

LEVY (R.)

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OF
LARYNGEAL PHTHISIS.

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TREATMENT OF LARYNGEAL PHTHISIS.*

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The treatment of laryngeal phthisis is of absorbing interest, and largely on account of the great strides that have been made in the last decade. Compare the writings of ten years ago of Morell Mackenzie, Browne, Schnitzler, and many other prominent and conservative men, with their words of to-day, and if they do not give so sanguine an outlook as those of more enthusiastic writers, there still appears such marked feelings of hope, that despair, at any rate, has disappeared. In 1880, Mackenzie¹ said, "the prognosis of laryngeal phthisis is always extremely unfavorable, and it is not certain that any cases ever recover."

To-day his words² are at least hopeful. Heinze,³ in 1879, said, "a cure of laryngeal tuberculosis will probably never be obtained." To-day, Sedziak⁴ says, "the curability of so-called laryngeal phthisis is undoubtedly possible," and "partial recovery from laryngeal phthisis, viz., the cicatrization of single ulcers, must be considered not only as possible, but even apparently often obtained." When we study the literature on the curability of this disease we find that rare cases⁵ of

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cures are reported as having occurred without treatment, *i. e.*, spontaneously. Sokolowski⁶ even says he has seen many cases of spontaneous cure of phthisical ulceration of the larynx, and Mr. C. J. Symonds⁷ goes so far as to make spontaneous recovery "a strong argument against local treatment." With the aid of local treatment, there seems to be even less diversity of opinion as to the curability of this affection, although many more cases of partial cure, *i. e.*, cure of single ulcers, have occurred than of complete cure. However, when we read of such specimens as Krause⁸ and Sajous²⁸ show, in which, after death, microscopical examination proved the cases cured, we can no longer doubt its possibility. And, indeed, I am strongly inclined to the belief that partial cure or healing of single ulcers, which I also have often observed, ought not to be pronounced cures. One cannot be absolutely certain of a permanent cure unless the patient, dying from pulmonary consumption or other intercurrent disease, presents a larynx which, on microscopical examination, reveals no indication of tuberculosis.

In a discussion following the reading of Dr. Rice's⁹ paper before the American Laryngological Association, 1889, but one gentleman¹⁰ expressed a decided opinion that laryngeal tuberculosis could be cured, while four¹¹ expressed decided doubt. Still, despite many doubts as to the actual curability of this disease, the fact remaining that partial cures are frequent has given us hope where formerly existed only despair, has led us to increased energy, and has given our patients much comfort instead of constant suffering. For these blessings we have to thank new methods of treatment, and one could write a most interesting paper upon the "History and Treatment of Laryngeal Phthisis," covering a period of only ten years, but during which time radical changes in the principles of treatment have gained almost universal support. I need but to quote Robinson,¹² 1879, in proof—"I, for one, affirm emphatically that all caustic substances are radically wrong when applied to the

ulcerated laryngeal surfaces of phthisis." Compare this statement with articles of to-day on the subject, teeming, as many are, with recommendations of lactic acid, chromic acid, galvano-cautery and other harsh remedies. True, there is still a minority who discourage irritating measures, but we believe they will yet join the majority. The treatment resolves itself into prophylactic, curative and palliative:

PROPHYLACTIC.—We can not emphasize too ardently the many rules laid down for the prophylaxis of pulmonary tuberculosis, viz., proper climatic conditions, perfect sanitary surroundings, the disinfection of sputa, etc. But pertaining directly to laryngeal phthisis, whether primary or secondary, the hygiene of the upper passages, I believe, is a most important factor. I rarely see a case of pulmonary consumption that does not present some abnormal condition of the nose, pharynx or larynx, irrespective of any tuberculous tendency. That each case of phthisis shall breathe properly through the nose is of paramount importance in preventing a chronic catarrhal laryngitis, which, having once obtained, furnishes good soil for the development of tuberculous laryngeal complication. Thrasher¹⁰ calls attention to this fact, although his article was unknown to me until after writing the above.

CURATIVE.—In speaking of remedies for the cure of this disease, we bear in mind those which have been known to have produced partial cure as well as complete cure. The measures can be divided into local and general, the former being of even greater value than the latter. In this view we believe with Daly,¹³ who said: "If I were to be denied one or the other in the treatment of tuberculous ulceration of the larynx, I should certainly elect to be deprived of the constitutional treatment." The local remedies are of three kinds, viz., medicinal, surgical and a combination of these two in the treatment with lactic acid. *Medicinal.*—The remedies used in the form of sprays, insufflations, inhalations and applications directly to the larynx by cotton, sponge, or brush are so many

that no one man can treat sufficient cases with each to prove or disprove its efficiency. I mention a few of the less important ones which have given satisfaction to some, but which I have never even tried. Masucci¹⁴ believes that *calcium phosphate* is preferable to iodoform or lactic acid. Guinier¹⁵ lauds *sulphur water*, particularly those of Raillièrè Springs, as producing an improvement, and even cure, in tuberculous ulcers of the larynx.

Pyoktanin has been applied by Scheunmann,¹⁷ who claims to have cured some cases of laryngeal phthisis with this remedy. *Balsam of Peru* has produced improvement, but no healing in a series of experiments by Prof. Simonowski,¹⁸ and Schnitzler¹⁹ has seen benefit from the same remedy. Inhalations of *hot air* have produced no effect, according to the experiments of Moser²⁰ and of Nykamp,²¹ while Fournier, mentioned by Sedziak,²² recommended them. *Creolin* and *B-Naphthol* have proved of very little value in the hands of Favitsky.²³ Bassols Prim²⁴ recommends inhalations of *oxygen* as a parasiticide. *Resorcin* has been used by Frounstein²⁵ and by Fronheim,²⁶ the former showing several very flattering results, the latter preferring it to cocaine to relieve pain. This has been a rather favorite remedy with me to diminish the discharge in chronic inflammations of the upper air passages, and I have found that the co-existence of laryngeal phthisis is no contra-indication to its use. The distressing symptoms due to increased secretion may be relieved, but only temporarily, by a spray of a ten per cent. solution of resorcin.

For years I have used a solution of *Tinct. Ferri. Chlor.* ʒj to ʒj of water as a spray in those cases of laryngeal phthisis with slight thickening over the arytenoids and a congestion of the vocal bands. While this remedy acts very slowly, it nevertheless has done much in my hands towards restoring the voice in such cases. The only reference I can find to any iron preparation in this disease is in the very admirable article by

Sedziak,²⁷ who speaks of Morell Mackenzie using a solution of 1 to 30 of ferrum sesquichloratum.

The above list comprises only a few of the long line of medicaments used. It would be only tiresome and of little worth to recount any more. Three remedies, however, remain, that are, I believe, to be of more value than any already mentioned, and that vie for supremacy with all known means of local treatment. These I wish to speak of at some length; they are *menthol*, *iodoform* and *iodol*.

Menthol.—Dr. A. Rosenberg first called attention to this drug in diseases of the nose and throat in 1885. His object was to find a remedy to take the place of cocaine on account of the latter's costliness.²⁸ Menthol answered admirably, and continuing his experiments, he presented in several succeeding articles²⁹ a most flattering experience on its use in laryngeal phthisis. He uses preferably a ten to twenty per cent. solution in olive oil, dropping it into the larynx at longer or shorter intervals. In addition, inhalations of a twenty per cent. solution are used frequently by the patient. The results obtained depend upon the anæsthetic and parasitic properties of menthol; and while but few cases of cicatrization of ulcers have been recorded, and even less has been accomplished against infiltrations, nearly all who have used this remedy agree, however, that it produces marked amelioration in the pain, dysphagia and cough. We may mention among those who are more favorably impressed with the remedy, Hyndman,³¹ who uses it in sprays; Beehag,³² who follows Rosenberg more closely; H. Smith,³³ who uses a hot spray of vaseline with menthol and iodoform; Ossendowsky,³⁴ who applies it with a cotton applicator; F. Potter,³⁵ C. H. Knight,³⁶ Lennox Browne,³⁷ and others. I have used menthol in a number of cases and am favorably impressed. The following case illustrates its beneficial action:—

Mrs. W. F. D., aged 37; duration of illness, one year. On examination find the following: Marked emaciation, consider-

able cough, aphonia, no dysphagia. Pulse 112, Resp. 134, Temp. 100° F. at 11.30 a. m. Lungs: large cavity in right side, left apex consolidated. Larynx: large, characteristic infiltration over both arytenoids, extending up the ary-epiglottic folds. Bacilli abundant. Treatment for the present, supporting. One week following the first visit found the patient suffering great dysphagia. Examination revealed both arytenoids spotted with numerous pin-head, superficial ulcerations. Treatment: daily insufflations of iodoform with three to four inhalations of five drops of 15 per cent. menthol in oil. In one week dysphagia had disappeared and the larynx presented the same picture as on first examination. I invariably use iodoform with the menthol inhalations except when applying the latter directly to the larynx, which I do but seldom, and then by means of cotton.

Iodoform.—This is a remedy upon which I depend more than any other, using it alone or in combination with morphia and a bland powder. With the menthol, as well as the lactic acid treatment, iodoform serves me as an adjunct. First, having cleansed the larynx, a spray of cocaine, three to five per cent., is used for the purpose of allaying sensibility. This having been accomplished, is of great value in preventing the cough, caused by, and the dislodgement of, the powder. I then insufflate a portion of the following:

R	Morph. Sulph.....	gr. x.
	Pulv. iodoform	ʒ jss.
	Pulv. acacie.....	ʒ ij.

M.

The morphia relieves pain for a length of time after the effects of the cocaine have disappeared, and the acacia adds to the adherent properties of the iodoform. Under this treatment alone I have seen single ulcers heal very rapidly. The author uses iodoform alone in infiltration without ulceration, and believes to have seen slight absorption take place. Lactic acid, however, is far preferable in this condition. The adherents of this method of treatment have been, and are still,

very numerous. We may mention Bosworth,²⁸ Massei²⁹ (placing it above lactic acid), Luc³⁰ (employing both lactic acid and iodoform), Schnitzler,⁴¹ Semon,⁴² Butlin,⁴³ and a great host of others.

Iodol has been advanced principally to substitute iodoform on account of the latter's disagreeable odor. Those who claim as good, if not better, results with this drug are not very numerous. Lublinski⁴⁴ and Peinado⁴⁵ have reported success with it. Personally we have never seen so good results with iodol as with iodoform, although we gave it a fair trial. The disagreeable odor of iodoform can be greatly disguised by a few drops of oil of bitter almond or by coumarin, first recommended to me by a druggist.

Among all remedies for laryngeal tuberculosis, there has never been one which has so rapidly gained favor as *lactic acid*. From the time when Krause, in 1885, published his first report, medical literature has not ceased to abound in successful trials of the remedy. Dr. H. Krause⁴⁶ had his attention first called to lactic acid by an article by Mosevig-Moorhof, who used it in lupus and caries fungosa. His method was to use from a ten to eighty per cent. solution, passing as rapidly as possible to the stronger. He applied these by means of cotton or sponge, rubbing the parts as thoroughly as possible. He also, to reach more deeply situated ulcers, dropped the remedy by means of a syringe, and in cases of hard infiltrations first scarifying and then rubbing with the acid. He claimed to be able to heal ulceration, lessen infiltrations and remove excrescences. Gottstein and Heryng⁴⁷ corroborated his claims. Major,⁴⁸ in 1886, endorsed Krause's statements, and wrote favorably of submucous injections. Jellinek,⁴⁹ in 1886, endorsed the use of lactic acid, and showed good results in shallow ulcerations and soft infiltrations. Heryng, 1887, recommended submucous injections of lactic acid⁵⁰ and incising swollen parts and rubbing them with the acid.⁵¹ Among the first to use the lactic acid in a spray was Leets.⁵² Other

Homœopathic physicians⁵² also recommend this method. These are some of the pioneers in a form of treatment which is the best, we believe, that has, up to the present time, been given us. It is to Krause and Heryng that we owe our greatest acknowledgements, and it is with their names that it is closely associated. While to Krause is given the honor of first applying the remedy, to Heryng is due a more satisfactory and extensive method of its application. Indeed, this method of treatment is called the Krause-Heryng method. The latter, too, has changed it from a purely medicinal to a partially surgical procedure. From the lactic acid treatment to the purely surgical is but a step, and then by way of Heryng. Among the adherents of this treatment are Golinetz,⁵³ Nikitin,⁵⁴ Lösch,⁵⁵ Simanowski,⁵⁶ Lauenberg,⁵⁷ Symond,⁵⁸ Beale,⁵⁹ Greville MacDonald,⁶⁰ Lennox Browne,⁶¹ Bronner,⁶² Butlin,⁶³ and a long list of others. It is impossible to separate the treatment with lactic acid from that by curetting. The two go hand in hand, Heryng having proposed the latter and Krause rapidly adopting it. By means of a small curette, Heryng scrapes such ulcers as resist lactic acid rubbings, infiltrations, and new growths, after which the acid is applied. In 1890 he reported⁶⁴ 482 cases, of which 52 had lactic acid applied and 37 were curetted, these latter being very bad cases. He claims 15 cases of absolute cicatrization, lasting more than three months, and 32 of cicatrization for a less period. Krause⁶⁴ reports 71 cases with 43 cured or ameliorated by this method. Sedziak⁶⁵ reports more or less favorable effects in 73.5 per cent.

Our experience with lactic acid has been confined to rubbings with or without previous scarification, and allows us to draw these deductions, viz., superficial ulcers heal rapidly, but only temporarily; soft infiltrations break down quickly, leaving ulcerations whose tendency is to heal under treatment; tuberculous excrescences are most markedly affected by strong solutions of lactic acid, and disappear with the greatest rapidity, yielding truly beautiful results; hard infiltrations are

unaffected by the acid alone; scarifications, unless deep and numerous, do not increase the acid's efficacy. My practice has been to supplement this treatment by insufflations of iodoform, except in cases of soft excrescences, and therefore only in these latter can the good that resulted be attributed to lactic acid alone. Too much care cannot be exercised in applying solutions of proper strength (that is, not too strong, until the patient tolerates the remedy), and in allowing it to remain as long and thoroughly in contact with the parts as possible.

We pass now to the *surgical treatment* proper, and I cannot help repeating that from the lactic acid to curettement pure and simple is but a step, and a confusing one, when the literature is consulted. However, Heryng alone is responsible for this treatment, and we find him advising it in cases in which, despite deep incisions and energetic rubbings with lactic acid, the ulcers refuse to heal.⁶⁶ Beschorner,⁶⁷ Schæffer⁶⁸ and Neuman⁶⁹ recommend the treatment by curettement. A spoon after that of Volkman or one devised by Heryng is used.

The *galvano-cautery* has met with but little encouragement, principally on account of the liability to œdema that sometimes follows. Gouguenheim,⁷⁰ however, as well as Schmiegelow,⁷¹ has reported good results. Still, a more purely surgical treatment is that recommended in primary tuberculosis by Betz,⁷² viz., laryngectomy; and that for the removal of tuberculous tumors. Gouguenheim⁷³ is most active in recommending surgical interference in these cases and gives as indications for this procedure, dyspnœa and apnœa, dysphagia and aphonia. He uses either a cutting forceps similar to Mackenzie's or a "laryngeal punch" devised by himself. Dehio⁷⁴ discourages surgical intervention, but states that, if removal is determined on, electro-cautery should be preferred.

Tracheotomy in laryngeal tuberculosis has been earnestly advocated by Robinson,⁷⁵ M. Schmidt,⁷⁶ Seifert⁷⁷ and others, while probably the strongest opponent to this procedure is Lennox Browne.⁷⁸ Robinson⁷⁵ as early as 1879, believed it to

be a palliative remedy of much value, although he at the same time believed phthisical laryngitis to be rarely tuberculous. Schmidt claims that it lessens dysphagia, reduces laryngeal swelling and improves the general health,⁷⁶ and reports 15 cases,⁷⁷ in five of which cicatrization took place. Those in favor of tracheotomy use it not only to relieve dyspnoea, but also, in early cases, to prevent mechanical irritation by the passage of air over the larynx, to lessen the danger of infecting the lungs in primary laryngeal cases, to rest the larynx and to more readily make topical applications.

An impetus given by Koch in his publication regarding a cure for consumption has caused an overflow of new so-called cures. Among those taking a prominent place in our minds to-day are Koch's tuberculin, Liebreich's cantharidinate of potash, and the Gibbes-Shurley treatment. Considering the length of time these remedies have been given us, many and varied are the experiences of investigators, and all have something to say of their effects in tuberculosis of the larynx. I consider it of interest, only historically, to study the reports appearing but a few months after these discoveries, and shall be content to refer only to those of the most recent dates, believing that time will prove their value and that a too hasty judgment now will distort our future conclusions. In speaking of these remedies we omit all matters referring to technique, indications and other interesting questions, and refer only to their *effects*, as reported.

Koch's Tuberculin.—That the larynx is a place pre-eminently suited for the study of this remedy was early recognized, and should time forbid its use in the lungs as it has in the cranial cavity, its application to the larynx may still be permissible as partaking of the nature of external tuberculosis. Tuberculin has caused ulcers to heal, it has caused ulcers to develop, it has removed excrescences and infiltrations and has produced great swellings and oedema. It has improved larynges and has destroyed them. What do some statistics show?

Mr. Lennox Browne⁸⁰ reports 13 cases of laryngeal and laryngo-pulmonary tuberculosis observed under himself, Prof. Krause and Prof. Gerhard, and although the cases have been followed but a short time, his conclusions are more flattering than a careful study of their histories warrants. Of the 13 cases, 7 seem improved, 1 presents negative results, and 5 seem worse. Sir Morell Mackenzie⁸¹ reports 7 cases, with 1 improved, 1 negative and 5 unimproved or worse. In Flatau's cases⁸² the results were good in 3 and bad in 2.

Schnitzler⁸³ shows one good result, and another good so far as the larynx was concerned, but bad so far as the lungs were affected. Schreiber⁸⁴ reports 1 improved and 4 negative. Irsay⁸⁵ reports 2 improved, 1 worse. It would be tiresome to continue these figures, and I will hastily report a few cases observed in Denver. Through the courtesy of Drs. Elsner and Meuer we have examined some 20 cases. In only five were the laryngeal appearances markedly tuberculous, although a greater or less catarrhal thickening was observed in nearly all. The following table gives the observations in the 5 cases mentioned.

It will be seen by the following table that of 5 cases, 2 have improved, 1 grown worse and 2 remained unchanged. Number 2 grew so much worse, as far as his lungs and general condition were involved, that he has since died, and number 3 grew so much worse, both as to his laryngeal and pulmonary troubles, that treatment was stopped and the method of Shurley substituted. He is failing very rapidly.*

The remedy suggested by Liebreich and that of Shurley have been tested still less than that of Koch. However, a few reliable men have given us an idea, at least, of their values. The Liebreich cantharidinate of potash or soda is given in doses of two to four decimilligrams. P. Heyman⁸⁶ has seen ulcers in the larynx clear, and swellings lessen. B. Fraenkel⁸⁴

* This case has died since reading of this paper.

has seen improvement in the aphonia and a cure of ulcerations. Lennox Browne⁸⁵ reports two cases in which the Liebrich remedy had to be substituted for the Koch. In one it caused no change, in the other dysuria compelled its discontinuance.

	NAME.	Most marked subjective Symptoms.	Most marked objective Symptoms.	No. of injections.	Total quantity.	Time from first to last injection.	RESULT.
1.	E. L.....	Voice, husky.	Inter-aryt thickening, redness between vocal bands anteriorly.	27	<i>mgr.</i> 719	3 mos. 20 dys.	Thickening greatly diminished.
2.	J. B.....	Complete aphonia, dysphagia.	Ulcer on left ventr. band. Both aryts very thick. Vocal bands thickened and injected.	14	104¼	2 mos.	Slight voice at times. Ulcer gone. Vocal bands normal in color. Aryts. greatly wrinkled.
3.	W. H. H.	Voice, husky.	Thickness inter-aryt. Right vocal band notched in centre and red.	9	39½	2 mos. 20 dys.	Aryts, greatly thickened. Increased discharge.
4.	J. S. L....	voice, husky.	Both aryts thick. Right vocal band thick and red. Inter ary. excrescences.	8	52	21 dys.	No apparent change.
5.	J. J. D....	Voice, husky.	Larynx anæmic. Excrescences inter-aryt.	12	141	25 dys.	No apparent change.

The *Shurley-Gibbes* treatment consists in the use of hypodermic injections of iodine and chloride of gold and sodium,

and the inhalations of chlorine gas made respirable by the presence of a spray of sodium chloride. In 27 cases reported in the *Therapeutic Gazette*, April 15, 1891, we find 13 with more or less laryngeal complication, and the results, referring only to the larynx, are as follows:—Improved 5, worse 3, no result noted or negative 5. We have seen but one case treated by this method. This is No. 3 of the above table, and as stated, Koch's tuberculin had already been given to the detriment, we believe, of the patient.

The *climatic* treatment of laryngeal consumption can be of scarcely less importance than that of the pulmonary disease, and still very little has been offered in medical literature to guide us. Even the question of climate for the latter is an unsettled one in many respects; still it has not been neglected by eminent writers. What little was said on the question of climatic influence in laryngeal phthisis was universally opposed to high altitudes, until Wagner⁸⁶ stated that he believed cases of laryngeal tuberculosis could remain at high altitudes, provided the pulmonary complication had improved. Ingals⁸⁷ believes high altitudes of benefit in laryngeal phthisis only when their injurious effects are more than counterbalanced by their beneficial influence on the general disease. Dr. S. E. Solly, of Colorado Springs, believes "this climate's influence is, as a rule, beneficial in laryngeal phthisis."⁸⁸ He reports 7 cases⁸⁹ of laryngeal phthisis, all but one of which improved, more or less, in this climate.

We have endeavored to record our cases with special reference to the effect of this high and dry atmosphere, and present the following table.

Some explanation of this table may be necessary, and while its conclusions are open to considerable criticism, it at least paves the way for more accurate and scientific results. Many of the cases were observed by us only a short time. The length of "residence in Colorado" was reckoned from the time of their arrival, only to the last date of our observation, so that many

NAME.	DURATION OF DISEASE		WHERE CONTRACTED.		EFFECT OF COLORADO		Length of residence in Colorado.
	of Lungs.	of Larynx.	Disease of Lungs.	Disease of Larynx.	on Lungs.	on Larynx.	
1. J. C.	6½ yrs.	4 mos.	Cal.	Col.	Improved.	Imp'd by trt.	1 yr.
2. M. P.	8 mos.	8 mos.	Wash.	Wash.	Worse.	Improved.	3 mos.
3. J. A.	6 mos.	2 wks.	Neb.	Col.	Worse.	Worse.	6 wks.
4. R. P.	2 yrs.	2 yrs.	Kansas.	Kansas.	Improved.	Worse until improved by trt.	1½ yrs.
5. J. R.	12 yrs.	10 yrs.	Ills.	Ills.	Worse.	No change.	1 yr.
6. K. S.	2 yrs.	2 yrs.	Cal.	Cal.	Improved.	No change.	1 yr.
7. R. S.	1 yr.	14 days.	Wis.	Col.	Worse.	Growing worse.	10 mos.
8. W. F. D.	8 mos.	6 mos.	Ind.	Ind.	No change.	Growing worse.	3 wks.
9. T. C.	4 yrs.	4 mos.	Ills.	Col.	Improved.	Improved.	8 mos.
10. J. S. S.	1 yr.	6 mos.	Texas.	Texas.	Improved.	No change.	6 wks.
11. I. G.	7 mos.	7 mos.	Ky.	Ky.	Improved.	Worse.	1 yr.
12. F. G.	—	1 yr.	East.	East.	Worse.	Worse.	14 mos.
13. M. W.	2 yrs.	3 wks.	Mass.	Col.	Worse.	Growing worse.	3 mos.
14. M. R. L.	2½ yrs.	4 wks.	N. Y.	N. Y.	Improved.	Improved.	1½ yrs.
15. W. H. R.	2 yrs.	2 wks.	Mass.	Col.	Worse.	Growing worse.	7 mos.
16. A. M.	8 yrs.	8 yrs.	Penna.	Penna.	Improved.	Worse.	1 yr.
17. G. B. P.	— yrs.	6 mos.	Ohio.	Ohio.	Worse.	Worse.	5 wks.
18. G. B. W.	8 mos.	8 mos.	Ky.	Ky.	Improved.	Improved.	1 mo.
19. B. L.	4 yrs.	1½ yrs.	Penna.	Penna.	Improved.	Improved.	6 mos.
20. A. L.	5 yrs.	5 yrs.	N. Y.	N. Y.	Improved.	Improved.	2 mos.
21. R. A. J.	7 mos.	7 mos.	N. Y.	N. Y.	Worse.	Worse.	2 mos.
22. I. D. M.	3 yrs.	1½ yrs.	N. Y.	Col.	No change.	Improved.	1½ yrs.
23. E. L.	16 mos.	16 mos.	N. Y.	N. Y.	Improved.	Improved.	11 mos.
24. J. B.	— yrs.	1½ yrs.	Mass.	Mass.	Worse.	Improved.	11 mos.
25. R. S.	2 yrs.	4 mos.	N. Y.	Col.	Improved.	No change.	2 yrs.
26. I. N. M.	10 yrs.	8 yrs.	Canada.	Col.	Improved.	Worse.	10 yrs.
27. J. B. L.	16 yrs.	8 mos.	N. Y.	Col.	Improved.	Growing worse.	7 yrs.
28. M. R.	4 yrs.	1 yr.	N. Y.	Col.	Improved.	Improving.	2 yrs.
29. J. S. L.	3 yrs.	3 yrs.	Ills.	Ills.	No change.	No change.	10 mos.
30. J. J. D.	15 mos.	15 mos.	Canada.	Canada.	No change.	No change.	6 wks.

of those improved may since have grown worse, or vice versa. All the cases reported have had more or less treatment, both local and general. Our judgment of improvement or otherwise has been, of course, based, in the majority of cases, upon the patient's statements, except in those cases which remained under our care for some length of time.

Nor have we endeavored in the table to separate the incipient cases of either lung or laryngeal disease from those more advanced. In a general way we may sum up as follows: Of the 30 cases observed, the lungs were improved in 16, worse in 10, unchanged in 4. The larynges were improved in 12, worse in 12, unchanged in 6. Of those in which the larynges grew worse 5 were improved or unchanged as to their lungs. We believe, therefore, that while this high altitude may not be as beneficial to laryngeal as to pulmonary tuberculosis, it is certainly not deleterious to any extent. Eleven cases of the thirty originated in Colorado, but it is questionable if the climate had much causative influence, for we know the natural tendency to secondary laryngeal development upon pulmonary phthisis, particularly in advanced cases, of which we see a great many here.

GENERAL TREATMENT.—Concerning this I wish merely to emphasize the necessity of maintaining the best possible nutrition, as is recommended in pulmonary phthisis. Favorable hygienic surroundings are of great importance, and, inasmuch as dysphagia is a most demoralizing symptom to the patient, his nervous and mental conditions need some attention. Often the pain is so great that the patient can swallow hardly anything, despite his desire to do so. Wolfenden⁸⁹ has endeavored to partially overcome this by having the patient suck liquids through a rubber tube while lying stomach down and legs raised. Woodvine,⁹⁰ evidently not knowing of Wolfenden's article, recommends about the same procedure, except that the liquid is made to pass to one side or the other by the patient lying on one cheek.

PALLIATIVE.—As to these, the main indication is to relieve pain. Cocaine undoubtedly stands first in this respect, and although disagreeable in taste the patient prefers it to constant suffering. Particularly before meals, say ten minutes, it is of service in allowing more comfortable deglutition. I use it preferably in the form of a lozenge, each one containing one-fourth of a grain, and dissolved slowly in the mouth. A three per cent. to five per cent. spray may also be used, especially if a nurse can apply it.

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