs.“		
„	25	„	21	„	„	„	„tuberculous ulcers“ *read* „ulcers in tubercles of the lungs.“		
„	34	„	17	„	below	„	„At lenght“ *read* „Finally.“		
„	43	„	20	from	above	„	„one and a half long“ *read* half an inch long.“		
„	47	„	12	„	„	„	„the glottic ligaments“ *read* „the lower glottic ligaments.“		
„	—	„	14	„	„	„	„the ligaments“ *read* „the lower ligaments.“		
„	—	„	11	„	below	„	„the glottic ligaments“ *read* „the lower glottic ligaments.“		
„	49	„	1	„	„	„	„Nr. 25, June 21“ *read* „Nr. 22, May 31.“		
„	57	„	19	„	above	„	„posterior“ *read* „anterior“.		

Historical remarks

on the

practical use of the Laryngoscope.

Many years had elapsed since a speculum invented by Selligue had been declared of no practical utility, and has been abandoned (although by means of it Bennati had been enabled to obtain a view of the glottis [1]), when Liston [2]) alluding to the glottal oedema, mentioned the possibility of the parts being seen, by introducing into the throat of the party a little mirror, similar to those used by dentists, but which should previously be heated. In the year 1855 Garcia [3]) published an interesting account of experiments upon himself, by means of a similar instrument, and with a view to make new observations on the human voice.

However, as far as has been ascertained, the speculum has not been used in real cases of morbid affections either by Liston, Garcia, or any other persons; and if such experiments have actually been made, they have not been perseveringly followed up, which is probably owing to the fact, that experiments of this kind though practised on many and various individuals, at first generally prove a complete failure. The most insufferable vomituritions are excited by them,

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[1]) Trousseau et Belloc, Traité Pratique de la Phthisie laringée, etc.

[2]) A view of the parts may be obtained by means of the speculum, — such a glass as is used by dentists on a long stalk, previously dipped in hot water, introduced with its reflecting surface down-wards, and carried well into the fauces. Practical Surgery, London 1840, p. 417.

[3]) The method which I have adopted is very simple. It consists in placing a little mirror, fixed on a long handle suitably bent, in the throat of the person experimented on, against the soft palate and uvula. The party ought to turn himself towards the sun, so that the luminous rays falling on the little mirror, may be reflected on the larynx. Observations on the human voice. The London, Edinburgh and Dublin Phil. Magaz. Vol. X, 1855, p. 218.

and no satisfactory result as to exploring can be obtained: this is, at any rate, what I have frequently had occasion to observe during my first attempts at experimentation, with glasses answering pretty well to Garcia's vague description of what they ought to be. Nevertheless, being convinced that the laryngoscope might become an instrument of great practical utility, I took upon myself to improve upon its shape, and if possible to alter it so as to make it generally useful for medical purposes.

After a long series of most varied experiments made by myself during the summer of 1857, on dead subjects, and on the patients under my care in the „General Hospital", I succeeded in giving the laryngoscope so convenient a shape as suited it best for the purposes of examination both of „the larynx, and adjoining parts, on a great number of individuals [1])."

At a meeting held by the I. R. medical Society of Vienna, on the 9. April 1858, I made known this result I had obtained during my reiterated experiments, a result that proved the more satisfactory when compared with the fruitless attempts that had preceded, and clearly showed that the prevailing notion of the unserviceableness of this instrument was unfounded. It was at the same meeting that I first explained the principles upon which my method rests, and which I promised, at a later period to publish them at full length [2]). At this meeting, I also showed a few specimens of my laryngo-pharyngeal speculums, which have since undergone no material alterations [3]).

Since then I have been enabled by constant study, and much practice, to do much towards improving the system of laryngoscopy adopted by me, and these improvements have been made known to the public by the organs of the medical press.

These articles in the journals, to which my first publications on former experiments and researches have been added, together

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[1]) Report of the Imp. R. Society of the Physicians of Vienna at a meeting held on the 9. April 1858 (section of Physiology and Pathology), and published by them in their own „Medical Review" (Zeitschr. d. k. k. Ges. d. Aerzte Nr. 17, April 26., 1858).

Since February 1856, it has been my office to superintend the treatment of all those who were in my wards destined for internal diseases in general, besides those in two wards principally for nervous diseases. In the year 1857 I have treated in the 7 wards of my departement 1873 patients, among which there were only 275 cases of diseases of the nervous system. I only mention these numbers in order to deny the false statement lately made by Dr. Czermak (See Virchow's Archiv, Dec. 1861) that I had then only made laryngoscopical experiments on several patients with nervous diseases.

[2]) These publication in details with illustrations followed on the 28th of June 1858 (Zeitschr. d. Ges. d. Aerzte Nr. 26.)

[3]) Report (Zeitschr. d. Ges. d. Aerzte, Nr. 17, April 26., 1858).

with some recent additions of mine, form the subject of my treatise [1]); and if I have now and then availed myself of a few remarks from other professional men, which seemed to throw some light upon the subject, I have never done so without mentioning their names.

I think that an account of the very numerous particulars all which I have gained by experience cannot fail, to awake some interest in those who intend to make experiments in laryngoscopy; as well as what I have said at the end about rhinoscopy.

The following is a list of the different treatises and notes which relate to my researches on the subject.

1. Report of a meeting of the Section of Physiology and Pathology of the I. R. Society of the Physicians of Vienna, 9. April 1858 (Zeitschr. d. k. k. Ges. d. Aerzte, Nr. 17, April 26., 1858).

2. The laryngoscope and mode of using it (Zeitschr. d. Ges. d. Aerzte, Nr. 26, June 28., 1858).

3. Of an artifice in examining the larynx (artifical dispositions) (Zeitschr. d. Ges. d. Aerzte, Nr. 8, Febr. 21., 1859).

4. A description of several cases of morbid affections of the larynx examined by means of the laryngoscope (Zeitschr. d. Gesellsch. d. Aerzte, Nr. 14, March 14., 1859).

5. Of the laryngoscope and mode of using it in affections of the larynx and adjoining parts — (Containing an account of eleven new pathological cases.) (Allgem. Wiener med. Zeitung, Nr. 15, 16, 17, 18, 19, 20, 21, 22, 25, 26 from April 10., to June 28., 1859).

6. Of a reflecting apparatus and of the examination of the back part of the larynx. (Allgem. Wiener med. Zeitung Nr. 48, November 28., 1859.)

7. Improvement in the mode of exploration by means of the laryngoscope. (Sitzungsberichte der mathem.-nat. Cl. d. kais. Akad. d. Wissensch. XXXVIII. Bd. 1859.)

8. Of obtaining magnified views of the larynx and of some artifices in the laryngoscopical examination. (Zeitschr. d. Ges. d. Aerzte, Nr. 32, December 26., 1859).

9. Of a proper instrument for pressing down the tongue. (Zeitsch. d. Ges. d. Aerzte Nr. 3, January 16., 1860).

10. Of the position the mirror of the reflecting apparatus should be held in, whilst examination is taking place. (Allg. Wien. med. Zeitung Nr. 5, January 31., 1860).

11. Of some recent cases of laryngeal affections examined by means of the laryngoscope. (Allgem. Wr. med. Ztg. Nr. 8 und 9, Febr. 21. and 28., 1860).

12. Of several laryngoscopical instruments. (Allg. Wr. med. Ztg. Nr. 16, April 17., 1860.)

[1]) Viz. Practical method of Laryngoscopy.

13. Additions to Laryngoscopy and Rhinoscopy. (Zeitschr. d. Ges. d. Aerzte Nr. 21, May 21., 1860.)

14. Laryngoscopical communications on ulcers of the larynx. (Allg. Wr. med. Ztg. Nr. 25, June 19., 1860.)

15. Notes on Rhinoscopy. (Allg. Wr. med. Ztg. Nr. 33, August 14., 1860.)

16. Notes on Laryngoscopy. (Allgem. Wr. med. Ztg. Nr. 34, August 21., 1860.) [1])

Dr. Czermak having lately published as an addition to the French edition of his treatise, a „communication" addressed to the „Académie des Sciences" and to the „Académie de médicine" [2]), in which he pretends to claim the right of priority over me, respecting the introduction of the laryngoscope in the medical practice, I feel myself compelled to answer his illegitimate pretensions merely in the following terms.

Dr. Czermak who, during the winter of 1857—1858 had borrowed from me my laryngoscopes, as he told me expressly, to make some physiological researches, and especially with a view to repeat the experiments made by Garcia, published an article [3]), the sole object of which has been that of recommending the laryngoscope to the medical world for general use. At a subsequent meeting of the Society of Physicians, held on the 9. April, 1858, the first since the publication of Dr. Czermak's article, I have protested against it, and Dr. Czermak shortly afterwards expresses himself thus [4]): „I have simply related, touching the most essential points only, what has taken place, in very few words it is true, and perhaps in a manner wanting perspicuity [5]): *Nobody, however, can entertain any doubt as to the fact of Dr. Türck's deserving the merit of being the first, at least in this country, who succesfully introduced in his wards at the „General Hospital", since the summer of 1857, Garcia's method of examination, and that too for medical purposes.*

In a note annexed to this article, Dr. Czermak adds: „When I caused an article to be inserted in Nr. 13 of this paper, tending to call the attention of professional men to the practical

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[1]) Since the French edition the following notes have been published 17. Notes on Laryngoscopie. (Allgem. Wien. med. Zeitung Nr. 44. Octob. 30., 1860. 18. Of a new spatula of the tongue. (Allg. Wien. med. Ztg. Nr. 13, March 26., 1861. 19. Late improvements of laryngoscopical and rhinoscopical apparatus. (Allg. Wr. med. Ztg. Nr. 28, 32, 35. Juli 9., Aug. 5. and 27. 1861. 20. Notes on Rhinoscopie. (Allg. Wien. med. Zeitung Nr. 17., April 29., 1862).

[2]) Du laryngoscope et de son emploi en physiologie et en médecine. Paris 1860, p. 105—112.

[3]) Wien. mediz. Wochenschr. Nr. 13, March 27., 1858.

[4]) Wien. med. Wochenschr. Nr. 16, April 17., 1858.

[5]) In Wien. med. Wochenschr. Nr. 13, March 27., 1858.

utility of Garcia's speculum, I really was under the impression, that Dr. Türck, who had lent me the laryngoscopes he had had made according to his own directions, and which I used for physiological experiments, had altogether ceased to make his experiments for diagnostical purposes, on his patients at the hospital, which as I know, and mentioned in the article, he had undertaken during the previous summer."

„Had I been aware of the fact which I have just heard, i.e. that Dr. Türck had suspended his researches only during the winter, owing to the absence of direct solar light in the wards of his departement, I should certainly have abstained from causing the said article to be inserted in Nr. 13 of the Vienna med. weekly Gazette, and to *prevent my recommending the use of the laryngoscope in medical cases, a recommendation essentially suggested by the results of experiments made on my own self, from not seeming to have been impelled by the desire to detract from Dr. Türck's priority, which I have never claimed, and which is incontestably his own* [1]).

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*) Dr. Czermak says: „Im Wesentlichen habe ich diesen Hergang, wenn auch mit wenigen Worten und vielleicht nicht ausdrücklich genug loc. cit. (Wien. med. Woch., Nr. 13) angedeutet, obschon Niemand im Zweifel darüber bleiben konnte, dass in der That Herrn Dr. Türck das Verdienst gebühre, Garcia's Untersuchungsmethode wenigstens hier zu Lande zuerst, d. i. seit Sommer 1857, zu medizinischen Zwecken auf seiner Abtheilung mit Erfolg angewendet zu haben."

In a note Dr. Czermak adds: „Als ich in Nr. 13 dieser Wochenschrift einen Artikel einrücken liess, in welchem ich die practischen Aerzte auf die Verwerthung des Garcia'schen Kehlkopfspiegels aufmerksam machte, war ich der Meinung, Herr Prim. Dr. Türck, dessen nach seiner Angabe construirter Spiegel ich mich zu meinen ersten physiologischen Beobachtungen bediente, hätte die, wie mir bekannt war und ich auch in jenem Artikel andeutete, im abgelaufenen Sommer an Kranken seiner Abtheilung vorgenommenen Versuche einer Verwendung dieses Spiegels zu diagnostischen Zwecken gänzlich fallen lassen."

„Hätte ich gewusst, dass, wie ich erst jetzt erfahre, derselbe seine Untersuchungen den Winter hindurch wegen mangelndem direkten Sonnenlicht in seinen Krankensälen nur unterbrach, so würde ich den in Nr. 13 enthaltenen Aufsatz unterdrückt haben, um meiner wesentlich auf Beobachtungen an mir selbst gestützten Anempfehlung des Kehlkopfspiegels zu praktischen Zwecken nicht den Anschein zu geben, als wäre sie geschehen, um dem Prim. Dr. Türck die Priorität, auf welche ich übrigens nirgends Anspruch gemacht habe, zu entziehen, denn diese gebührt ihm jedenfalls ganz unbestreitbar."

If one year later [1]) Dr. Czermak has had the quite new idea of retracting these so clear and so precise explanations which he has given as he mentioned in his „Communication“ „after Dr. Türck had protested in an irritable manner against the violation of his intellectual property“ pretending to have given these explanations out of regard for old colleagues and the members of the „Directorial Board“! of the medical Society of Vienna [2]), some of whom were desirous of avoiding the unpleasantness of a polemical contention in the Papers , or „out of mere good-nature“ („Communication“), or, as he did not hesitate in asserting (loc. cit. Nr. 17), „because I was his senior“, it will not be difficult for the reader to judge of the importance to be attached to these reasons.

Dr. Czermak repeats constantly that I had abandoned my experiments before his first publication came out; this is quite erroneous. I have continued my researches during the summer and autumn of 1857, and have only discontinued them in the winter owing to a want, of proper solar light, which not even Ruëte's ophthalmoscope with a stand used by Dr. Czermak in his experiments on Autolaringoscopy could supply; I resumed them, however, at the close of the winter 1857—1858, that is before Dr. Czermak's first publication had appeared. And Dr. Czermak, who placed implicit reliance in the „verbal communications of well-informed persons“, answered to the invitation he received from me, June the 21. and November the 29. [3]) to publish whatever he had to say on this head, by a most insignificant letter written by Dr. Brücke, which may be read in a note annexed to his „Communications“, and in which no reference whatever is made to the introduction of the laryngoscope into common practice [4]). Dr. Czermak was, on the contrary, well aware that I had not altogether discontinued my researches, as it may distinctly be inferred from the tenor of the subjoined note from Dr. A. Elfinger [5]), a copy of

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[1]) Wien. med. Wochenschr. Nr. 17, April 23., 1859.

[2]) In the Wiener med. Woch. Nr. 17. Dr. Czermak alludes to simple members of the society, now he promotes them to members of the „Directorial Board“, which moreover is of no consequence.

[3]) Allgem. Wiener med. Zeitung.

[4]) This may be seen from a letter of Prof. Brücke dated the 15. of November 1860, which I possess. See also my „Rectification“ in: Archiv of Virchow, Vol. 23, number 3 and 4, 1862.

[5]) „I hereby declare that in the second half of the month of March, and anyhow before the 27. March 1858, Dr. Türck has, in my own room and presence demanded back from Dr. Czermak the laryngosco-

which I also caused to be inserted in Allg. W. med. Zeitung of the 21. June 1859.

Another circumstance, which proves that I had not given up my experiments, is the fact that I was able to communicate such results of my experiments to the Society of Physicians, at a meeting held on the 9. April 1858 as before mentioned (see p. 2); another unequivocal proof is that, since I had lent Dr. Czermak my instruments, I had ordered others to be made, which were shown by me at the same meeting of the Society of Physicians April 9, 1858, and a descriptive account of which is given in the report of this meeting on 9. of April 1858 (see p. 11)

In fact Dr. Czermak insists on having an evident proof of my having abandoned pursuing my researches in the simple circumstance that „Dr. Türck had till that moment never seen a violation of his rights in the experiments well known to him, which I made in the syphilitic wards, in order to render the use of the laryngoscope in common practice possible — and, moreover, that Dr. Türck during the whole time never once opposed my experiments although their object was known to him."

The truth of it is, that on the 16. March 1858 Dr. Czermak, accompanied by Dr. Gruber, then assistent physician of the syphilitic wards at the Hospital, called upon me to obtain permission to use my laryngoscope, in these wards, and in a letter from Dr. Gruber, still in my possession, this gentleman declares that he (Dr. Czermak) wished the more to obtain Dr. Türck's consent, as he knew that Dr. Türck, who had lent him his instruments, had only experimented with them on patients of his own wards. Therefore there was here no question about „rendering possible the use of the laryngoscope in common practice."

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pes he had lent him, adding that he stood in need of them to resume his researches. Vienna, April 28. 1859.

(Signed) Dr. Ant. Elfinger.

Ich bestätige hiemit, dass Herr Primararzt Dr. Türck in der zweiten Hälfte des Monats März 1858, jedenfalls vor 27. dieses Monats, in meiner Wohnung und meiner Gegenwart von dem Herrn Prof. Dr. Czermak die Kehlkopfspiegel zurückverlangte, welche er letzterem geliehen hatte, mit dem Bemerken, dass er dieselben zur Fortsetzung seiner Untersuchungen selbst wieder benöthige.

Wien, am 28. April 1859.

Dr. Ant. Elfinger.

By giving my consent to Dr. Czermak, and it would have been difficult for me to refuse it him, for he came accompanied by Dr. Gruber, I certainly did not forfeit my right of priority in favor of Dr. Czermak. — And yet eleven days had hardly elapsed when Dr. Czermak published an article in a medical journal [1]), in which he tried, to introduce, under his own name, and with the greatest selfconfidence, the laryngoscope into common practice. Thence it is evident that the interval of time given to Dr. Czermak for „rendering the use of the laryngoscope possible in the syphilitic wards" would have been too short.

Further, in a second article [2]) Dr. Czermak declared that, he had „based his recommendations of the laryngoscope for the medical practice, essentially upon the experiments made on his own self" (see what precedes). But it is evident that he had not gone through any of those experiments, which he pretends to have „hidden from no one", either in the syphilitic or any other wards, and that if ever he has made them, they must have proved a failure.

In fact, at the time of my communication to the Society of Physicans and of his first publications, Dr. Czermak was in the greatest ignorance of what relates to the application of the laryngoscope in medical practice.

Dr. Czermak's own avowal, which I have just quoted, is a new proof of his ignorance concerning the practical application of the laryngoscope in medical practice. For it is in fact evident, that „experimenting on onesself" cannot give a general insight into those difficulties, which a variety of circumstances in different individuals is apt to present; — nor will the method of self-experimentation, even admitting the practitioner to be acquainted with the different difficulties and enable him to surmount them whilst experimenting on others.

Dr. Czermak gives an other proof by the wants of any hints whatever upon the mode of manipulation of the laryngoscope, and again, by expressing such inadmissible recommendations as the following: viz. „to use, in order to obtain a view of the anterior angle of the glottis, two mirrors, placed over oneanother and made to move on a variable angle, the inferior mirror being carried as far along the posterior part of the pharynx, as will enable it to reflect the image obtained by it in the

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[1]) Wien. med. Wochensch. Nr. 13, March 27., 1858.
[2]) loco cit. Nr. 16, April 17., 1858.

upper glass, — or to make use of a convex glass with short focus", for the same purpose (to see the anterior angle of the glottis).

It was only after the publication of my detailed treatise, June 28, 1858 on the laryngoscope and the method of its application, that Dr. Czermak and others have learned the application of the instrument in a greater number of subjects.

Fig. 1.

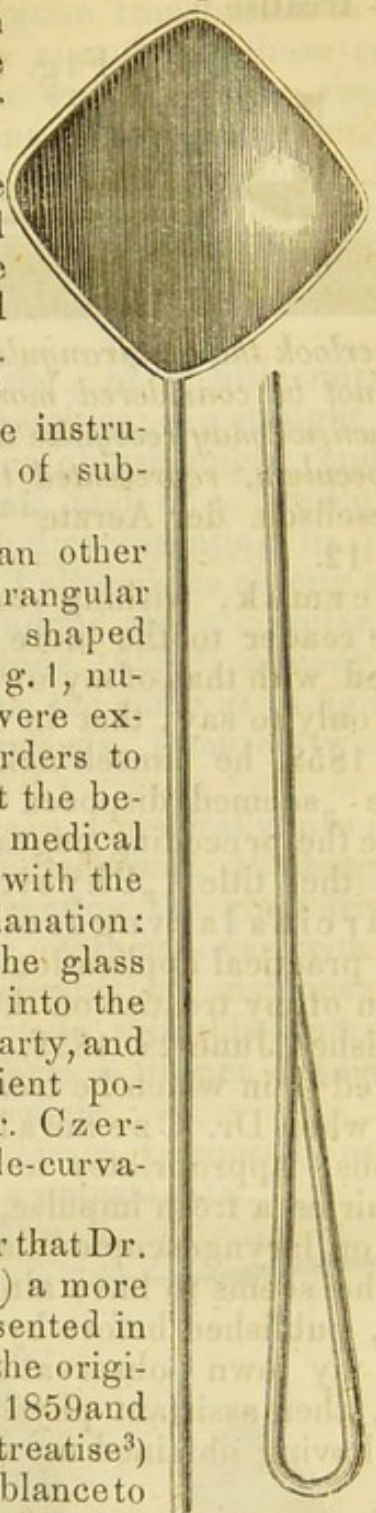

Fig. 2.

Dr. Czermak gave an other proof, by proposing the quadrangular mirror, an inconveniently shaped instrument represented in Fig. 1, numerous specimens of which were exhibited and offered at his orders to the practitioners of Vienna at the before mentioned meeting of the medical Society, on April 9., 1858, with the following rather puzzling explanation: „Bend the stalk, so that the glass may easily be introduced into the wide-opened mouth of the party, and be brought into a convenient position" [1]. At this period Dr. Czermak also indicated a double-curvature of the stalk.

It was nearly a year later that Dr. Czermak made known [2] a more convenient instrument represented in Fig. 2, which is drawn from the original in the W. med. Woch. Nr. 10, 1859 and in the French edition of his treatise [3] and already bears some resemblance to my own instrument. Finally in 1860 Dr. Czermak published a new laryngoscope represented in

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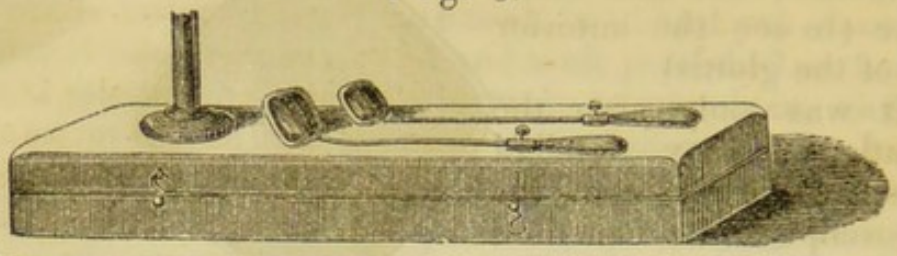
[1] Wien. med. Woch. Nr. 16, April 17., 1858.
[2] Wien. med. Woch. Nr. 10, March 5., 1859.
[3] Du Laryngoscope, Paris 1861, p. 21.

Fig. 3, drawn from the original illustration in the French edition of his treatise [1]).

Fig. 3.



If we overlook the quadrangular shape of this mirror, which will certainly not be considered more convenient than the circular shape of my own, we may recognize in this laryngoscope my laryngo-pharyngeal speculum, represented two years before in the „Zeitschrift der Gesellsch. der Aerzte“ [2]) and which is reproduced in this work, p. 12.

Dr. Czermak, wishing to establish his priority over me, refers the reader to the more remote date of his publications compared with that of my own; in reply to this observation, I have only to say, that in his second article published on April 17. 1858, he himself acknowledged my right to priority, which he „seemed disposed to claim“ in his first article March 28. (see the preceding pages), and that in a third article which bears the title „Physiolgical researches by means of Garcia's laryngoscope“, no directions were given by him for its practical application. It was only six months after the publication of my treatise on the laryngoscope and mode of using it, published June 28. 1858, that Dr. Czermak's fourth article appeared [3]), in which he treats of a practical application.

Lastly, when Dr. Czermak, referring to his pathological observations, appropriates to himself the merit of having given my inquiries a fresh impulse, by publishing [4]) a „remarkable“ case on laryngoscopic diagnosis (his first pathological observation), he seems to have altogether forgotten, that one of the two cases, published before by Dr. Stoerk [5]) was one resulting from my own observations in my wards, and that Dr. Stoerk, then assistant physician in my department published it after having obtained my special consent to do so.

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[1]) Ibid. Paris 1860, p. 29.
[2]) Nr. 26, du 28. Juin 1858.
[3]) Wien. med. Wochenschr., 8. Jan. 1859.
[4]) Wien. med. Woch. 8. Jan. 1859.
[5]) Zeitschr. d. Gesellsch. d. Aerzte Nr. 51, Dec. 20., 1858.

Of the laryngo-pharyngeal speculum.

According to the description transmitted to us by Liston and Garcia relating to their speculums, these consisted of a mirror with a handle to it; but with regard to the shape of the glasses no particular indications have reached us. It was at a meeting of the medical Society of Vienna, April 9., 1858, that I exhibited speculums made according to my own directions, and to which I gave the name of laryngo-pharyngeal speculums. The following description of them is contained in the report of this meeting [1]).

„These speculums consist, of a little mirror of oblong shape, well rounded at its extremities; of a straight stalk forming, with the plane of the mirror, an obtuse angle rendered variable by the flexibility of the metal; and of a handle fixed on the lower extremity of the stalk and representing its prolongation."

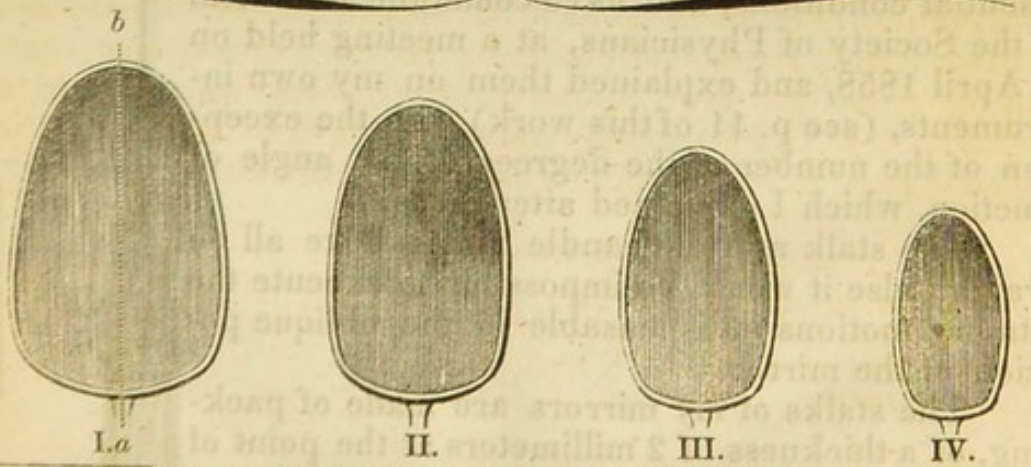
A short time afterwards I altered the oblong shape of these glasses into an oval one, and added also a circular form.

My treatise published June 1858 [2]) already contened representations of my speculums, the same as in figures 4, 5 (II to IV) and 6. A short time afterwards, I caused two larger speculums to be made (fig. 4 and 5, I.).

Like Liston and Garcia I generally use a mirror encased in a very slight frame of packfong. Wishing, however, to contrive some means of preventing the glass from cooling too rapidly, I tried to coat some of them over with a substance a non conductor of heat, the asbestus for instance; but the experiments which I have as yet made with this kind of instruments, are too few to enable me to form a proper estimate of the real value of this intended improvement.

The dimensions of the glasses, I generally use are varions; they are represented here in a natural size:

Fig. 4.



[1]) Zeitschr. d. G. d. Ae. Nr. 17, April 26., 1858.
[2]) Zeitschr. d. G. d. Ae. Nr. 26, June 28., 1858.

Fig. 5.

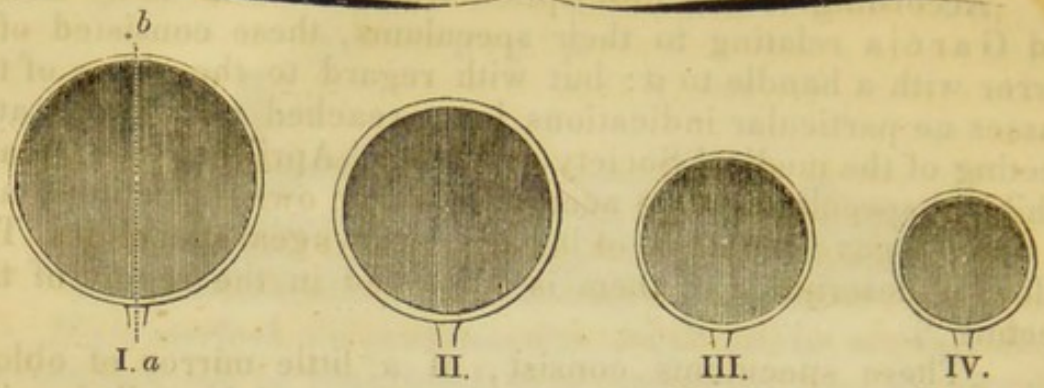
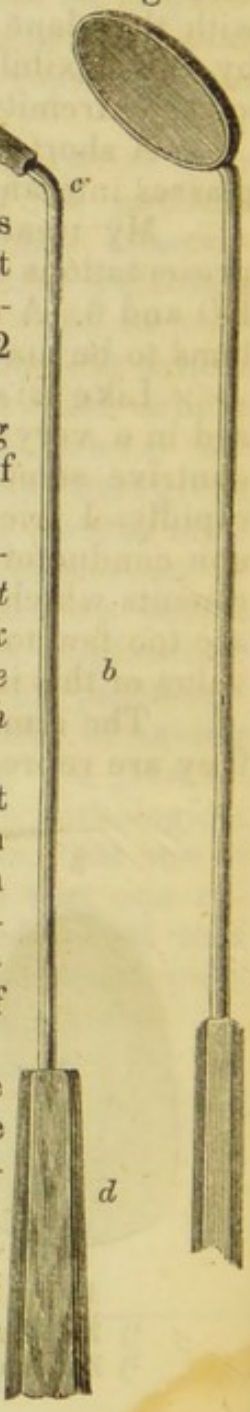


Fig. 4 and 5. — View of the reflecting surface of a mirror, *a*, point of insertion of the stalk, or base of the mirror. *b*, top of the mirror: *a b*, its longitudinal axis.

Fig. 6.

Fig. 7.



The longitudinal axis of the oval mirrors varies from 18 to 30 millimeters; their greatest breadth varies from 11 to 20 millimeters; the diameters of the circular glasses vary from 13 to 22 millimeters.

Liston and Garcia only mention „a long stalk suitably bent“ on the upper extremity of which the glass was to be fixed.

But in order to render the use of the laryngoscope of practical utility, it must have a straight stalk, its handle must also be straight, and the stalk must be fixed on the mirror at an invariable angle (angle of junction), the number of degrees of which must be determined.

I have been the first to ascertain these most essential conditions, and have communicated them to the Society of Physicians, at a meeting held on 9. April 1858, and explained them on my own instruments, (see p. 11 of this work) with the exception of the number of the degrees of the angle of junction, which I explained afterwards.

The stalk and the handle must above all be straight, else it would be impossible to execute the rotatory motions indispensable in the oblique position of the mirror.

The stalks of my mirrors are made of packfong, of a thickness of 2 millimeters at the point of their insertion into the handle, and of a lesser thickness towards the point of their junction with

the mirror, thereby presenting a considerable power of resistance and allowing of any alteration being made in the angle of junction whenever required; this, however, is a case of rare occurrence.

The length of the stalk is of about 8 centimetres; the handle is of the same length, and made of wood.

After having gone with great precision through a whole series of comparative experiments in order to determine the size of the angle of junction, I have in my treatise, June 28., 1858 (loc. cit.), fixed the same at from 120 to 125°. This I have found to be the most convenient size, and I have preserved it unaltered in numerous experiments that have turned out very successful. However there are very few cases in which it becomes necessary, to alter the angle.

With regard to the selection of glasses it is quite natural that one should prefer the largest size the patient can put up with. With adults Nr. I and II of the circular mirrors and Nr. II and III of the oval ones are generally very convenient. I generally use Nr. I and II of the circular ones. The smaller kinds are seldom applied except in very young people, in order to examine the back of the palate, the tonsils, or in cases of Rhinoscopy.

Clinical researches

on

different diseases of the larynx, trachea and pharynx, examined by the Laryngoscope.

On catarrhal Inflammation of the larynx *).

1. Acute catarrhal Inflammation.

The pathological anatomical changes are the same as those of a catarrhal affection of the mucous membranes in general, (See Rokitansky's patholog. Anat. vol. II. page 40) namely, red injections from a pale to a deep red, from the injection of the minutest branches to the largest trunks of the vessels, whereby the mucous membrane appears to the naked eye of a uniform red colour. Dullness, tumefaction and looseness, arising from infiltration of the texture of the mucous membrane with a serous fluid, and finally, the formation of a purulent secretion.

By the aid of the laryngoscope, we are able to observe these changes even in a living subject.

In an etiological sense, acute catarrh of the larynx may be divided into an independant, substantive, and a symptomatical. While we pass over the latter, which appears in acute exanthemae, as well as the pustular eruptions which we see in small pox, we will only speak here of the substantive acute catarrh.

Extension.

The pathological anatomical changes show a very different extension both to the larynx itself, as well as to the neighbouring parts.

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*) Published in the „Allgem. Wiener mediz. Zeitung" Nr. 49, Dec. 3., 1861 and single pathological cases in Nr. 21, May 24., 1859 and Nr. 9, Febr. 28., 1860.

The following parts of the larynx itself, may be affected, exclusively or at least prevailing in various degrees of intensity. The epiglottis, the upper ligaments of the glottis, the coverings of the mucous membrane of the Santorinian and arytaenoid cartilages, the ary-epiglottic folds, the lower ligaments of the glottis etc.

The disease may affect single, or more of the before mentioned parts at the same time, and indeed the affection may appear exclusively, or preponderating on one or both sides; finally the whole of the parts mentioned, may also be affected at the same time. Very often, the neighbouring mucous membranes, those of the entrance of the throat, of the pharynx, of the trachea and bronchial tubes, of the pharyngo-nasal cavity, are affected with catarrh at the same time as the mucous membrane of the larynx, or the catarrhal inflammation of the larynx arises from the catarrh of the adjoining parts.

Appearances of disease.

The appearances of disease are very different, varying according to the special seat of the malady.

The epiglottis seems only to be red on the posterior, or even both surfaces, or transformed into an irregular unsymmetrical swelling, in unequal intensity of the disease on both sides.

Old observers (Home and others) speak already of an epiglottitis, in which the epiglottis is visible behind the tongue, like a red round body, and the patient complains of pain in swallowing, and also of compression produced between the os hyoides and the thyroid cartilages.

These observations are quite correct. Laryngoscopical examination has proved to me that, in cases of epiglottitis where the other parts are free, the pain in swallowing is really only to be attributed to inflammation, in other cases, to ulceration of the epiglottis, as only laryngoscopical observation is able to prove, that a catarrhal inflammation may be confined to the epiglottis alone. I have often convinced myself of the painfulness of the epiglottis to the touch, by means of introducing my fore finger into the side of the throat.

If the covering of the mucous membrane of the Satorinian, and arytaenoid cartilages is inflamed, it is to be seen by the speculum, more or less reddened and swelled, frequently together with the back part of the segment of the larynx which lies above the glottis. The inflamed covering of the mucous membrane of the Santorinian, and arytaenoid cartilages, causes likewise painfulness in the act of swallowing, in a normal condition of the entrance to the throat, and the pharynx, because

by the attempt, or completion of this act, the inflamed parts are in one way, or other mechanically offended; in violent stages of inflammation, swallowing may be rendered entirely impossible.

Through the inflammatory swelling of the covering of the Santorinian, and arytaenoid cartilages, the motion of the cartilages, and also those of the ligaments of the glottis, may become finally limited.

The upper ligaments of the glottis become affected at the same time, as the covering of the mucous membrane of the Santorinian, and arytaenoid cartilages, or the epiglottis, but sometimes separately, and only on one side. In high degrees of inflammation, they appear like red swellings, and sometimes as if composed of longitudinal bundles, and partly, or entirely cover the lower ligaments of the glottis, whereby the ventricles of Morgagni are closed, and by their surmounting the margins of the glottis, as well as their offering a mechanical opposition to the external movement of the lower ligaments of the glottis, the latter is restricted.

The lower ligaments of the glottis may be injected to a greater or less extent, and indeed may be reddened, either in part, or in their whole circumference, uniformly. Their colouring may vary from a pale rose colour, to a saturated red. Sometimes a distinct swelling is to be recognised, which appears in single cases, as a reddish border which projects on the internal edge of the lower ligaments of the glottis, or as a little round tumour, confined to one place. In some cases, which I observed, the lower ligaments of the glottis, or other confined parts of the mucous membrane of the larynx, assumed the appearance, as if they had been cauterised quite superficially, with a solution of nitrate of silver. — The epithel seemed to form a scab.

Coughing as a functional disturbance, is so far not characteristic of disease of the lower ligaments of the glottis, because it appears in catarrh, in other different parts of the mucous membranes of the respirating organs. Encreased sensibility is mostly observable by pressing the larynx, namely in the vicinity of Adam's apple.

From my observations up to the present time, hoarseness in different degrees, and when in a slight one, is mostly a constant sign. In this respect, I once observed distinctly, that the hoarseness entirely, or almost entirely vanished, while a considerable swelling, and redness of one of the lower ligaments of the glottis still remained.

Inflammation of the lower ligaments, may finally lead to a straitening of the glottis. In order to maintain the act of normal respiration, a certain width of the glottis is necessary.

Straitening of the glottis, may take place in two ways: either by moments, which limit the power of dilitation of the glottis (i. e. the outward motion of the lower ligaments of the glottis), or such as positively restrict the aperture of the glottis. To the first moments belong, as has been already partly mentioned: a) the swelling of the parts adjoining the Santorinian, and arytaenoid cartilages, whereby these, and also the lower ligaments of the glottis, which are inserted in the processus vocales, lose entirely, or partly their motion; b) the swelling of the upper ligaments of the glottis [1]), which, as above mentioned, offer a mechanical hindrance, to the outward motion of the lower ligaments; c) perhaps also abnormity of the action of the muscles [2]). To the instances of the second kind, belong a) a higher degree of swelling of the lower ligaments of the glottis; b) the projection over the internal borders of the same, by the upper ligaments of the glottis being swelled; c) swelling of the mucous membrane, which covers the anterior surface of the posterior side of the larynx; and d) finally a collection of a slimy purulent secretion, the removal of which, is rendered more difficult by the limited functional power of the parts of the larynx in consideration.

Acute catarrh of the larynx, may as is known prove fatal by laryngostenosis, particularly if accompanied by oedema of the glottis.

Course, Duration and Issue.

The slightest cases stand still in the stadium of injection, and from thence become again retrogressive.

Their duration in general is short, often limited to a few days. The duration is longer, when it comes to the formation of an uniform redness, particularly on the lower ligaments of the glottis; here the duration lasts at least two or three weeks and more. Often inflammation only confined to single parts, lasts for months, which we will mention again when we speak about chronic catarrh. In greater degrees of intensity of the disease, the inflammation may arrive at its greatest height in a few days, and even in a few days superficial ulcers may form. Such ulcers may at the cessation of the inflammatory appearance in the vicinity, heal spontaneously, without loss of substance.

It is only possible by means of a laryngoscopical examination, to form a diagnosis of the differences of a state, which is very frequently taken for catarrh of the larynx, which it is not.

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[1]) and of the external parts of the lower.

[2]) a paralysis of the muscles opening the glottis, or a spasm of those, which close it.

We find namely in bronchial catarrh, in bronchitis, in tubercles of the lungs, frequently irritable cough, hoarseness, sometimes amounting to aphony, which in the course of a longer or shorter time, frequently even in a few days, again disappear, often on the contrary continue, and relapse much longer, namely, in tubercles of the lungs. In such cases, we think we have to contend with catarrh of the larynx, or tubercles of the lungs with ulceration of the larynx.

As I have already shown some time ago, on another occasion [1]), in such cases, only a disturbance of the muscular power is to be considered, about which it is conceivable, that the laryngoscope alone can afford an explanation.

2. Chronic catarrh of the larynx.

a) Chronic substantive catarrh of the larynx, can present itself as the result of a more acute stadium, or from the beginning appear without acute symptoms. Of the cases of the latter kind, I will from my observation, direct the attention to those of partial inflammation of the lower ligaments of the glottis, which without any pain, and in some cases also without an irritable cough, cause but only an occasional trifling hoarseness, which sometimes appears troublesome in singing and takes a more or less tiresome course [2]).

b) Symptomatic chronic catarrh of the larynx, displays itself as is well known, in a secondary form, in the vicinity of syphilitic, tuberculous ulcers of the larynx, of cancer, and may cause a callous degeneration of the mucous membrane, and submucous textures.

Catarrhal and simple ulcers of the larynx [3]).

I had several times an opportunity, of observing the development of catarrhal ulcers at the height of an acute catarrh of

[1]) Allg. W. med. Ztg. Nr. 8, Febr. 21., 1860.

[2]) In chronic catarrh of these as well as other parts and ulcers of the larynx, the topic application of medicinal fluids as solutions of nitrate of silver, glycerine with Jodine, are as is known, sometimes of use. I use for this purpose a sound of whale-bone with sponge, which Watson and Green used. In order to be able to press out a greater quantity of fluid I modified the sound in this way, that instead of the knob at the end of the sound being in the middle of the sponge, I ordered the end of the sound to be attached to a small plate which presses on the basis of the more conical sponge. Here it is only necessary to see by a weak light, the free end of the epiglottis so far as to be able to see the sponge entering below it.

The application of the apparatus of Sales-Giron must farther be tried.

[3]) See: Laryngoscopical communications on ulcers of the larynx in Allgem. Wien. med. Zeitung Nr. 25, June 19., 1860.

the larynx. In one case, the covering of the mucous membrane of the Santorinian, and arytaenoid cartilages was affected, and in another, the posterior segment of the left lower ligament of the glottis. Their course as already mentioned, was a short one, keeping seemingly equal, pace with the solution of the catarrhal inflammation. Besides these, I had in several cases an opportunity of observing ulcers, which were not accompanied with the appearances of catarrh of the larynx. As they did not come under my observation, till some time after the commencement of the first appearances of disease in the larynx, I could no more decide as to their catarrhal origin, but still in some degree the presence at the same time, of although sometimes very slight, catarrh of the bronchial mucous membrane, would seem to speak in favour of this kind of origin. As therefore, these ulcers could not be referred with certainity to catarrh, nor any other diseased state, as for instance syphilis, tubercles etc. I will here as an appendix to the catarrhal, mention them as simple ulcers of the larynx.

The seat of the ulcers, was to a greater, or less extent, the posterior part of the lower ligaments of the glottis.

In one case, they extended in length, over the greatest part of the lower ligaments. It is remarkable that both lower ligaments were equally affected at the same time. The loss of substance, was sometimes seemingly deep. In the one case, where it gained a greater extent, in the longitudinal direction of the ligaments of the glottis, it was quite superficial, so that the lower ligaments appeared, as if they had been quite superficially ground in their outward circumference. In all cases, a more or less speedy healing followed, under an indifferent mild treatment, according to the extent of the loss of substance.

The symptoms of diseases caused by them consist, in hoarseness, and cough accompanied in some cases, by spitting of mucus, striped with blood; pain was sometimes entirely absent.

On Perichondritis of the larynx [1]).

This affection may have its seat in the arytaenoid cartilages, in the cricoid cartilage, and far more seldom in the thyreoid cartilage. A case of this kind was of late published by Friedreich.[2])

Thereby, the cartilage is deprived of its perichondrium, partly destroyed, the mucous membrane covering it is wanting, or whilst the mucous membrane is uninjured, there is formed, particularly on the cricoid cartilage, an abscess projecting outwards, and into the cavity of the larynx, and therefore, conducting to a fatal straitening of the glottis. Flormann has reported the first case of this sort. Perichondritis of the larynx generally arises, as it is known, in a secondary way as a consequence of exanthematic disorders, particularly from small pox, further from typhus fever, from syphilis, finally very frequently when occupying the arytaenoid cartilages, by the progress of ulcers from the mucous membrane to the cartilages in tubercles of the lungs.

To this may be added another way of origin, which I had found in a case of abscess, namely tuberculous infiltration of the cricoid cartilage.

We proceed to a short relation of the cases of perichondritis laryngea that we had observed.

Perichondritis with abscess.

Here the cricoid cartilage is commonly the seat of the affection; so I found it, in a case which I had observed.

A man of 34 years old was suffering for 8—10 days from hoarseness, pains in the larynx, and difficulty of respiration. Since one day, on inspiration a rustling was heard, and the difficulty of breathing increased to a higher degree. For the last two days he could not swallow, but small quantities of fluids. There is a hoarseness of high degree. On pressing on the left side of the larynx, the patient feels pain. On laryngoscopical examination, the left lower ligament of the glottis presented itself considerably protuberating, and fixed with its interior somewhat rounded border to the median line, and a little beyond it to the right side. As regards its colour, and lustre they were however of perfectly normal quality. The same immobiltiy I found on the left Santorinian

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[1]) Published in the Allgem. Wien. mediz. Zeitung Nr. 50, December 10., 1861.

[2]) On diseases of the larynx etc.

and arytaenoid cartilages, the covering of the mucous membrane of which is rather puffed up. The sinus formed on the one side by the plate of the thyroid cartilage, and on the other side by the arytaenoid cartilage, and by the ary-epiglottic ligament (sinus pyriformis Tourtual) is larger on the left side than on the right. The right lower ligament of the glottis, as well as the motions of the right Santorinian, and arytaenoid cartilages, are in all respects normal.

The patient died in the following night. Dissection showed on the left half of the cricoid cartilage an abscess of the size of a hazel-nut, filled with a thickly green matter which protuberated partly into the sinus pyriformis, partly immediately below the left lower glottic ligament, undermined by the matter, and rounded off on its free margin into the interior of the larynx, the passage of which was thereby contracted into a fissure directed from before to behind.

The left half of the cricoid cartilage was partly deprived of its perichondrium, rough, and infiltrated with a tuberculous substance on its posterior portion, in a small, circumscribed spot. Tubercles of the pleura.

I consider the mentioned signs characteristic,t hough taken only from a single case.

The strong protuberance and fixation in the median line of the lower glottic ligament, contributing materially to the straitening of the glottis, was evidently not effected either by inflammation or by oedema, because, abstractedly from the limitation of the mentioned abnormities to one side, the colour and lustre of the respective glottic ligament, have remained perfectly normal.

The oblique position in the interior of the larynx recognisable by the enlarging of the sinus pyriformis, the difficulties of deglutition, the pains on the left side of the larynx, and the acute course of the affection, indicated an inflammatory swelling. Should, however, so particular a protuberance of the left lower ligament of the glottis be in connexion with that, it is not to be comprehended otherwise, than that the inflammation turned into an abscess, and the left glottic ligament, undermined by supperation, did protuberate in the manner described.

If we see such a combination of morbid phenomena, we may conclude safely the presence of a pouched abscess.

Syphilitic Perichondritis.

Porter has published, several years ago, a case of perichondritis in a syphilitic individual, who had undergone the unc-

tion cure. If, in some cases, where it came, beside the denudation of the cartilage, to destructions of the mucous membrane, it is difficult or even impossible to determine, whether the perichondrium was the original seat of the affection, or, on the contrary, this last, and also the cartilage had been affected, only in consequence of the affection of the mucous membrane, the same takes place also particularly from syphilitic perichondritis.

In two cases of syphilitic perichondritis which came under my observation, the internal surface of the cricoid cartilage was deprived in a greater or less extent of the mucous membrane, and perichondrium, necrotised, and in one of the cases the posterior ends of several rings of the trachea likewise, and in this latter case, the perichondritis seemed to have arisen from ulcers of the mucous membrane.

Under circumstances, which are favourable to a laryngoscopic examination of the posterior part of the larynx and trachea, particularly therefore, if the glottis were sufficiently opened, the mentioned pathological alterations would perhaps, at least partly be recognised during life.

In the only case I examined during life, a view of the portion of the larynx, situated below the glottis was not possible, as the patient came under my care, after consecutive inflammation of the lower, and upper glottic ligaments of one side, had already arisen. Besides the appearances of inflammation in the just mentioned parts, I found on the back portion of both the lower glottic ligaments, a sharp jagged line, running along their length, which could not be explained but as an upper margin of an ulcer seated on the back part of the larynx, a supposition which was confirmed afterwards on dissection. At the same time, the pressure from before to behind, on the larynx and trachea, was painful, the expired air of a very bad smell. Also in the second case which I did not observe during life, it would have been impossible according to the results of dissection, on account of ulceration and thickening of the lower glottic ligaments, to examine during life, the destructions produced on the back part of the larynx.

Perichondritis in typhus fever.

Perichondritis, and diphtheric ulcers on the posterior part of the larynx, belong to the most important affections of the larynx in typhus fever.

In Diphtheritis, we know, exudations are deposited in the tissue of the mucous membrane, which are destroyed by gangrene, and so produce losses of substance of the mucous

membrane. In typhus fever, such a loss of substance appears on the back part of the larynx over the musculi transversi. Frequently it extends deeper, so that a cavity, filled with putrid matter is formed, in which most frequently, we find the arytaenoid cartilage, severed from its surrounding parts, covered by gangrenous matter, and exposed. (Rokitansky.) From this consecutive state of diphtheritis, it is sometimes scarcely possible to distinguish the Perichondritis, arising primitively in the course of typhus fever, (Dittrich) and so much the less, at the bedside of the patient.

In cases of typhus, we may suppose from the appearance of hoarseness, particularly if it is increased to aphony, the presence of diphtheritis or perichondritis. But the aphony, if it appeared only a few days before death, is frequently overlooked, as the soporose patient is not often observed in this respect.

On the contrary, diphtheritis and perichondritis, are apt to give rise to very alarming appearances, when they caused a considerable inflammatory swelling in their vicinity.

I had an opportunity of examining with the laryngoscope five cases of this kind. They were all in young persons from 14—25 years of age. In all these cases, the affection of the larynx, manifested itself at a later period of typhus fever, namely twice in the fifth, and three times in the 7th or 8th week, in subjects that already appeared to be reconvalescent; as if an inflammatory reaction of this sort in the larynx would be impossible at the time of the utmost prostration.

In all patients there appeared a cough, more or less intensive hoarseness, pain in the larynx, and dyspnoea, sometimes difficulties of deglutition. The dyspnoea depending on stenosis of the larynx, rose always to such a degree, that, in order to save the patient, tracheotomy must have been performed after two, or at the utmost five days.

On laryngoscopical examination, I discovered inflammatory swelling of one lower glottic ligament, or simultaneously of the upper glottic ligaments, or of the mucous membrane covering the Santorinian, or arytaenoid cartilages, or acute oedema in the latter region, finally, acute, intensive oedema of both the lower glottic ligaments. This last mentioned state, presented itself twice, and had caused the highest degree of dyspnoea. In one of those two cases, I could descry very clearly, on one of the lower glottic ligaments, a deep loss of substance arising doubtlessly from the presence of a dyphtheritic ulcer.

Of those five patients which were operated upon, two died, in whom dissection showed perichondritis; three recovered; they are, however, on account of too little permeability of the

larynx, perhaps condemned to wear a canula for their life, in one of them fragments of cartilage were seen to be thrown off afterwards.

Two cases submitted to larygoscopical examination, were evidently perichondritis, primitive, or arising from gangrene of the mucous membrane, and in one case the presence of an undoubted diphtheritic ulcer, could be stated by means of laryngoscopic examination [1]).

On syphilitic affections of the larynx [2]).

Syphilitic ulcers.

The epiglottis ranges among those parts of the larynx, which are, most frequently, the seat of secondary syphilitic ulcers, and the syphilitic ulcer of the epiglottis is the most characteristic. When of longer duration, it has a special tendency to penetrate deeply; in all the advanced cases I had observed, the whole thickness of the epiglottis was perforated. Thereby a more or less considerable part of the border, and, sometimes, a great part of the epiglottis is, destroyed. Only, in one recent case, the ulcer remained superficial. The tendency to occasion a loss of substance, perforating the whole thickness of the epiglottis, and embracing at the same time, a part of the border of the epiglottis, belongs according to my present observations, likewise to lupous ulcer, and to that of cancer. The tuberculous ulcer of the epiglottis, shows but more seldom a similar appearance.

The adjoining parts of the ulcer to a large extent, even the still remaining part of the epiglottis are reddened, and frequently considerably swelled, and by this, as well as by the great incli-

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[1]) Lately I had the opportunity to examine a case of perichondritis in a very advanced period of small-pox, with similar appearances as in the above mentioned cases of typhus fiver. Dissection showed the back part of the cricoid cartilage exposed, surrounded by matter, necrotised and near the median line divided in two pieces, one of the arytaenoid cartilages destroyed; and strange to say aphonie did not take place.

[2]) Published in the „Allgem. Wiener mediz. Zeitung“ Nr. 52, Dec. 24., 1861 and see also: Laryncoscopical communications on ulcers of the larynx (Allgem. W. mediz. Zeitung Nr. 25, June 19., 1860) and for single pathological cases Zeitschrift d. Gesellschaft d. Aerzte Nr. 51, Dec 20., 1858 and Nr. 11, March 14., 1859, Allg. W. med. Zeitung Nr. 22, May 31., 1859 and Nr. 8, Febr. 21., 1859.

nation of the rest of the epiglottis backwards, and downwards, the sight of the inside of the larynx, is sometimes highly restricted, and particularly the investigation of the anterior angle of the glottis, is rendered impossible. It is therefore, in such cases we can never predict with safety, whether the epiglottis alone is affected, or the parts, more deeply situated.

On the margins of old losses of substance, which are here and there not seldom curved, the exposed yellow cartilage is, sometimes, exactly to be distinguished. Swallowing, as we know, even by such destructions of large extent, can be unobstructed.

The lower ligaments of the glottis are, not seldom, the seat of syphilitic ulcers, which according to their longitudinal direction, may acquire a very considerable extent. They cause hoarseness.

In the cases I observed till now, both lower ligaments were always affected. The ulcers are more or less deep, and can be encircled by a circle of inflammation, which occupies, wholly or partially, the rest of the ligaments of the glottis. They can occur together with indented prominences of the mucous membrane, or ulcers on the front surface of the upper section of the posterior part of the larynx, and by this, assume the appearance of tuberculous ulcers.

Their diagnosis must be founded on other syphilitic symptoms, as well as on the anamnestics.

In cases, where on account of the before mentioned affections of the epiglottis, the inspection of the ligaments of the glottis is insufficient, or almost impracticable, the presence of ulcers on them is only to be inferred, with more or less probability, from the obvious disturbance of functions.

The more superficial ulcers of the ligaments of the glottis, heal without cicatrices, being recognised by the aid of laryngoscopic investigation. It is quite another thing, deep ulcers, and of large extent, which leave behind them deformities of the ligaments of the glottis, and stenosis of the larynx, especially membranous concretions on the anterior angle of the glottis.

The lower ligaments of the glottis, the aryepiglottic folds, the covering of the mucous membrane of the arytaenoid cartilages, the upper posterior part of the larynx etc. may also be the seat of syphilitic ulcers [1]).

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[1]) Lately we observed a very large deep ulcer with undermined margins, situated on the upper margin, and posterior surface of the back part of the larynx, and in another case a broad transversal cicatrix on the same spot.

The proportion of the ulcers of the larynx, to those of the neighbouring parts is, as is known, a different one, and I infer in this respect from my actual observations the following.

a) In most part of syphilitic ulcers of the larynx, there are simultaneously ulcers, or at least scars, on the tonsils, on the arches of the palate, on the soft palate, on the posterior part of the throat, and on the base of the tongue. As concerns the extension of ulcers over the single parts on the larynx, in similar cases, the epiglottis, and the parts more deeply situated, may be ulcerated, nay, it may present a continued series of ulcerations, from the throat down to the inside of the larynx, or the epiglottis escapes, and the ulcers occupy only the ligaments of the glottis, or other parts situated below the epiglottis.

b) In other, and as it seems rarer cases, the soft palate, and the entrance to the throat, etc. are in a normal state. In these cases too, either the parts inferior to the epiglottis, as for instance the ligaments of the glottis, or the epiglottis itself may be the seat of ulcers.

In all such cases, where there are wanting the traces of syphilitic affection of the mouth, and throat, if there are also no other secondary phenomena, for instance on the skin, the diagnosis of syphilitic ulcers of the larynx cannot be made with perfect security. It depends

a) on the anamnestics, where sometimes you may infer nothing more, than that the patient had once had a primary ulcer some years ago,

b) then in ulcers which resemble such as in tubercles of the lungs, at the same time in the absence of tubercles, and

c) in ulcers of the epiglottis, also in their characters delineated above.

As regards the relation of the affection of the larynx to that of the adjacents parts (of the throat etc.), as well as with regard to the affection of the larynx itself, there is some affinity betwixt syphilitic and lupous affections.

The syphilitic new-formations of the mucous membrane.

As such may be considered with security, before all, new-formations resembling broad condyloms, if they are met with accompanied by other phenomena of syphilitic affection and disappear under a general antisyphilitic treatment.

I had occasion of observing only one case of this description. It was the wife of a labourer of 36 years old who was

affected with large syphilitic scars, and ulcers on the soft palate, in the throat, in the pharyngo-nasal cavity, on the epiglottis.

One of the two new-growths, resembling broad condyloms was seated on the covering of the mucous membrane of the left cartilage of Santorini and the arytaenoid cartilage, as well as on the right upper ligament of the glottis in all its length, and covered the right lower ligament of the glottis entirely. At the closing of the glottis, the left potuberance lay like a flap over the backpart of the right one. During the application of the unction cure, they disappeared perfectly [1]).

Protuberances and small roundish new-growths of the mucous membrane, are furthermore, to be regarded, if they are met with in syphilitic subjects, and yield to an antisyphilitic cure, as an effect of syphilis.

I have observed a case of this sort which, undoubtedly belonged to syphilis, but where after the disturbance of function, in consequence of a cure by mercury, had entirely been appeased, I had no further occasion for making a laryngoscopic examination.

Omitting the syphilitic perichondritis, the inflammatory swellings are, finally to be mentioned which may associate with the syphilitic ulcers of the larynx, as well as with perichondritis, and cause an acute stenosis of the glottis.

I had an occasion of observing a case of this kind. The epiglottis was strongly reddened, puffed up, and seemed to be ulcerated in the middle, the upper and lower ligaments of the glottis were red, and considerably swollen, the glottis dangerously straightened. The mouth being opened only with difficulty, and, moreover, a good deal of secretion being accumulated, a more accurate laryngoscopic investigation was impossible, and it was still less possible to find means of discovering, if there were ulcers on the ligaments of the glottis [2]).

In the treatement of syphilitic affections of the Larynx, fine results are to be obtained by a moderate unction cure, and Jodide of Potassium.

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[1]) Lately I saw still two other similar cases.

[2]) I must according to my farther observations, characterise as syphilitic inflammation of the moucous membrane of the larynx those cases, where the laryngoscopical examination shows swelling with reddening or discolouring of the glottic ligaments and of the mucous membrane of other parts of the larynx, coexisting also with more or less numerous and small new-growths, and also ulcers.

All these appearances of a chronic inflammation of the mucous membrane of the larynx, when found in syphilitic individuals, and healed by means of an antisyphilitic treatment, as I had opportunity to observe, must be looked upon as consequences of syphilis. The syphilitic catarrh of the larynx may produce a more or less high degree of straitening of the glottis.

On affections of the larynx in tubercles of the lungs [1]).

A. The ulcers.

Louis has, as it is known, entirely denied the tuberculous affections of the larynx, Hasse, and Rheiner have allowed the presence of tuberculous ulcers of the larynx, only in a certain number of cases. A very striking proof of the existence of tuberculous affection of the larynx, is afforded by the cases of miliary-tubercles of the larynx, which appear, indeed, very rarely.

We had occasion to observe one exquisite case of this kind, in which we found, besides close groups of miliary tubercles of the mucous membrane of the larynx, simultaneously ulcers of great extent, on the back surface of the epiglottis, and on the ligaments of the glottis.

Rokitansky assigns to the tuberculous ulcers of the larynx as a principal seat, the mucous membrane of the posterior part of the larynx, above the transversal muscles.

Besides the tuberculous ulcers in tubercles of the lungs, are met with, too, ulcers of the larynx, in which the character of tuberculous ulcer, neither in the dead body, nor, as far as we can judge of it by aid of laryngoscopical examination during life, is to be demonstrated. Hereto belong the simple, the catarrhal, and perhaps also the follicular ulcers. The occurence of the latter, is to a certain degree granted by the circumstance, that two of the principal seats of the conglomerate mucous glands of the larynx, namely the posterior surface of the epiglottis, and the anterior surface of the superior section of the backpart of the larynx, range also at the same time, among those parts of the mucous membrane of the larynx, which most frequently are ulcerated in tuberculous affections of the lungs.

The ulcers of the epiglottis are situated, as Louis already remarks, mostly on its posterior surface, and particularly, in the inferior section of the latter. They do not, for the most part, perforate the whole thickness of the epiglottis. If it

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[1]) Published in the „Allgem. Wiener mediz. Zeitung“ Nr. 2 and 3, January 14. and 21., 1862. See also Laryngoscopicapical communications on ulcers of the larynx (Allg. Wien. med. Ztg. Nr. 25, June 19., 1860 and for single pathological cases: Zeitschr. der Ges. der Aerzte Nr. 11, March 14., 1859, Allg. Wien. med. Ztg. Nr. 22, May 31., 1859.

happens, the perforation of the cartilage may take place near above the glottis on its peduncle, or also on its borders, by which they appear, as if they were gnawed, nay, even a considerable part of the epiglottis may be destroyed by this accident. Such penetrating losses of substance, on the borders, are however, relatively more rare, and the outlines of the part remain, mostly in very large ulcers of the epiglottis, of tuberculous subjects, uninjured. By this circumstance, is however, in a great number of cases, afforded a very striking difference between these, and the syphilitic, lupous or cancerous ulcers.

Ulcers of great extent, on the back surface of the epiglottis, are not, excepting in tuberculous affections of the lungs, frequently found, and they appear, for instance in typhus fever under circumstances in which they are no object of laryngoscopic examination, or where a mistaking of the affection for pulmonary tubercles will be scarcely possible.

Therefore, if one discovers ulcers of large extent on the back surface of the larynx, on uninjured outlines of the latter, one will be able in most cases, to make a safe inference, as to the presence of tuberculous affections of the lungs.

Sometimes, we succed in obtaining approximately a front view of the ulcers of the epiglottis, but mostly, we must content ourselves with a near side-view, at which the respective part of the posterior surface of the epiglottis presents itself uneven, and provided with a whitish covering.

The examination, mostly succeeds better, when the head is bent backwards, and may be aided by various respiratory movements.

For the most part, you must content yourself, with a very transient view of the surface of the ulcer.

The examination becomes very difficult, and often impracticable, in consequence of swelling, and a strong inclination backwarts of the epiglottis. But even under unfavourable circumstances, I succeeded by a quick pushing of the laringcoscope to the posterior part of the throat, at the commencement of vomiturition, in catching a glimpse of the ulcerated middle part of the posterior surface of the epiglottis, which was raised up at this moment.

The ulcers on the posterior part of the epiglottis do not, if they are not accompanied by a considerable inflammation of the epiglottis, produce any pain, or only slight in swallowing.

The ulcers of the lower ligaments of the glottis, are less characteristic than those of the epiglottis.

Here, we must mention at first, those quite superficial ulcerations, which present on laryngoscopical investigation a per-

fect likeness of the simple ulcers of the larynx which we have described on another occasion. The lower ligaments of the glottis offer then, through a great part of their length, but mostly not in their whole breadth, a palegreyish yellow colour, differing from the regular one, which is of a tendonlike white. At an oblique view, we can convince ourselves, that the normal brilliancy is wanting on the decoloured spots, and there is present a loss of substance, which manifests itself by a quite superficial depression. In the vicinity of these ulcers, you cannot discover, not even by means of a magnifying apparatus, any trace of tuberculous granulation.

More frequently are to be observed, more considerable losses of substance, which extend mostly over the greater part of the length of both lower ligaments of the glottis, but also of only one. We observe not seldom within such an ulcer, a small furrow which proves afterwards in the dead body to be a much broader and deeper one. Both the inner, and outer sections of the lower ligaments of the glottis, may he ulcerated. The figure may be a very irregular one, the margins of the ulcer may, as I saw it distinctly on laryngoscopical investigation, be undermined.

Considerable ulcers on the lower ligaments of the glottis, do not frequently cause aphony, but only hoarseness.

The ulcers of the upper ligaments of the glottis, occur frequently, but still more rarely, than those of the lower ligaments of the glottis. They appear, isolated from the latter, on several circumscribed spots, or form with them by a simultaneous ulceration of the ventricules of Morgagni a continuity.

We encounter frequently ulcers on the front surface of the superior section of the posterior part of the larynx which, we know, have their principal seat on the covering of the mucous membrane of the transverse muscles, amidst the arytaenoid cartilages, and from them an inference may be made with a high degree of probability, on the presence of tuberculous affections of the lungs. They are, frequently, to be discovered during life, and in this manner, that on laryngoscopic examination, a deal of their superior margin is to be seen. We commonly best succeed in this examination, by the erect position of the head of the patient. One discovers here on the topmost section of the front surface of the posterior part of the larynx, a jagged border, or only two or three sharp points standing nearly on the same horizontal plane beside one another. They are of a dirty whitish colour, and no other thing but ragged protuberances of the upper margin of the ulcer. They are not to be confounded with small elevated prominencies, more or less pointed, which in the same re-

gion lie partly beside one another, partly also one over the other in a row, and represent unevenesses of the mucous membrane, which are sometimes to be met with in acute, and chronic catarrhal affections.

Sometimes, one succeeds moreover, in getting a view of a small portion of the ulcerous surface.

From obvious reasons, a mistaking of such ulcers for diphteritic, on the back part of the larynx in typhus fever, and other diseases, is scarcely possible; still, one may easily confound the former, with syphilitic ulcers, syphilitic perichondritis on the posterior part of the larynx, and we have on an occasion of syphilitic perichondritis mentioned a case, which presented quite similar laryngoscopical symptoms.

One must therefore, notwithstanding the scarcity of such cases in comparison with the frequency of ulcers in pulmonary tubercles, proceed with some caution, in order to refer such ulcers with perfect safety, to pulmonary tubercles. But it is still evident, from what has been said, that one can conclude from the presence of such ulcers without further inquiry, with great probability as to the existence of tuberculous affections of the lungs.

In one case, being still in the ward, where it remained doubtful, whether it was the question of an older pneumonic infiltration of the one superior lobe, or a tuberculous one, hoarseness ensued. Laryngoscopical investigation, made soon afterwards, confirmed the presence of such an ulcer on the back part of the larynx, and, now, there was no more doubt about the tuberculous nature of the infiltration [1]).

Very frequently we find in pulmonary tubercles, ulcers on the epiglottis, on the upper and lower ligaments of the glottis, on the front surface of the posterior part of the larynx. At a far advanced state of ulceration, there arises an uninterrupted ulcerated surface, which surrounds in form of a broad ring, the inside of tbe larynx.

It is clear from the above mentioned, that during life, one cannot see but single portions of such ulcerous zones.

It is also very seldom that one can succeed in ascertaining with certainty, whether, the ulceration is only confined to isolated spots of the larynx, for instance to the vicinity of the anterior angle of the glottis.

Also the upper border, and the posterior surface of the superior portion of the backpart of the larynx may, likewise, be the seat of ulcers, and sometimes of great extent, which are easily to be recognised by the aid of the laryngoscope.

[1]) which has since be confirmed on dissection.

These ulcers may by spreading themselves, produce a considerable sensibility in the act of swallowing. They extend not seldom to ulcerations of the aryepiglottic folds, which sometimes communicate again with ulcerations, by which the posterior lower ends of the margin of the epiglottis are destroyed. In a case which came under my observation, one epiglottic fold was entirely destroyed.

The laryngeal ulcers accompanying pulmonary tubercles, in our country, only very seldom heal. In a similar case, in a woman labouring under far advanced tubercles of the lungs, I met with the following laryngoscopical condition. The right lower glottic ligament was scarcely half the size of that of the left side, and presented a deep longitudinal furrow, but the colour and lustre remained normal. There was evidently no question of any ulcerous loss of substance. On dissection the furrow proved to be a cicatrised loss of substance, and the diminution of the ligament of the glottis depending partly on retraction of the tissue of the scar, partly on old losses of substance of the glottic ligament

B. The catarrhal Inflammation.

This complaint presents itself in a subacute, or chronic state.

The subacute inflammation manifests itself by more inflammatory appearances, by considerable redness, and swelling of the mucous membrane. It appears:

a) In the neighbourhood of ulcers on the epiglottis, on the glottic ligaments, on the back part of the larynx, appearing in the form of an inflammatory circle, which may extend itself to the pyriform sinusses. It may produce considerable dyspnoea by the restriction of the glottis, and even necessitate tracheotomy.

b) As a specious forerunner of ulcers. I had observed only two such cases. In one of them, there appeared a considerable redness of injection, of both the lower ligaments of the glottis, followed by the formation of ulcers; in the second case, which was a man of 38 years old, in whom the most accurate repeated examination showed no infiltration of the tips of the lungs, there arose a very considerable inflammatory swelling of one of the upper glottic ligaments. Afterwards, there was a formation of ulcers of both the lower ligaments of the glottis, and tuberculous infiltration of the tips of the lungs. Such cases would, perhaps, be less scarce to be met with, if one had more opportunities of examining such patients in an earlier epoch of the disease.

But when in single cases, the formation of ulcers is preceded by inflammation of the mucous membrane, one cannot consider with security in all cases, the inflammation in the vicinity of

ulcers mentioned sub a as an inflammatory circle produced by the ulcers.

c) In rare cases, the inflammation of the larynx appears only in the presence of unimportant ulcers, as one spread by the coexistant bronchitis, and tracheitis.

In the subacute inflammation of the larynx, as well as in the simple ulcers of the larynx of tuberculous individuals, the irritability of the neighbouring parts, is sometimes so great, that laryngoscopy becomes by that circumstance very difficult, nay, even in single cases, entirely impracticable. Here, as well as generally in great irritability, I succeeded very often by pushing with the tongue holder or without it, during deep panting respirations, or during a very deep accelerated inspiration, very quickly, in a moment to the back part of the pharynx, and by bidding the astonished patient to make slower, loud, or toneless deep ex- and inspirations, or panting respirations. The overwhelming impression, of the rapid introduction of the laryngoscope, which in this case, may also be considerably large, as well as the strong, uninterrupted respiratory movements, do not suffer the vomituritions to ensue. At other times, by a very slow, and cautious introduction of a small speculum, we gain more safely our end.

The chronic catarrhal inflammation occurs, according to Rokitansky, as a follicular catarrh, sometimes terminating in ulceration of the portion of the larynx, abundant in glands, at the base of the epiglottis, and on the back part of the larynx, also in the neighbourhood of tuberculous ulcers of the larynx. In unfrequent cases the mucous membrane degenerates with the submucous tissue into callosity, which presents itself, particularly on the circumference of the glottis, in large masses, and causes at length a fatal stenosis (Path. Anat. 3 Vol.)

The catarrhal swelling, as well as the sclerosis of the mucous membrane, and of the submucous cellular tissue, is to be recognised by aid of laryngoscopical examination, on the epiglottis by a massy thickness, on the back part of the larynx by a series of prominent protuberances, placed beside, and behind one another, on the covering of the cartilages of Santorini and the arytaenoid cartilages, particularly on the so called cartilages of Wrisberg, by the thickening of the parts concerned, with redness or a pale colour.

C. Necrosis of the cartilages of the larynx.

It happens frequently, that in the presence of ulcers on the glottic ligaments, on the back part of the larynx, the arytaenoid cartilages are exposed, necrotic, and finally are thrown off, and

this happens only on one side, or on both, in the same manner, or in different ways. The plate of the cricoid cartilage becomes also not seldom necrotic, finally, and indeed most rarely the thyroid cartilage.

The necrosis of these latter cartilages may cause infiltration of the surrounding cellular tissue, and the formation of abscess.

With the loss of the arytaenoid cartilage occurs aphony, and an imperfect closing of the glottis during coughing and swallowing. At the loss of the two arytenoid cartilages, the expectoration is effected but very imperfectly by quick expirations.

Sometimes the loss of the arytaenoid cartilages manifests itself on laryngoscopical examination.

There is discovered a depression of the back part of the larynx in the region of the Santorinian and arytaenoid cartilages, which is more easily recognised at the loss of only one arytaenoid cartilage, but may as well fail, which happens particularly when the mucous membrane is swollen.

A second symptom, likewise of importance, only in single cases, consists in the absence of the motions, in a normal state so conspicuous, of the Santorinian and arytaenoid cartilages at the alternate opening and closing of the glottis. This is particularly remarkable, if only one arytaenoid cartilage is lost or separated from the connexions necessary for its motion. If there is severe swelling or sclerosis of the mucous membrane on the superior portion of the back part o the larynx, this sign also disappears, because, as we mentioned on a former occasion, the mobility of the arytaenoid cartilages is suspended even in consequence of such swellings.

At length, the loss of the arytaenoid cartilages is sometimes perceptible from a large ulcerous cavity on the hindmost portions of an upper and lower ligament of the glottis.

With regard to the relation between the disorders of the larynx already described, and pulmonary tubercles, I shall observe that I found in a great number of such patients examined by means of the laryngoscope, always an actual tuberculous infiltration on one tip of the lungs or on both of them, and frequently, a far advanced state of phthisis of the lungs. Only three or four cases were exemptions.

The first was that we had mentioned above, with an inflammation of the upper ligament of the glottis. In two other cases of ulcers of the lower ligaments of the glottis, the inflammatory swelling of the adjoining parts had effected stenosis of the larynx, and necessitated tracheotomy. Also here, on the most accurate examination no infiltration of the tips of the lungs was to be found, whereby I must remark, that the examination for tuberculous affections

was rendered uncertain, by the emphysema of the lungs originating from the stenosis of the larynx. Afterwards conspicuous signs of pulmonary tubercles manifested themselves, of which both the individuals died. In a fourth case likewise submitted to laryngotomy, I was not able to hear anything about the course of the tubercles, which arose probably somewhat later.

Concerning the stenosis of the larynx which accompanied them, I observed that in the cases, where the pulmonary tubercles were not yet to be demonstrated, tracheotomy could not be avoided, whilst in individuals already exhausted, and anaemic, by the progress of pulmonary tubercles, frequently repeated fits of dyspnoea depending on the straitening of the glottis, were mostly appeased without tracheotomy.

On new-formations of connective tissue of the larynx [1]).

Without regarding the cicatrices, and callous degeneration of the mucous membrane, which Rokitansky reckons here together with the papillary new-growths, and fibrous tumours, we will speak of the two latter.

A. Papillary and other small new-growths.

As papillary new-growths are reckoned by Rokitansky, the new-formations of the size of a grain of hemp to that of a bean, seated on the entrance of the glottis, in the cavity of the larynx, and in the wind-pipe. Though there be only few histological proofs of such new-growths, we may, however number among them with much probability, a good deal of the new-formations frequently presenting themselves in laryngoscopical examinations.

On the contrary, such a peduncular new-growth, seated on a lower glottic ligament, which Bruns had lately removed with a sharp instrument, was found to be fibrous.

These new-growths generally designated by the term of „polypi of the larynx“, „condylomatous new-growths“ represent

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[1]) Published in Allg. Wien. Zeitg. Nr. 29 and 30, Juli 22. and 29., 1862. Single pathological cases in Zeitschr. d. Gesell. d. Aerzte Nr. 11, March 14., 1859, Allg. Wien. med. Ztg. Nr. 20, 21, 22, 1859.

on laryngoscopic examination small, roundish, uneven, minute granulated , jagged protuberances , resembling a cauli-flower, either pedunculated or resting on a broad base, which are partly of a dirty yellow colour, and in some regard of gelatinous appearance, partly show a rather reddish, even livid colour. They are sometimes provided with distinct vascular injections.

One of the most usual seats of these new-growths, are the lower glottis ligaments; the first case of this kind was described by Czermak, and similar have been published by Gerhardt, Lewin, Gilewsky. They are met with here, on the upper surfaces, as well as on the free borders of them, and present themselves in the latter case sometimes, as cristiform formations implanted with a broad base, and extending longitudinaly along them.

One finds them likewise, not seldom on the outer borders of the lower vocal ligaments, and in the ventricules of Morgagni.

Furthermore they occur frequently on the anterior angle of the glottis, in which case they are seated not less on the upper surface of the vocal ligaments, than on the front part of the larynx , close below the lower vocal ligaments , and may extend into the anterior angle of the glottis. More rarely they are found on the back surface of the epiglottis, and here are to be ranged according to Wedl, some of the cases of similar new-growths distributed in greater number over the posterior surface of the epiglottis, as well as downwards into the cavity of the larynx, which are reported in the work of Ehrmann „Des polypes du larynx". We shall also communicate afterwards such a case, whichwe have had the opportunity of observing.

The place, on which these new-formations grow , is either of a normal appearance, or it shows morbid alterations. The former state is very distinctlyto be seen if the lower ligaments of the glottis are the seat of the new-formations, which very strikingly contrast with the tendonlike white basis, on which they rest. The immediate vicinity of these new-formations may also appear red, swollen, and covered with secretion.

This different condition of the adjoining parts of the new-growths, is of great moment, on account of their real signification.

As concerns the new-growths in a normal appearance of the neigbouring parts, their etiology is commonly unknown, and they are to be considered , if I may be allowed to use the expression , as simple new-formations , which , according to the observations I made till now, are particularly not of a syphilitic nature. In othercases such new-formations are likely to have been the consequence of a chronic inflammation

of the larynx. It is true, especially in such cases where there are still traces of preceding inflammations.

The syphilitic new-growths have, according to the observations, I made hereto, quite a different appearance to those just mentioned.

They were all seated on a reddened swollen place, from which they mostly rose up with less sharp borders, than is the case with the new-growths described till now; though on the other hand, I had observed a case in which, after the healing of such syphilitic new-growths, and swellings of the mucous membrane by means of mercurial ointement, small, sharply bordered peduncular new-growths still remained.

I had opportunities of seeing small peduncular new-growths, particularly on the anterior angle of the glottis beside ulcers, especially in tuberculous disease. In such cases, especially in ulcerations of the larynx of tuberculous subjects, one must observe great caution, lest one takes the various prominences caused by the chronic catarrh of the larynx, for independant new-formations, and overlook the more essential part of the pathological cases that we meet with.

Finally, there are found on the lower glottic ligaments protuberances, which on a less exact investigation, look like new. formations, whilst they are really nothing else, but the borders of ulcerous losses of substance. Such a deception is more possible in a considerable swelling of the neighbouring parts, and in case, where the secretion preventing examination were not duly removed by expectoration, or very slight attempts at coughing etc.

From what has just been mentioned, it follows that on laryngoscopical examination, one must proceed with great caution in all cases, where there is no question of a new-growth seated on a healty part, in order to get acquainted with the real state of the fact.

The constant functional alteration to which the new-formations just described give rise, if they are seated on the lower vocal ligaments, is hoarseness, which moreover, as we shall see immediately, is not exclusively caused by them as a mechanical hindrance.

The course of these new-formations is a very chronic one. They are likely to exist, sometimes during several years, without any considerable progress. Sometimes they are likely to provoke catarrh of the larynx. In one case alone under my observation, which I shall report afterwards, we saw such a considerable inflammatory and oedematous swelling of the vicinity,

that in order to save the patient, tracheotomy had to be performed.

According to my experience these new-formations have frequently an other consequence, namely they cause a paralytical gaping of the lower vocal ligaments, upon which the hoarseness in a great measure depends.

With regard to the treatment, we have to mention, independent of the syphilitic new-growths, which demand a general antisyphilitic cure, the removing of the new formations by squeezing or tearing, by excision with ensuing cauterisation or without it, by which methods according to newer publications favourable results have been obtained.

The following case deserves special mention. M. P. a tradesman, 33 years old, was admitted into the ward on the 27 August 1860.

According to his rather uncertain account four years ago, there appeared a more difficult passage of air through the nasal cavities with purulent bloody secretion. This state lasted nearly a year, and was removed by an inunctory cure.

Three years ago, a physician is said to have found ulcers in his throat, which had been healed by a common cure with jodine. Since two years he suffered from hoarseness which, has since half a year, increased to aphony; since last winter difficulty of respiration came on. The wife and children of the patient, are according to his account, healthy. He denies every primary or secondary syphilitic affection.

There is a cicatrised contraction on the soft palate, and an indistinct cicatrice on the penis.

We found the following appearances at the laryngoscopical examination made on the 14th of September: On the inferior portion of the posterior surface of the epiglottis, also on the anterior portion of the left lower glottic ligament near the anterior angle of the glottis were seated several small, pale, pointed new-growths. The two upper glottic ligaments, as well as the covering of the mucous membrane of the Santorinian and arytaenoid cartilages are reddened, oedematous, flapping at the oscillations of the vocal ligaments. By this very swelling of the upper vocal ligaments, a large portion of the lower ones is covered, so that only a thin stripe of them remains perceptible. The left lower vocal ligament remains nearly immoveable in the middle line.

Laryngostenosis of more considerable intensity. Deep and fast inspirations are noisy, crowing, as is the case in croup. A moderate, consecutive pulmonary emphysema was stated.

We had recourse to a general mercurial inunction cure.

On the 2d October the dyspnoea became so violent, that, to save the patient's life, tracheotomy had to be performed. An inunction cure performed afterwards, and the treatment with jodide of potassium had no effect at all upon the just mentioned new-growths seated on the posterior surface of the epiglottis, and on the front-portion of the left upper vocal ligament. At a later examination of the interior of the larynx through the wound of the wind-pipe after the manner of Dr. Neudörfer, convinced myself of the presence of the same small growths on the inferior surface of the foremost portion of the left lower vocal ligament, as well as on a part of the anterior side of the larynx. The paresis of the left lower vocal ligament depending, it seems, on the presence of these new-formations, remained unchanged. The oedematous swelling had disappeared.

B. Fibrous tumours.

These (the so called fibrous polypi of the larynx) are rare, but encrease sometimes to a considerable size, and develope themselves in the submucous connective tissue, namely on the lower glottic ligaments. (Rokitansky.) This author has published a case of this kind with a drawing by Dr. Elfinger [1]).

„The larynx at a front view, appeared almost cylindrical, its cavity enlarged, in the glottis filled with a firm elastic new-growth, so much so, that only on the left side, and behind it, between the arytaenoid cartilages a small space remained. This growth was half the size of a nut, roundish, on the surface superficialy lobulated, in its texture very compact, of a fibrous appearance, and was situated on the right lower glottical ligament almost in its whole length, and above it downwards."

On microscopical examination the tumour proved to be fibrous. It shows in reference to its seat, form and consistency, a great similarity to two or three cases reported by Ehrmann, as may be partially seen by comparing the relative drawings. These latter ones, may therefore very probably be reckoned among the fibrous tumours. Lately a much less tumour, hanging from one of the lower glottic ligaments, by means of a duplica-

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[1]) In a treatise on Ehrmann's histoire des polypes du larynx (Zeitschr. d. Ges. d. Aerzte, 3. Heft 1851.)

ture of the mucous membrane, on microscopical examination made by Bruns also proved to be fibrous.

Such, as well as other larger tumours, as for instance cancerous, when they are seated in, or below the glottis, cause besides hoarseness, and aphony, a more or less rapidly encreasing, and some times occasional difficulty of breathing, and lead to suffocation. Till now such a case did not yet come under my observation.

The symptoms may be generally less alarming, when such tumours are seated above the glottis; although it seems that also in such cases death may take place by suffocation. Similar tumours, when they were seated higher up, were removed by the knife by Regnoli and Green, in another case by Middeldorpf by his galvanocautery.

Is the tumour situated deeper, there remains as a remedy, the excision of it, at first practiced by Ehrmann, after having been preceeded by tracheotomy, and the opening of the larynx in its whole length, (or after Malgaigne's laryngotomie sous-hyoidienne) or the removal by means of the galvanocautery, in the same way, as had been proposed by Friedreich.

We will now relate two cases of larger tumours situated above the glottis observed by us, of which the former is very probably, but the latter less probably, to be reckoned among the fibroid.

Case 1. A baker, 47 years old, stating to have suffered, since 1855, repeatedly from a pungent pain on the left side of the neck, which returned several times, and lasted always a few days. Nearly half a year ago, he said the respiration was somewhat noisy; but dyspnoea never appeared. Slight meagreness and rather a pale complexion had also ensued.

On laryngoscopical examination we found in the interior of the larynx a round tumour much larger than a pea, presenting the colour of the mucous membrane, which seemed, to be fixed on the left side of the interior of the larynx and extended from the anterior circumference of the Santorinian and arytaenoid cartilages to the lower portion of the potsterior side of the epiglottis, from which it raised itself at short coughing and deep inspirations. At normal respiration it covered entirely both the upper and lower vocal ligaments; and it is only at deep inspirations that the right upper and lower ligament is momentary exposed to the view, below the free border of the tumour. At violent expirations, as well as in coughing, there advanced below the free border of the tumour a white, flat, uneven, granulated body, which, on this occasion, sometimes

rose upwards over the level of the Santorinian cartilages, and, therefore, necessarily rested upon the left upper or lower vocal ligament or arytaenoid cartilage. The posterior surface, as well as the left half of the free border of the epiglottis were somewhat puffed up and flushed; the former were covered with slime. The covering of the mucous membrane of the Santorinian cartilages a little puffed up, and moderately flushed, their movements were normal. The cough was of a short character, namely the beginning and the cessation of coughing are distinctly defined, the voice was loud, only somewhat hoarse.

By means of the forefinger introduced through the throat into the interior of the larynx, we were able to pass it round the tumour on its right side but not on the left, and you can assure yourself, that it is adherent by a broad basis to the left side of the larynx, perhaps also to the left lower vocal ligament. It is solid, and elastic to the touch. The flat body protuberating on its inner border is very uneven, and of cartilaginous hardness.

2. Case. — This case occurred in a farmer, 22 years old, who according to his statement had been hoarse, nearly 2 years, and who, eight months ago, had become aphonous, and since that latter epoch on stronger bodily exercise, i. e. fast walking felt difficulty of breathing, which does not disturb his rest at night. At the laryngoscopical examination we discovered in the interior of the larynx a tumour which was of the size of a hazel-nut, roundish, uneven, rugged, flapped, partly reddish, partly whitishyellow, provided with single injected vessels, smooth, not covered with slime. This body is evidently adherent by a very broad basis to the left side of the entrance of the larynx, and perhaps to the posterior surface of the epiglottis, whilst between the free, flappy border, and the right side, as well as the half of the posterior part of the inside of the larynx, there remains open a long fissure, a line in breadth, which however, is not sufficient to afford us an insight into the parts more deeply situated, especially the vocal ligaments. The left half of the free, flapped border is on the contrary, so far jutting backwards, that you are prevented from seeing the Santorinian and arytaenoid cartilages situated below. The parts surrounding the tumour have quite a normal appearance. In short coughing the right Santorinian cartilage moves itself rather quickly. The beginning and cessation of the cough is not well defined, the voice is aphonous.

The tumour is not to be reached by the finger introduced into the throat.

The examination made with a curved whale-bone probe with a knob at the end, assisted by means of the laryngoscope, shows us, that the tumour is of a very great hardness.

On palpation of the region of the neck, the thyroid cartilage seems to be more expanded i. e. more obtuse on its anterior angle. The upper cornua of the thyroid-plates project by some lines more outward, than the cornua of the os hyoides, a circumstance, which otherwise may be observed also in healthy individuals.

The interstice between the os hyoides and the upper border of the thyroid cartilage is, on the left side, by some lines larger, than on the right. On pressing on this interstice on the left side, one perceives the resistence of a compact body, deeply situated, of quite undefined circumference. The motions of the larynx are quite free, and deglutition is normal. There is no pain, neither on pressure nor spontaneously, in the region of the larynx.

On cancer of the larynx [1]).

Carcinoma is found in the larynx, according to Rokitansky, a) as medullary Carcinoma, viz. primitively under the form of knots in the submucous tissue, or as a degeneration of one or the other arytaenoid cartilages or the thyroid, with a future degeneration of the mucous membrane; b) far more frequently as epithelial carcinoma, so that the larynx affords one of the most remarkable seats of this affection. Hereby, either the epiglottis and the mucous membrane of the glottis with the vocal ligaments, and the arytaenoid cartilages, are often the seat of a destructive cancerous degeneration, extending over the base of the tongue and the palatinal arches, which, not only, heals with ulcerous expulsion of the parasitic mass, and leaves behind it extensive, knitted, constricting cicatrices, or the epithelial carcinoma is also independently met with in the larynx and the contiguous portion of the wind-pipe. (Rokitansky, Pathol. anatomy, 3. Edition, 3. Vol., q. 25—26).

I had an opportunity of examining with the laryngoscope, three cases of extensive epithelial carcinoma.

1. Case. The first case came under my observation at the end of 1859. It was an apothecary of the age of 57 years, Ale-

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[1]) Published in Allg. Wien. med. Zeitg. Nr. 31, Aug. 5., 1862.

xander R. He felt in the month of January 1859, during a violent sneezing, a sharp pain on the right side of the region of the fauces and in the depth of the right ear, with a simultaneous discharge of nearly some drachms of pure blood from the mouth. Since that time, the painful sensation in the depth of the right ear, and on the right side of the region of the fauces, in which especially on swallowing, returned more frequently, and in a similar manner the saliva was oftener mixed with purulent matter and blood. Since that time, the patient has often been hoarse.

On laryngoscopical examination, performed on the 2. Nov. 1859, the epiglottis was discovered flushed, swollen, laterally compressed, much reclined backwards, and in an oblique position. On the posterior surface of the right half of the free border, it was ulcerated, in the same manner the top of the right Santorinian cartilage was puffed up, of a dirty white-yellowish colour. The right Santorinian cartilage is slower in its movements, than it uses to be in the regular state, it stops nearly in the median-line, whilst the left moves regularly. On the right side of the pharynx is seated an ulcer inclined to bleed, nearly three lines broad and more than one and a half long, tending downwards to the right sinus pyriformis. There is dull pain at the seat of this ulcer. Some papillae and glands at the base of the tongue are intensely swollen. At the respiratory movements and short coughing the right Santorinian and arytaenoid cartilages are of less agility than the left ones.

On a further examination made on the 5. April 1860 we discovored the epiglottis particularly in its right section quite disfigured, tuberous, uneven, ulcerated and we observed, likewise, on its right portion near the base of the tongue a deep thoroughly perforated hole. On the angle between the epiglottis and the base of the tongue appeared a granulated white-reddish new-formation, of some lines in height, taking its course transversally. The ulceration on the right side of the pharynx continued. In the month of April 1860, after the cauterisation of the ulcer of the pharynx with a concentrated solution of nitrate of silver, a painful tumour appeared on the right side of the neck, which was afterwards transformed into an abscess, opening spontaneously. On the 23. June on an other examination, we found the epiglottis considerably diminished by loss of substance in comparison with its late size, so that we obtained a more free view of the vocal ligaments, the visible parts of which were of sufficiently normal appearance. The perforating hole on the epiglottis communicated only by a small bridge with the right side of the base of the tongue; oedema had formed on the parts not yet ulcerated of the right ary-epiglottic fold.

He died on the 6. August 1860 after previous fits of shivering, and finally sopor.

Dissection showed pyaemia with purulent meningitis and hypostatic pneumonia, furthermore a cancerous growth on the base of the tongue, which advanced from here downwards to the os hyoides, and to the anterior part of the larynx.

The right half of the os hyoides was necrotised, lying exposed in the middle of a collection of ichorus matter, communicating with the abscess, which opened outwards. The epiglottis in the right half of its basis free, where a part of its substance was lost; the remaining part, drawn to the left side, puffed up, thickened, degenerated into cancer. (It was therefore, since the last laryngoscopical examination that, the above mentioned bridge on the right half of the epiglottis, had been broken through, and by that caused the separation and rotation of the latter to the left side.)

The right ary-epiglottic fold was destroyed, as well as all the glosso-epiglottic ligaments. The mucous membrane covering the right arytaenoid cartilage and that of the right upper vocal ligament, were thickened by similar new-formations. Both the left vocal ligaments, and the right lower vocal ligament were normal; the tonsils were exulcerated.

2. Case. The second case was met with in a butcher, 58 years old Augustine M. This person had felt since the month of June 1860 a pungent pain, particularly in swallowing on the right side of the pharynx, and in the depth of the ear. Six or eight weeks afterwards, the patient suddenly spit blood mixed with purulent matter on coughing, and clearing the throat, which happened repeatedly since that time. Frequently choking took place in swallowing, and the devouring of larger morsels was difficultly performed, and became more and more painful and troublesome.

The difficulty of deglutition had increased, during the autumn of the same year to a point, that the consumption of more solid food, as meat, bread etc. was impossible for the patient.

There grew in the course of the disease, on the right side of the neck and beneath the larynx, a tumour of the size of a wallnut, flatly roundish, tuberous. For the whole duration of the disease hoarsenes existed. His breath had a very bad smell.

At the laryngoscopical invistigation made in the beginning of 1861 I discovered on the posterior portion of the right half of the free border of the epiglottis, a perforating ulcerous loss of substance, and from here towards the os hyoides, likewise an ulceration. The right cornu of the os hyoides is on a small spot

puffed up. The right Santorinian and arytaenoid cartilages, are covered by an ulcerated new-formation, seated on them, surpassing the middle line of the glottis, provided with irregular borders, and resembling a medullary carcinoma. A similar one covers the greater part of the right lower vocal ligament.

Both the left ligaments of the glottis, as well as the right Santorinian and arytaenoid cartilages are of normal appearance, and duly perform their movements. The closing of the glottis is normal.

On 29 of April appeared in the afternoon suddenly, such a great difficulty of respiration, that recourse had to be had to tracheotomy.

On the 16. May the patient died. Dissection showed an ulcerated epithelial-carcinoma of the larynx, carcinoma of the lymphatic glands of the neck, phlebitis of the right jugular vein, and pyaemia.

On the right side of the larynx a cancerous mass was growing, which had distroyed the ary-epiglottic ligament, and the lateral part of the pharynx, so that on one side the necrotised epiglottis lay denudated, on the other side, the right cornu of the os hyoides was covered with ichorous matter. Downwards into the interior of the larynx the cancer extended as far as the ventricle of Morgagni, simultaneously pushing inwards the lower vocal ligament and thus changing the glottis into a mere fissure.

3. Case. This was again a man, 58 years old, Joseph S. In the month of March 1861 he felt on swallowing a pain on the right side of the neck, which augmented gradually, and which at the end of December was associated with hoarseness. His breath had a bad smell. Since the end of December little pieces of the food and fluids which he swallowed, slipped into the glottis and produced coughing. Nearly since the month of April 1862 deglutition has been very troublesome, andif not very cautious in drinking, most frequently a part of the fluids penetrates into the glottis, and produces by that means a series of violent respiratory movements, accompanied by dyspnoea, whereby the inspirations are accompanied by a croup-like sound, originating from the restrained passage of the air through the larynx. Nearly since the end of 1861 he perceived a solid, flat swelling on the lower right lateral region of the neck. On the 15. May 1862 was also seen on the right side of the free burder of the epiglottis, an ulcerous loss of substance penetrating it wholly, in the vicinity of which the epiglottis is flushed. The covering of the right Santorinian and arytaenoid cartilages, as well as these cartilages themselves, have been partly destroyed by an ulcerating process;

above them is growing inwards a tuberous, soft, red cancerous new formation, so that it surpasses with its inner free border partly the glottis, and covers entirely the posterior portion of the right lower vocal ligament. The right boundary of the pharynx near the epiglottis, is likewise ulcerated. He is able to cough short. The right lower vocal ligament stands with its inner border nearly in the median line, and remains in this position, during the movements of respiration and cough almost immoveable; the voice is hoarse.

In the beginning of July 1862, nearly the same appearences were found, only that the ulcerous destruction had made further progress. Hoarseness increased. A pressure applied between the right cornu of the os hyoides and the upper border of the right thyroid plate is painful. In swallowing the larynx makes regular-movements, and also as passive, is normally moveable. On the right side of the neck, far downwards, behind the musculus sternocleido mastoideus is percived a tumour of the size of a nut, flat, solid, slightly painful, immoveable, being in no conexion with the larynx.

When we regard these three cases, we see, that they agree not only accidentely in age (57—58 years old), but also in other respects.

The first and constantly remaining complaints, were pain in the corresponding side of the pharynx, which in two cases spread to the depth of the ear, and sometimes made swallowing very difficult; as well as a bad smell from the mouth.

Afterwards hoarseness, choking in swallowing, and difficulty of breathing came on, according as the disease spread itself to the posterior side of the larynx, to the arytaenoid cartilages, etc. In two cases, a firm uneven tumour, developed itself in the lower part of the side of the neck.

Death followed in two cases, one in about a year, and the other in a year and a half, after the first conspicuous appearances.

Laryngoscopical examination has in all cases showed on the one side of the epiglottis, an ulcerous loss of substance, perforating its whole thickness, and ulceration on the approximate side of the pharynx, with a moderate inflammation in the vicinity.

In the first case, all these ulcerations might have been taken for syphilitic ones, which usually perforate also the whole thickness of the epiglottis; but at a future period of the disease, the cancerous nature of the complaint was clear from the irregular uneven form of the epiglottis, as well as, from the extensive, granulated, reddish-white new-formation, which grew on the base of the tongue.

In both the other cases, even the first laryngoscopiscal exami-

nation, (although not made till after six months or a year) did not leave the least doubt about the presence of cancer of the larynx.

The view alone of the fungous, luxuriating new-formation in the interior of the larynx, was quite sufficient to form a diagnosis.

On alterations of the motions of the larynx [1])

A. Paralysis of the muscles closing the glottis.

1. Phonical paralysis of the muscles closing the glottis.

Laryngoscopic examination often shows as causes of aphony or hoarseness, an approximation of the glottic ligaments, not properly performed in the efforts of forming sound, a gaping of the glottis, and an improper oscillation of the ligaments of the glottis. This gaping may extend over the whole glottis, namely, its ligamentous, and cartilagineous portion, in a manner, that it is most considerable on the posterior end of the cartilagineous glottis, or that it appears, on the contrary, to be there in a much slighter degree, than in the middle of the glottis, a difference that had already been inferred from one of my earliest observations. Every such considerable gaping of the glottis produces aphony. In a slight degree of gaping of the whole glottis, or in gaping alone of the ligamentous portion of the glottis, which, of course, was restricted to the middle part of the lower glottic ligaments, whilst the cartilaginous glottis closed perfectly, I found only hoarseness. If we should have, in the latter case, possibly to do with a paresis of the thyro-arytaenoid muscles, running along the glottic ligaments, the cause of the gaping of the whole glottis is to be looked for, before all, in a paresis of the principal muscles which close the glottis, namely of the musculi crico-arytaenoidei laterales and transversi, with which may be also associated a paresis of the muscles promoting partly the closing of the glottis, viz. the musculi thyreo arytaenoidei, and perhaps the so called (Merkel) musculi obliqui.

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[1]) Published in the „Allgem. Wiener mediz. Zeitung“ Nr. 4 and 8, Jan. 28., Febr. 25., 1862 and for single pathological cases Zeitschr. der Ges. d. Aerzte Nr. 11, March 14., 1859, Allg. Wien. med. Ztg. Nr. 22. May 31., 1859 and Nr. 8, Febr. 21., 1860.

But all these muscles do not always participate equally of the paresis. Thus in the case to which I alluded before I saw a remarkable preponderance of the musculi obliqui.

Paresis or paralysis of the contracters of the glottis may remain, though it reaches to a higher degree, only phonetic i. e. restrained to the production of the voice, so that in the most perfect aphony, the closing of the glottis in coughing, swallowing, and pressing, succeeds duly. In the same manner the opening of the glottis is properly performed.

I found this paralysis always as a bilateral. It is founded according to my experience on several other disorders as follows:

a) Catarrhal affection of the larynx. Störk has published the first case of this sort.

b) Tracheal and bronchial catarrh, in a greater or less degree. The inspection of the larynx, shows nothing abnormous besides the gaping of the glottis, and the improper oscillation of the glottic ligaments, in attempting to produce a sound. The hoarseness or aphony, may last from a few days to some weeks, but it may also continue after the catarrh has ceased, for months and years.

c) Tubercles of the lungs. Also in this case, aphony transitory, or of longer duration, arising from paresis of the glottis, may occur, and even repeatedly in one, and the same individual.

d) Typhus fever. In a patient being aphonic a little while before death, I could not by the minutest examination state any pathological alteration on the larynx, I found the muscles on microscopical examination normal, there was, consequently, a mere nervous affection We shall be acquainted afterwards with an other case, originating from typhus fever, and in which the laryngoscope evinced the described paralysis of the glottis.

e) New-formations of the glottic ligaments. I found them also little, repeatedly accompanied by such a considerable gaping of the lower glottic ligaments, that it seemed to have a preponderating share in the hoarseness.

As much as concerns the treatment of this state, first of all, the use of electricity is to be mentioned, by which in the aphony, long before the application of the laryngoscope, brilliant results, were sometimes obtained. The beneficial influence of the stream of induction, into which the affected muscles are interposed, by a proper application of wet sponges, often displays itself after the first sitting by diminished hoarseness, and by a greater facility in speaking, and less propensity to fatigue in speaking. This effect, often passes off very soon, and we need in order to secure success, frequent repetition.

Most recently, Maurice Mayer was very successful in another way, by the use of the electric pencil. But electricity, often, is of no effect at all.

I think, the fact observed by myself a long time ago, is deserving of interest, that aphony does not seldom disappear transitorily during the laryngoscopic examination [1]). This is hardly to be explained by the altered position of the parts, but rather by the excitement which arises from the examination. This observation seems to induce us in such paralytic cases to produce a direct stimulating action on the interior of the larynx, i. e. by injections of pure water, of solutions of nitrate of silver, by blowing in powders, and the like.

Emotions may have a similar influence. This took place in a case observed by me, of phonical paralysis of the muscles closing the glottis, in consequence of catarrh. In this case, a woman 47 years old, who had been since the last ten months perfectly aphonous, on seeing a child fall from the first story, and being terrefied in the highest degree, she uttered some words of alarm, and from this moment she became again the perfect use of her voice. [2])

Among the persons treated and healed in an analogous manner till now, under the supposition of chronic laryngitis, there may indeed have been some who were affected with the anomaly of mobility, which is the object of this article.

The following case affords in another sense some therapeutical interest.

It was a maid servant, 21 years old, Francisca U. She says that she had typhus fever five years ago, in consequence of which she became aphonous or intensively hoarse. A year after, the voice is said to have returned for a duration of 3 months, and disappeared hereafter anew. Since that time, the aphony she says, has lasted alternating with deep hoarseness. Five years ago menstruation is said to have appeared for the first time during the typhus fever, and to have reappeared no more since that epoch. For the last four or five years, she has been suffering from difficulty of breathing, which from time to time, is considerably worse, particularly in the night, from a sensation of heat rising to the head, and since nearly three years, from frequent head-ache.

During her sojourn in the ward, since the latter half of August 1861, she was aphonous, only sometimes intensively hoarse, the tone of the voice becoming sometimes very high.

Laryngoscopical examination frequently repeated, showed by an attempt to produce a sound, a too great gaping of the liga-

[1]) See Allg. Wien. med. Zeitung Nr. 8, Febr. 21., 1860.

[2]) See Zeitschr. d. Ges. d. Aerzte Nr. 11, March 14., 1859, and Allg. Wien. med. Zeitung Nr. 25, June 21., 1859.

mentous, and cartilaginous glottis, at another time a normal closing of them. The whole inside of the larynx, and the trachea, as far as the bifurcation of the bronchii were normal, the heart and lungs normal, no bronchial catarrh.

The patient is well nourished, the skin of the face considerably flushed, the mucous membrane of the mouth rather pale, no murmuring sounds in the veins of the neck. On the 8th of January 1862 I ordered a pound of blood to be taken. On the 14th the aphony had partially, on the 15th even the hoarseness wholly disappeared, she met only with some difficulty in producing single sounds. Since the voice is returned, the difficulty of breathing as well as the sensation of pressure she continually complained of in the region of the trachea, have disappeared; the headache and the accompanying heat have diminished.

On the 21th, according to her relation, the menstruation manifested itself for the first time since five years. The voice remained normal [1]).

2. General paralysis of the muscles closing the glottis.

In speaking of a general paralysis of these muscles, in contradistinction to the morbid condition we called „phonetic paralysis of the muscles closing the glottis", we do not intend to indicate a paralysis of all the muscles which concur in closing the glottis, but an alteration of motility, in consequence of which is wanting the proper reciprocal approximation, and perhaps, also the tension of the lower glottic ligaments, not only in the production of the voice, but also in other functions.

You will mostly find in such cases, besides the gaping of the glottic ligaments on sounding the A, also in a slight cough an inadequate approximation of the Santorinian and arytaenoid cartilages, whilst swallowing, forcing and expectoration are performed perfectly well. These cases agree, excepting the difference just now mentioned, nearly in all other respects with the phonetic paralysis of the muscles closing the glottis. Also in those the paresis is almost always a bilateral one, and I have till now only seen one such unilateral paresis.

I had however occasion to see a case, where the muscles closing the glottis refused to act properly, not only in the production of the voice, but also in expectoration, and probably in deglutition too.

It happened in a peasant 62 years old, who stated that he had suffered for the last four weeks from a cough, and hoarseness

[1]) In another hysterical girl intense paralytical hoarseness frequently retourned and always spontaneously vanished.

(which in the further course passed into aphony) and difficulty of deglutition.

On laryngocopic examination, I discovered on sounding the now entirely aphonous A, a strong gaping of the lower glottic ligaments, and a strong vibration of the Santorinian and arytaenoid cartilages, which, besides in this case, I never had yet observed. In coughing, the closing of the glottis was imperfect, and the patient therefore was not able to expectorate properly. Besides this the whole interior part of the larynx, as well as a part of the trachea, were normal. After thicker bougies had been several times introduced, the difficulties of deglutition improved considerably, but still a stricture of the oesophagus could not be stated with certitude.

Although the regurgitation of solid substances and fluids had ceased, often a part of what had to be swallowed, got into the glottis, and the probable cause of this circumstance may be found in a paralysis of the muscles closing the glottis, which showed itself in an uncommon high degree in coughing, and in the attempt at sounding, and besides which there was also present an imperfect paralysis of the soft palate [1]).

B. Permanent unilateral restriction of the glottis.

Here the interior margin of one lower glottic ligament is more or less considerably approximated to the median line, or it even reaches it. The point of the arytaenoid cartilage of the same side, projecting very conspicuously together with the Santorinian cartilage which rests upon it, attains the median line and even surmounts it on the opposite side. In deep inspiration and exspiration, in the producing of the voice, in coughing, the lower vocal

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[1]) Since that time I had an opportunity of observing other similar cases, among which I will mention the following. In a person 42 years old with intense hoarseness, and difficulty of swallowing, on sounding the A, both lower ligaments of the glottis remained far asunder. In coughing short, the right Santorinian cartilage remains almost immoveable. In coughing severer the left Santorinian cartilage inclines itself behind the right one, and the left upper ligament of the glottis protrudes with its posterior part over the middle line to the right, in order to oppose itself to the right upper, or lower ligament of the glottis, which remain quiet, withdrawn from the middle line. At this moment, the epiglottis is laterally compressed, and when the already mentioned motion oft the left upper vocal ligament has arrived at its greatest height, then the epiglottis turns itself round, on its longitudinal axis, at about an angle of 45°, so that its anterior part lies forwards, and to the left.

In quick drinking, fluidity got into the nasal cavity; in swallowing, large pieces he must drink afterwards in order to be able to swallow them, but the voice is not nasal, and in blowing, the nasal cavity is sufficiently closed by the soft palate.

ligament and the arytaenoid cartilage which belongs to it, remain nearly in the mentioned attitude, or their motions are at least more circumscribed than in the normal state.

Though the functions of the said parts of the other side are perfectly well performed, the voice is necessarily more or less intensively hoarse, the cough is often not of a short character, viz. the commencement and the cessation of coughing, are not distinctly defined.

I have published the first case of this kind two years ago [1]). But the nature of this state is in spite of observations, repeatedly made by various persons, still unknown, and therefore its assignation to this place not yet well founded. If one considers the matter as a paralysis of the muscles moving one of the lower glottic ligaments one should suppose not only a paralysis of the muscles opening the glottis, but mostly also such a state of the muscles closing the glottis of one side, but with a prevailing paralysis of the muscles first indicated. The protuberance of the top of the arytaenoid cartilage of the same side, would then only be a consequence of the antagonistic action of the muscles which are respectively stronger. An equal effect could perhaps be produced by a continuous spasm, contraction of the muscles closing the glottis, particularly of single bundles of the thyreo-arytaenoid muscles.

As etiological moments according to my experience, the following morbid conditions have presented themselves

a) Catarrh of the air passages. In a few cases the hoarseness was said to be the remnant of a pretended catarrh of the larynx; once emphysema of the lungs was present.

b) Rheumatism. In one case the patient was, shortly before the appearance of the hoarseness, attacked by rheumatism of the same side of the face, still existing at the time of the laryngoscopic examination which I made a quarter of a year later.

c) Carcinoma of the trachea. In one case, it was situated on the back part of the trachea, directly below the cricoid cartilage, in form of a longitudinal protuberance, running from above downwards, over a tract of an inch and a half, sending in a rectangular direction, to the same side as the seat of alteration of motility, from three to four transversal protuberances. In a second case, it was situated deeper below on the side of the paralysed part [2]).

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[1]) Allg. Wien. med. Zeitung Nr. 8, Febr. 25., 1860.

[2]) d) In one case that came under my observation, and which I previously related, also as it seemed little new-growths of connective-tissue, situated on the posterior surface of the epiglottis, the anterior part of the larynx, and on the glottic ligament of the corresponding side.

C. Spasm.

We will confine ourselves to mentioning a case, which may be perhaps interpreted as a spasm of the crico-thyroid muscles.

A servant, 20 years old, affected with rheumatism of the joints some weeks ago, became aphonous. At the investigation made not long afterwards, I found a considerable redness of the back surface of the epiglottis, and a slighter one, on the coverings of the arytaenoid, and Santorinian cartilages, as well as on the front part of the larynx. The aphonic state continued. Soon afterwards, a repeated change of aphony, with a perfectly clear, but uncommonly high voice, similar to a falsetto followed. During such a period of aphony, the laryngoscopical examination, showed a gaping of the glottic ligaments.

After that state had continued nearly half a year, I observed in the patient, returned to my department of the hospital, who now spoke with her high clear voice, a painfulness on pressure on the anterior, and side part of the cricoid cartilage, and from here to the inferior border of the thyroid.

The possible connexion of the abnormal height of voice, with a state of irritation of the crico-thyroid muscles, situated here, and which stretch the lower glottic ligaments, induced me to order a strong Belladonna ointment, to be applied to the front part of the neck. Success seemed to corroborate this supposition, for after 4 or 5 days, the painfulness on pressure disappeared, and the normal voice returned.

On straitening of the larynx [1]).

We refer not only to those cases where the permeability of the larynx is altered in a manner that the necessity of breathing is only supplied by some exertion, and imperfectly, (which is properly called laryngostenosis), but also slighter degrees of straitening, in which the respiratory functions do not undergo a material alteration.

In a clinical point of view, we intend to arrange the numerous respective cases of our own experience in 3 classes, according as the portion of the larynx situated above the glottis, or the glottis itself, or, finally the part of the larynx situated below the glottis, has presented itself as being straitened.

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[1]) Published in Allgem. Wien. mediz. Ztg. Nr. 32 and 33, Aug. 12. and 19., 1862.

A. Straitening of the part of the larynx situated above the glottis.

Passing over the oedematous swelling of the ary-epiglottic folds, no case for laryngoscopical examination having presented itself, we shall briefly expose first of all a case, in which the entrance of the larynx was straitened by a cancerous tumour seated on the pharynx. This was a case of a man, 62 years old, who on his admission into our wards on the 18 of July 1860 stated to have perceived, since May of the same year a rapid increase of his struma, which had existed some length of time. In the last three weeks swallowing was more difficult; during which very often fragments of food got into the glottis. Since nearly the same time he also suffered from difficulty of respiration in taking severe exercise. The larynx is pushed to the right side by a tumour of the size of the fist of an adult, originating from the left flap of the thyroid gland; the voice is somewhat nasal.

On laryngoscopical investigation one perceives, the tumour extending beyond the left lateral to the posterior part of the pharynx. There it forms an irregular protuberance of nearly the size of a walnut, behind the larynx, which protrudes from the left to the right, transversally under the whole of the epiglottis.

Increased difficulty of respiration demanded recourse to be had to tracheotomy.

On dissection the before mentioned tumour presented itself as a cancer.

I make here mention of a second analogous case, although there was no straitening of the entrance of the larynx. It was a girl of 25 years of age, who suffered, since three years from a slight pain in the pharynx, which grew more violent these three months. From that time appeared considerable difficulty in swallowing. Here as in the first case it happened frequently, that morsals of food got into the glottis. The voice is somewhat nasal.

Also here the laryngoscopical examination showed a probably cancerous tumour, seated on the posterior part of the pharynx, running along its whole extent in a transversal direction, behind the arytaenoid and Santorinian cartilages.

In this case, as well as in the former, the mechanical warding off of the food without doubt, had a material share in directing it into the glottis.

Here belong furthermore cases, in which the straitening is effected by tumours seated on the inside of the upper

portion of the larynx. We have examined two cases of this kind, both of which we have described on a former occasion, when we treated of the fibrous tumours of the larynx.

Lastly we have to mention here still two cases of carcinoma, in which, as we had already mentioned above, cancerous tumours, originating from the lateral, or posterior part of the upper portion of the larynx protuberated over the middle of the glottis.

B. Straitening of the glottis.

The pathological affections, that had given rise in the cases observed by us, to straitening of the glottis, were the following:

1) The catarrhal inflammation.

a. The acute catarrhal inflammation. We have explained already formerly, the way of the formation of the stenosis of the glottis in acute catarrhal inflammation, and refer in this respect as well as in regard to the laryngostenosis in other forms of inflammation of the mucous membrane, to what had been said before, p. 17.

b. In simple chronic catarrh of the larynx, we also saw, but only in a slighter degree, a straitening of the larynx, produced by a swelling of the lower vocal ligaments, and the posterior part of the larynx.

2) The syphilitic inflammation of the mucous membrane of the larynx.

3) The croupous inflammation.

No laryngoscopical observations being at our disposal, let us call attention only in a few words, to the straitening of the glottis, which is already occasioned in some degree by the envelopment of the vocal ligaments with a pseudomembrane, further to the still more important, as it seems, oedema of the vocal ligaments, which is not only observed in their own croupous affection, but also in the croup of more distant parts of the larynx, for instance of the epiglottis alone, especially in small-pox, and leads to a fatal end.

4) Inflammation and oedema of the vocal ligaments and the upper portion of the posterior part of the larynx, as a consequence of perichondritis laryngea.

We have obserwed, as has been treated upon on a former occasion, cases of perichondritis in typhus fever, in small-pox

cases of syphilitic perichondritis, in which, undoubtedly, such inflammatory and oedematous swellings of the lower vocal ligaments, with or without those of the upper ones, had formed the only, or at least by far the most preponderating moment for the intense straitening of the larynx. In other cases, especially in a case of perichondritis in an individual affected with typhus fever, the straitening of the glottis was, however, too inconsiderable, to account for the high degree of dyspnoea, and in such cases, without doubt a swelling of the portion of the larynx situated beneath the glottis plays an important part in the laryngostenosis.

5) Ulcers of the lower vocal ligaments.

In these ulcers, if they are of a larger extent, particularly, if they occupy the glottis in its whole length, there is sometimes existing an enlargement of the lower vocal ligaments; but the straitening arises principally from the inflammation of the neighbouring parts, to which belong particularly, also the superior portion of the back part of the larynx. The straitening of the glottis produced by it, is apt to become very great, so that tracheotomy must sometimes be resorted to. To these we must add:

a. The syphilitic ulcers.

b. The diphtheritic ulcers in typhus fever. We have observed an only case, which, undoubtedly belongs hereto, and have also mentioned it on a preceding occasion, in which the laryngoscopical examination demonstrated a deep loss of substance in one lower vocal ligament with intense inflammotory oedema of the two lower vocal ligaments, and the backpart of the larynx.

c. The ulcers in tubercles of the lungs. We mention here, besides the more acute, especially, the chronic catarrhal inflammation accompanying occasionally the ulcers of the larynx in tubercles of the lungs, which leads to callous degeneration of the mucous membrane (Rokitansky), and contributes in no small degree and in similar way as acute catarrhal inflammation to the straitening of the larynx.

d. Other sorts of ulcers which are not to be determined more particularly. Several of such cases happened to come under our observation. Among those, I must before all, mention such ulcers, which seemed to be syphilitic according to the anamnestical moments, but which resisted a general antisyphilitic cure. Their syphilitic character remained therefore doubtful. In a case of this description, tracheotomy was necessary. Further, we shall hint at other cases, which strictly do not belong

to that sort, and a few of which I had observed, viz. among elderly men.

One was a man, 58 years old, the second a still older individual. In both these cases, there were to be seen on the covering of the mucous membrane of the Santorinian and arytaenoid cartilages, dirty white-yellowish, extensive spots, but not sufficiently exact to be recognised as ulcers, the vicinity of the mucous membrane puffed up, flushed, and the glottis by that means contracted.

In one of these cases recourse was had to tracheotomy. Finally may be mentioned still other ulcers with inflammation, and swelling of the neighbouring parts in various forms, the detailed description of which we shall here pass over.

6. Cicatrices.

a. Cicatrisation after injuries. As regards this, I had an opportunity of observing a very remarkable case [1]).

This case was a shoemaker's apprentice, who had cut his throat, whereby the left lower and upper vocal ligaments, were transversally cut through. In consequence of the consecutive inflammation, a perfect growing together of the greater posterior portion of the left lower ligament, with the corresponding part of the uninjured right one by means of a connecting membrane took place. In the vicinity of the posterior angle of the glottis, there existed in the left half of the larynx a hole, conducting to its inside, the anterior border of which, was formed by the former edge of the wound of the left lower vocal ligament, which had been cut through, and through which the patient breathed. At the sounding of the vowal A, the uninjured right lower vocal ligament vibrated in its entire length. This vibration was possible from this circumstance, that by the approximation of the inner border of the said lower vocal ligament to the median line, the connecting membrane was relaxed. The patient's voice was still only somewhat hoarse, and strange to say, had retained the extent of an octave with four falsetto tones.

b. Cicatrisation after ulcers. To this class belong the cases of laryngostenosis likewise published by ourselves [2]), which was the consequence of syphilitic ulcers, having preceded undoubtedly in one case, and probably in the second. In the former of them tracheotomy was required, while in the second, an additional catarrh of the air passages increased the difficulties of breathing, otherwise not considerable, to a dyspnoea of high degree, which

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[1]) See: Allgemeine Wiener mediz. Zeitung Nr. 20 and 25, May 17., June 21., 1859.

[2]) Allg. W. med. Zeitg. Nr. 22 1859.

were reduced, by an antiphlogistical treatment, after dissolution of the catarrh, to their former state. Hereto may be added perhaps a third case, in an individual, that was affected with secondary syphilitic symptoms, and in whom I discovered an extensive uneven membranous growth, on the lower glottic ligaments at their anterior angle, by means of which the interior borders of these ligaments, were connected together.

7) New-growths.

a. The smaller papillary and other small growths, do not hinder materially, as has been before mentioned, the permeability of the glottis, though they are seated on the free borders of the lower glottic ligaments. But we must call to mind also here, the case mentioned already before, where, as it seemed, issuing from similar growths, inflammatory oedema arose, which led to an intense stenosis of the glottis, so that tracheotomy was indispensable.

b. The syphilitic growths. I had an opportunity of oberserving a very exquisite case of this kind, in which, after the greater part of the epiglottis, and the ary-epiglottic folds were destroyed, several large new-growths which partly arose from the rests of the before mentioned parts, partly, as it seemed from the upper glottic ligaments, and an accessory swelling of the upper glottic ligaments, gave rise to an intense stenosis of the glottis.

c. The lupous growths. In a girl affected with lupus, the moderate straitening of the glottis, was particularly owing to a great number of growths on the back-part of the larynx [1]).

8) Protuberance of one lower glottic ligament to the median line or even beyond it.

a. By an undermining abscess, as was to be found in a case of perichondritis, described before.

b. By carcinoma. As we had already mentioned, when we spoke of the carcinoma of the larynx, there was seen in one of the reported cases, a cancerous mass growing on the right side of the larynx, which pushed inwards the right lower glottic ligament, and thus the glottis was converted into an archlike fissure.

c. Finally we must number here the straitening of one half of the glottis, caused by *abnormity of the muscular action,* and explained before.

If we remember the case described by us among the papillary growths, in which inflammatory oedema was associated with such a partial alteration of motility, and in which tracheotomy was rendered indispensable, it is obvious to suppose, that in this

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[1]) See two cases of lupus of the larynx in Zeitschr. d. Gesells. d. Aerzte Nr. 11, March 14., 1859 and Allg. med. Zeitung Nr. 8, Febr. 21., 1860.

case, the just mentioned unilateral straitening of the glottis by abnormous muscular action, may have contributed its due part to the high degree of stenosis that followed. It may be here also more dangerous, to remove the canula, and to bring about a closing of the artifical canal, which had been produced by the tracheotomy.

C. Straitening of the portion of the larynx situated beneath the glottis.

We have to consider here, the following morbid conditions:

1) Circular straitening beneath the glottis.

Some time ago [1]), we had published a case of this kind, which was a shoemaker's apprentice, 14 years old, who suffered, these five months from a cough and difficulty of breathing, which symptoms were relieved materially by bloodletting, and where the laryngoscopical examination showed a circular border, situated close under the glottis, whereby the opening of the larynx was straitened to the size of nearly a quill.

A similar case of a less intense straitening, belonging also without any doubt to a croupous process, we had an opportunity of observing afterwards.

This was a maid-servant, 24 years old, suffering some months ago from hoarseness, cough, dryness and pain in the larynx.

On the laryngoscopical examination, made on the 14. August 1861 I found both the lower glottic ligaments superficially ulcerated; on the anterior angle of the glottis a small peduncular new-growth; quite close below the lower glottic ligaments, I saw a circular covering, nearly a line broad, intensely green, uneven, firmly adhering. An analogous covering appeared likewise, on the posterior part of the pharynx, and on the pharyngo-nasal cavity. The patient's breath had a very bad smell. At the same time, there were present a vaginal blennorrhoea, and superficial ulcerations on the orifice of the uterus. That greenish covering could as a sufficiently tough membrane be stripped off the side of the pharynx. The mucous membrane situated below it was a little flushed, and not bleeding.

At the microscopical examination it was seen to consist of slime and epithelium. As often as the membrane was removed, it was reproduced.

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[1]) Allgem. Wien. med. Zeitung Nr. 8, February 21., 1860.

The state of the patient remained, in spite of a treatemeut with jodine, and an inunction cure, unchanged. It was only by the continued application of the vapours of warm water by inspiration, that the elimination of that covering ensued, which by the repeated use of the remedy did not return. It is remarkable that, we saw appear as the basis of the before mentioned green covering, a circular membrane of new-formation, thin, whitish, here and there nearly transparent, perforated in form of a net towards the anterior angle of the glottis, which allowed hôwever, so large an aperture to be open, that respiration was performed without the least difficulty, and that one was able to see through it as far as the bifurcation of the bronchii. The back part of the trachea presented itself, in its whole longitudinal extension, beset with quite small prominences, which seemed to be swollen mucous glands. The superficial ulcers on the lower glottic ligaments, were consolidated, the small new-growth on the front-angle of the glottis was shrunk into a minimum size.

2) Perichondritis of the larynx.

As we had remarked before (p. 56), certain cases of this disorder belong to here, in which the straitening of the glottis, caused by the consecutive inflammatory swelling of the lower glottic ligaments is too little, to be sufficient, to explain the intense disturbance in respiration, in which, accordingly, also a straitening in that portion of the larynx situated below the glottis must have been supposed.

Hereto we are obliged to refer a case [1]), we had observed a long while before. It was a maid servant 38 years old, who suffered nearly these nine months from hoarseness, and periodically from dyspnoea, in the beginning with a pain in the larynx. Since nearly a week dyspnoea had increased , and reached by the 25. January 1859 a considerable degree under the appearances of laryngostenosis. On laryngoscopical examination, I found a very considerable inflammatory swelling of the right upper glottic ligament, whereby not only the ventricle of Morgagni disappeared entirely, but also the right lower glottic ligament was nearly quite covered. In the same manner, the inner side of the right ary-epiglottic fold appeared flushed and puffed up. The normal left lower glottic ligament at each inspiration, was with drawn sufficiently from the median line, so that a large space was consequently left open for breathing, and therefore the principal

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[3]) Zeitschrift der Ges. der Aerzte Nr. 11, March 14., 1859.

seat of the complaint had to be looked for on a lower part of the larynx. Tracheotomy was obliged to be performed, and the patient afterwards left the hospital, quite recovered. We were not able to pass a certain sentence on the process on which the present case was founded.

3) Tumours occurring on the inside of the larynx.

4) I observed a peculiar straitening of the larynx some time after laryngo-tracheotomy had been performed. The patient was, at a later period of typhus fever attacked by oedema of the lower and upper glottic ligaments, as a consequence of diphtheritic ulcers or of a perichondritis, and therefore submitted to laryngo-tracheotomy on the 7. January 1859.

In June 1862 I had occasion to examine him again.

The glottis was not only straitened by the still remaining swelling of the lower vocal ligaments, which was visible also from below, which ligaments on slight lateral pressure of the thyroid plates perfectly joined together, but almost immediately below them, the larynx was also straitened from before to behind. This was caused not only by an uneven protuberance on the lower section of the back part of the larynx, which fitted in the lateral opening of the canula, but also by the retraction of the posterior part of the upper side of the artificial canal, formed partially by the ligament. conicum. For, on drawing it forwards by means of a sound with a knob at the end, two lateral folds were to be seen extended, running from it to the lateral and posterior part of the larynx, or trachea.

On straitening of the trachea [1]).

The first case observed by me, happened in a shoemaker's apprentice of 18 years old, who has been suffering for the last half year from difficulty of breathing, particularly on taking severe exercise, and perceived since then on inspiration, the actually existing noise arising from the retarded passage of air through the wind-pipe. During the last weeks the difficulty of breathing had increased, so that he is no more able to run, and is often obliged to give up his work. The last nights he was obliged

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[1]) Published in Allg. Wien. med. Ztg. Nr. 6, Febr. 22, 1862.

sometimes to sit up in bed. His voice is said to have been clear and strong, till shortly before his admission into the hospital on the 26. of January 1862. Only at this latter period cough came on, transitory hoarseness, and pain on both sides of the chest, which appearances were before wanting, and have disappeared a few days ago with the exception of a trifling cough, producing a slight expectoration of mucus resembling spittle.

Half a year ago, he pretends first to have observed a moderate swelling of the thyroid gland; swallowing was always normal, pains in the region of the larynx, and the wind-pipe were never present.

On examination, we remark first of all the respiratory movements. During inspiration we see, when the patient is perfectly quiet, the grooves on the neck fall in slightly, and on exertion deeper. At each inspiration the scrobiculum cordis with the cartilages of the last true ribs, and the upper false ones, sink in deeply, whilst the superior portion of the thorax extends from behind to before, and the larger lower part laterally enlarges; at the same time, the powerful contraction of the diaphragm is recognisable by a considerable protuberance of the lower part of the belly. On expiration, the profound sinking in about the scrobiculum cordis, becomes more level, in spite of the depression of the undermost portion of the breastbone, arising from his trade. This abnormity of respiration is to be found in a higher degree of stenosis of the larynx; I saw it too, some years ago, in a case of stenosis of the wind-pipe, which had then not yet been examined by the laryngoscope. I only saw it in young individuals, and it is without doubt, founded on this circumstance, that in a powerful action of the muscles elevating the ribs, and of the diaphragm, and at an insufficient permeability of the larynx or the wind-pipe, there arises in the chest, during the inspiration, an exceeding rarefaction of air, in which the cartilages of the ribs, still supple, are not able to offer sufficient resistance to the atmospheric pressure.

The in- and exspirations are protracted, very deep inspiration is accompanied by a blowing and rattling noise, which at the movements of the patient becomes loud, or accompanied by a dull sound, like that of persons affected with a high degree of struma. Expiration succeeds under a similar, but much weaker noise. The sound of percussion on the thorax is full, clear, (also on the sternum); the perfect dulness of the liver begins in the mamillary line, only a thumb's breadth, in the axillary line three fingers breadth above the arch of the ribs, the point of the heart stands more inwards; consequently there was formed a consecutive emphysema of the lungs. Even during the deepest inspiration, one hears only in the anterior upper region of the chest

a weak undetermined respiratory murmur. Over the rest of the chest, we hear only a weak dull murmuring, with the above mentioned tracheal noises.

The sounds of the heart and of the aorta are clear. Pulse 80—100, respirations 12—16. No cyanosis, no oedema. The thyroid gland is moderatly increased, its middle flap does not reach wholly to the half moon-like border of the sternum. It is easily moveable. Pressure on the larynx and trachea, is not painful.

The voice of the patient is clear, he speaks as loud as any healthy individual. Only in attempting to shout, the voice appears to be weaker.

On laryngoscopical examination, I find a perfectly normal appearance of the larynx, and of its neighbouring parts, proper closing of the glottis; on the contrary, the trachea appears in an upper part straitened in such a high degree, that its opening represents nothing more than a very small fissure running from before to behind.

The mucous membrane of the trachea down to this fissure is reddened and puffed up, neverthless you may distinguish accurately some of the tracheal rings which are covered by it. The margins of the fissure are uneven. During exspiration the fissure is apparently wider than during inspiration, where it is undoubtedly, in consequence of the athmospheric pressure more contracted, and at the same time the trifling secretions found above the fissure, are sucked in.

Laryngoscopical examination at the moment as the patient uttered a strong yelling high tone, was of a particular interest for me. It was produced by an expiration, at which the margins of the fissure oscillated in their whole length, whilst the glottic ligaments remained perfectly quiet, widely separated from each other. The margins of the fissure, belonging to the wind-pipe, had therefore undertaken the office of the lower glottic ligaments.

By [1]) means of quietude and under an indifferent treatment, the difficulty of breathing considerably diminished since the 7. of February; on the 12. February the above mentioned modification of the respiratory movements had already disappeared. On the 13. of March in a state of quietude respiration was quite free. A laryngoscopical examination stated, that the opening of the straitened part, had considerably enlarged. One could now make out more accurately, that the straitening began at the 3^{d} or 4th tracheal ring, and extended from there over nearly

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[1]) The following has been published in Allg. Wien. mediz. Zeitung Nr. 34, Aug. 26., 1862.

4 or 6 tracheal rings downwards. The mucous membrane only on the right side of the straitened place was a little reddened.

In the latter half of May the thyroid gland swelled more considerably, and difficulty of respiration reappeared, which two phenomena again diminished under the use of jodine with glycerine; but the straitening of the windpipe was, however still present on his discharge which took place on 22. July. It was, as we must conclude from its situation, produced by the pressure of the but inconsiderable struma, and had encreased to a very high degree by the catarrhal inflammtion of the contracted part.

In two other cases which I observed, the straitening of the wind-pipe, also depended on struma, but of greater size, and had attained no high degree.

One of these two cases presented the peculiarity, that the cricoid cartilage inclined to the right side, and stood at the same time higher on that side.

In laryngoscopical examination, we saw a straitening of slight degree beginning in a deeper part of the trachea than in the first case. The longitudinal diameter of the straitened spot, did not however stand in the median line from before to behind, but in an oblique direction from before on the left, to behind on the right; therefore, pressure must also have operated in an oblique direction. The compressing tumour must necessarily be situated either towards the left and behind, or to the right and before the trachea. The portion of the trachea situated above the straitened part stood, probably in consequence of the above mentioned position of the cricoid cartilage, in another sense obliquely, so that the left side of that portion of the wind-pipe presented on laryngoscopical examination rather a partial front view.

A 4. case of straitening of the trachea terminated fatally. The excessive swelling of the thyroid gland had depended in that case on carcinoma.

The patient, 62 years old, affected, since several years, with asthmatic complaint and cough, remarked since nearly a month a rapid increase of her thyroid gland, which had always been tolerably swollen, to the size of a fist. These 3 or 4 days difficulty of breathing increased, and since last night inspiration became whistling.

The laryngoscopical examination, made on the day of her admittance into the hospital, the 19. March 1862 showed the existence of an intense straitening of the trachea, as its left side, on which the tracheal rings could not be distinguished, protuberated, a finger or a finger and a half in breadth below the larynx, to the right side, and thus converted the opening of the trachea into

a fissure. This fissnre, as well as the glottis were in a slightly oblique position, taking their course from the left and before, to the right and behind.

Pressure had, evidently operated here from the left to the right, and from behind forwards.

Breathing was rustling, dyspnoea considerable, the voice normal. The patient died on the 22. March. Dissection showed, that the posterior portion of the left part of the trachea protuberated into the opening of the trachea from the 6 to the 12 tracheal ring, which corresponded with the prevaling increase of the left flap of the thyroid gland.

On tracheal tumours [1]).

The first case observed by me was a man, 67 years old, who came under my treatment, on the 4th June 1860. He suffered from a stricture of high degree at the entrance to the oesophagus, and since nearly two months, from hoarseness, with transitory aphony.

On laryngoscopical examination, the right lower glottic ligament presented itself, standing with its interior border nearly in the median line, and the right Santorinian cartilage somewhat more elevated. The opening of the glottis, at a deep inspiration, was for the greater part only indebted to the outward motion of the left lower glottic ligament. Besides this you discover below the glottis, an oval tumour, extending from behind to before, and from above downwards, which seemed to sit, on account of its little distance from the lower glottic ligaments, on the undermost portion of the back part of the larynx, or on the uppermost portion of the back part of the windpipe. On account the straitness of the glottis, a safe judgement could not be pronounced, nor was it possible to determine, even approximatively, how far the tumour extended downwards.

With regard to the presence of a stricture of the oesophagus, and the anamnestics, there could not be any doubt, that we had to do with a cancer emerging from this organ.

Dissection made a month afterwards, confirmed this supposition.

The cancerous tumour restricting the oesophagus, extended itself on the back part of the trachea just below the cricoid car-

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[1]) Published in „Allg. Wien. med. Ztg." Nr. 8, Febr. 19., 1861.

tilage, and formed in this way a longitudinal protuberance, running from above downwards, over a length of near an inch and a half.

In the dead subject, the above mentioned discrepancy of the two lower vocal ligaments, and the Santorinian cartilages had disappeared, and there was no anatomical reason for this condition, to be found. The abnormous position of the right vocal ligament, and of the Santorinian cartilage, is consequently, in this case, as well as in others, that I had repeatedly mentioned, to be considered as an abnormity of motility, which may consist in a paralysis of the right musc. cricoarytaenoid. postic. or in a spasm of its antagonists.

In the second case, I had observed likewise on the summer 1860, a protuberance had its seat lower in the trachea. The patient, affected at the same time, with an enlargement of the thyroid gland, suffered a year ago, from a periodical asthma, which was afterwards accompanied with a cough. In the depth of the trachea, I discovered a protuberance, issuing from the back and right side, encompassing nearly a third of its canal. The great number of tracheal rings, situated above it, prove its deep seat. The free surface of this protuberance, facing the opposite side of the trachea, can be viewed over a length of a few lines into the depth. As far as it can be explored, it is level, provided only with small, but apparently irregular unevennesses; its colour is nearly that of the other mucous membrane. From the small inequalities of the surface, from the want of any trace of tracheal rings, upon the surface of that protuberance, we may perhaps be induced to conclude, that it does not only consist in a protrusion of the tracheal tube, by pressure from without, but, that we might have to do also with an alteration of the trachea itself, which however, may be combined with such an outward pressure [1]). As regards the distance of the protuberance from the right bronchus, it must have been sufficiently large to admit a free passage of air through the latter. This we can conclude from the slightness of the asthma, for which the extensive, and moderate bronchial catarrh that was present at the same time, affords a further reason, as well as from the circumstance, that the respiratory noise was to be heard with equal clearness over both the lungs.

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[1]) Observations, which I made afterwards on compression of the trachea in higher parts, prove, that by that alone the tracheal rings may be invisible at the points, which are pushed inwardly. In the present case it is therefore quite doubtful, whether it was more than a simple compression of the trachea, perhaps by the thyroid gland. (Struma substernalis?)

The third case was a waiter, 38 years old, admitted for a catarrhal affection of the larynx, into my department. On laryngoscopical examination I discovered on the free border of the epiglottis a round tumour, of the size of a grain of hemp, and a second, of nearly the size of a very small pea, below the glottis, seated on the back part of the lowest portion of the larynx, or the highest of the trachea, with a base somewhat smaller on the left side. This seat is best to be made out, by examining the patient in the rotation of his head to the right, or to the left, because, at the rotation of the head to one side, a considerable portion of the opposite sidepart of the lower section of the larynx, or the upper of the trachea, is exposed to view. Looking beyond the tumour, i. e. below it, we discover the posterior part of the trachea, through a large tract, till the point of bifurcation, and in the same manner also the remaining portion of the windpipe in its whole length, of normal appearance, as well as the visible part of the 3 or 4 cartilaginous rings of both bronchii.

After the catarrhal affection of the larynx had terminated, the hoarseness disappeared also.

On syphilitic ulcers on the sides of the pharyngo-nasal cavity [1].

Till now I had an opportunity of observing three cases of this kind, which I shall here briefly explain.

1. Case. Peter D., a turner, 20 years old, came under my treatment on the 15. July 1861. He had caught in the middle of April 1861 a chancre, which after a superficial cure broke out again, and was now discovered as an ulcer of the size of a pea, not indurated.

On examination made on the following day, we saw an ulcer on the left tonsil, and ulcers on the posterior part of the throat; besides this, a syphilitic acne. The rhinoscopical examination showed ulcers, partly covered with pus, moderately extended on the roof (upper part) of the pharyngo-nasal cavity. He was cured by rubbing in mercury.

2. Case. Leopold S., a confectioner, 18 years old, admitted into my department on the 28. of June 1861. A month and a half before a perforation of the soft palate took place, and a few days before his admission there appeared a swelling on the left side of the roots of the nose, which presented when he came, an

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[1]) Published in the Allg. Wien. mediz. Ztg. Nr. 48, Nov. 26., 1861.

abscess, threatening to burst, and disappearing under the use of jodide of potassium. We found ulcers on the arches of the palate. The rhinoscopical examination showed a great number of confluent ulcers, covered with thick matter, on the anterior portion of the back surface of the soft palate. They were much larger than the superficial ulcers, that surrounded the perforated spot on the anterior surface of the palate. There were to be found several small new-growths of the mucous membrane, about the posterior openings of the nasal cavity, and on the roof of the pharyngo-nasal cavity.

3. case. Susanna S., a labouring woman, 36 years old, married, admitted into my ward on the 6. of November 1861. She had become according to her statement, three years ago, an ulcer on the soft palate, which healed under a mere local treatment. The voice is said not to have been then nasal. Two months ago new losses of substance were produced on the soft palate, which had, as she said, been followed by the nasal tone of voice.

On inspection of the throat, we discovered great losses of substance on both arches of the palate, and on the soft palate, on which is to be seen, not far from the borders of the last loss of substance, an old radiant circatrice, large ulcers on the back part of the pharynx, which extend upwards as far as its upper end, and downwards to nearly a level with the origin of the arches of the palate. Rhinoscopical examination shows deep circatrised losses of substance, provided with cord-like prominences, on the two lateral regions of the back surface of the soft palate, the middle portion of which, presents ulcerations, covered with purulent matter. On the roof of the pharyngo-nasal cavity we discover a seemingly deep, large loss of substance bordered by cord-like protuberances, in the vicinity of which, we see small roundish new-growths, as well as some ulcers; moreover the mucous membrane on all sides of the pharyngo-nasal cavity, is here and there of uneven appearance. The larynx presents a large loss of substance of the epiglottis, and besides that, two new-growths resembling the flat condyloms, the one of which, sitting, as it seems, on the covering of the mucous membrane of the left arytaenoid cartilage, hides the back portion of the left lower glottic ligament, whilst the second, issuing probably from the right upper glottic ligament, deprives us of the sight of the right lower glottic ligament, with the exception of a small strip. The visible parts of the two lower vocal ligaments are normal, the closure of the glottis likewise. The voice somewhat hoarse. The portion of the pharyngeal mucous membrane situated between the larynx, and the region of the lower ends of the arches of the palate is quite normal.

From these few observations, we will direct our attention to the following points.

In the two cases of perforation of the soft palate, the ulcerous loss of substance of the posterior surface, prevailed on that of the anterior surface, and it was probably that where the perforation issued from.

In all the three cases, the ulcers of the pharyngo-nasal cavity were not isolated, but accompanied by such of the posterior part of the pharynx.

Contrary to that, I found in other cases examined by me, that ulcers occur frequently on the just mentioned places without continuating into the pharyngo-nasal cavity, or at least beyond its posterior part.

One may judge from these few observations, of the importance of the rhinoscopic examination in syphilitic individuals, particularly as regards preventing perforations of the soft palate.

According to my observations, furrows and other unevennesses, are occurring on the sides of the cavum pharyngo-nasale, as well as very small new-growths, which give only a more minute granulated appearance to the mucous membrane, or larger roundish, more or less pedunculated ones, which are decidedly, not of a syphilitic nature, and which we meet with in otherwise healthy persons, perhaps merely as consequences of preceding catarrhal affections. Thus, the same alterations I found in the three just exposed cases, are not to be necessarily attributed to syphilis.

A field not less rich for similar rhinoscopic examinations, may be particularly presented, in diseases of the skin.

With regard to the method of examinig ulcers of the pharyngo-nasal cavity, I shall remark, that for obtaining an exact insight, it is necessary to free the ulcerous surfaces from the pus; and where there are perforations of the soft palate, from the remnants of food, which are sometimes found here, in no small quantity. I effect this by injections of lukewarm, and if there are ulcers that easily bleed, of cold water, by aid of a syringe, the mouthpiece of which, is at its anterior end bent upwards, at an acute angle approaching to a right one, in order to be able to rinse the anterior, and upper part of the pharyngo-nasal cavity.

After having introduced the end of the syringe through the mouth between the soft palate, and the posterior part of the pharynx, the head must be bent forwards at the discharging of the syringe, to allow the injected water to run out of the mouth and nostrils, a proceeding, which can be made use of, also for the injections of medicinal fluids.

For the rhinoscopical examination itself, the use of different curved probes, made of whale-bone, and others is to be recommended, especially for the discovery of necrotic bones contained in hollow cavities.

On neuralgia and hyperaesthesia of the entrance of the pharynx [1]).

The subject of this is a complaint, belonging to neuralgia and hyperaesthaesia, which is limited to certain portions of the entrance of the pharynx, and which also extends beyond it.

It is certainly not a rare one because six similar cases have, during the latter months, occured to me [2]).

I discovered the seat of the hyperaesthesia by exploration with a curved whalebone probe, with a small knob at the end, or still better, with the aid of the index finger properly pressed against the parts.

Perhaps it may not be quite superfluous to hint on this occasion, that one must take care at similar investigations, not to apply the nail of the finger to the parts submitted to exploration, otherwise you will produce pain, also in quite healthy parts.

At the exploration performed in such a manner, the following parts have presented themselves as the seat of the complaint.

a) The posterior and exterior part of the base of the tongue, situated behind the lingual insertion of the anterior palatinal arch (arcus glossopalatinus), and constantly in all those 6 cases. In some cases, only a small spot behind that insertion was affected, in others, the hyperaesthesia extended from here in the same direction backwards, and downwards as far as the os hyoides.

The greater middle part of the posterior portion of the root of the tongue remained free, though its lateral parts were attacked in the said manner [3]).

b) The tonsil, the ovale groove situated between it, and the root of the tongue, fovea ovalis (Tourtual), and the inferior portions of the two palatinal arches. All these parts were less constantly affected. The touching of the tonsils and palatinal arches, often produced a violent cough.

c) Beyond the entrance of the throat, we saw in the cavity of the mouth several times, the back portion of the margin of the

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[1]) Published in Allg. Wien. med. Ztg. Nr. 9, March 4., 1862.

[2]) Since this time, a greather number of cases came under my observation.

[3]) In others also the middle part was affected.

tongue, once the inferior part of the cavity of the mouth, the gum behind and under the latter inferior molar tooth, finally, the side-part of the pharynx, affected with hyperaesthesia. The hyperaesthesia, was mostly found simultaneously on both sides, but then also always preponderating on one side.

At the laryngo-pharyngoscopical examination all the above mentioned parts presented a normal appearance. The complaints of the patient were various. They consisted in painful sensations, which were characterised as pricking, cutting, and scratching, and had, as it was accurately made out by pressure with the fingers, their seat on the indicated spots at the root of the tongue, the tonsils, the palatinal arches, and sometimes attained to a considerable, but never exceedingly high degree of violence. These pains sometimes induced the patient to suppose, he had an ulcer, or made him afraid of cancer.

Sometimes they extended along the one or other margin of the tongue forwards, once combined with numbness, and thus represented a true neuralgia of the tongue. Just the same as the hyperaesthesia, these pains were on both sides, but always on one side more excessive.

In other cases, the pains consisted in less perceptible painful impressions, in some difficulty of deglutition, the sensation of swelling, or of a foreign body in the pharynx, the sensation of dryness in the pharynx and larynx. Alterations of the taste were not observed.

On account of these complaints the patients requested the laryngoscopical examination, which always led to a negative result, whilst the touching with the probe or the finger, taught us the seat, and nature of the illness.

In an etiological sense, we must adduce, that there were among six patients two men, one 37 and the other more than 60 years old, two girls of 14 and 20 years old, and two women of 34 and 48 years old.

An obvious cause was in the two men, not to be determined with certainty. The girl of 14 years had menstruated 3 or 4 years ago, and since nearly this time the pains, periodically violent, existed on both sides of the base of the tongue.

She became chlorotic, the pains persisted after the recovery from the chlorotic state. The second girl had suffered from frequent fits of hemicrania, mostly on the left side; a fortnight before the beginning of the present complaint she was attacked with a catarrhal angina, with violent pain on deglutition, and hoarseness. During the reconvalescence she caught a severe cold, and already in a few hours afterwards, the pain prevailing on the left side, is said to have begun on the hindmost portion of the base of the tongue.

In the two women, the complaint occupied the place of the preceeding neuralgia. The woman of 34 years old, suffered since the last eight years, from intercostal neuralgia, from neuralgia of the breasts alternately on both sides, in the place of which came for the last three months, pain at the base of the tongue, on the tonsils, and on the palatinal arches. The woman of 48 years suffered since several years from hemicrania, from which she was delivered two years and a half ago, when the present complaint began. But this was likely to be occasioned by a catarrh of the nasal cavity, and the airpassages.

The complaint was aggravated, or renewed in all cases by continued talking, singing, twice also by the use of hot drinks and food.

The course was chronic, two cases lasted only from six weeks to two months, one case three months, one four years and a half, one six years. The reason of it is, perhaps, partly the continual active injuriousness of speaking.

There was sometimes an alteration of the intensity of pains on both sides.

As regards the nerves attacked in their course, it is not possible to decide, whether they belong to the nerv. lingualis or the nerv. glossopharyngeus. We refer in this respect, to a case of very violent, unilateral neuralgia of the tongue, where the most violent pain was likewise situated behind the insertion of the glossopalatine arch, and which Roser cured by cutting out a piece of the nerv. lingual. [1]).

With regard to the treatment, I shall only remark, that the cauterisation with nitrate of silver recommended by Romberg in neuralgia of the tongue, acted beneficially in one case [2]).

I mention here as an appendix, a hyperaesthesia on another part of the pharynx, viz. on the inferior portion of its side, in the interstice between the large cornu of the os hyoides, and the upper margin of the thyroid cartilage, which I encountered often in individuals, who suffered from analogous undefinable complaints, as they were exposed above.

At that time having no knowledge of the hyperaesthesia of the isthmus faucium, I had not explored in these cases the latter, and therefore, I am not able till now, to decide whether this hyperaesthesia between the os hyoides and the thyroid cartilage, is independant, or is a continuation only of that at the entrance of the pharynx.

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[1]) See Vierordt's Archiv 1855, 4. part.

[2]) I found also some relief from gargling with opiates.