45 per cent. alcohol, for in this medium the alkaloids will keep very well. Other solutions of any desired strength can be made extemporaneously, by adding recently boiled distilled water. In the *Correspondenz-Blatt fuer Schweizer Aerzte*, there recently appeared a very complete review of this subject, in which the writer, after considering the various methods which had been proposed, spoke approvingly of this solution with alcohol (45 per cent.). In it the alkaloids do not undergo any change. Some of the stock solutions have been kept as long as seven months, and have shown no signs of decomposition or alteration.

DR. A. B. LYONS.—The last paper illustrates what I attempted to show, that in prescribing these articles by their names, atropin, hyoscyamin, digitalin, hyoscin, scopolamin, etc., it is necessary to consult first with the chemist in order to ascertain what these articles really are, and whether they consist of the pure alkaloids, or whether they are a mixture of several principles and, if so, in what proportion. If it is found that they contain only one alkaloid, we must find out just which one it is; atropin, hyoscyamin, hyoscin, etc. These are among the most variable of substances known to the chemist. Unfortunately, unless special care be taken, the experimenter with these drugs will be in this precise predicament. He buys an article, like scopolamin, for instance, and he gets commercial "scopolamin" and not what the chemist would call by that name. In the same way the physician may prescribe one of these alkaloids for his patient, to be compounded in a capsule, but, after doing so, he is not in a position to say exactly what was really used in making that capsule, or what its effects should be on his patient.

DR. H. C. WOOD, JR.—I wish to emphasize the remark just made by Dr. Lyon, that in prescribing this class of drugs we do not know exactly what we are using. Physicians very commonly use the solanaceous plants, but I am sure that frequently they do not know precisely what they are giving to their patients even when they order the alkaloids. Dr. Robinson has spoken about sterilizing the solutions in order to ensure the permanency of the drug. This is a very necessary procedure. I had a very instructive experience illustrating this point. I had a bottle of atropin, obtained from one of the most reliable houses in Philadelphia, and from it I made solutions for use in experiments. Not having occasion to use it for several months, it remained unopened on the shelf, until I had occasion to make some control experiments with atropin. I made a fresh 2 per cent. solution and injected an ordinary dose into a dog, but got no characteristic effect, even after greatly increasing the dose, beyond dilatation of the pupil. I made a fresh solution, with the same negative result; I could get no atropin reaction whatever. I concluded that the drug had undergone some change, probably from bacterial action, although the bottle had been tightly corked. The contents of the bottle had become completely changed without giving any evidence to the eye. The same change may occur in the stock of the druggist. Therefore, I have very little confidence in supplies from the ordinary druggist and I do not think that we get exactly what we ask for when we prescribe these mydriatic alkaloids. If we ask for scopolamin, we may get hyoscin; if we ask for hyoscin, we may get scopolamin or hyoscyamin.

The Importance of the Prognosis.—The late Professor Gerhardt of Berlin used to say "the prognosis is the highest and ultimate achievement in the art of medicine as it presupposes everything else. The prognosis is based not only on knowledge but also on skill made possible by natural gifts and acquired by experience. It also has to take into account the sum of the personal properties of the patient, usually styled the 'resisting power.' This is the point in which the experienced family physician frequently surpasses the learned specialist. How differently, for example, is pain borne by different persons, bravely and unflinchingly by one, with an agonal expression by another. When the physician is certain of his prognosis, courage to proclaim it should come with it. It is easy to avoid mistakes by saying nothing. He who does not shoot at all will not miss the mark. But neither will he ever become an expert marksman."

THE EARLY APPEARANCES, DIAGNOSIS AND TREATMENT OF TUBERCULOSIS OF THE UPPER AIR TRACT.*

WALTER F. CHAPPELL, M.D.

M.R.C.S. Eng.; Surgeon, Manhattan Eye, Ear and Throat Hospital. NEW YORK CITY.

The subject embraced in the title of this paper is really too important to be fully considered during the time at my disposal, and can therefore only be treated briefly from a somewhat personal standpoint. At one time I thought any one who had ordinary opportunities of studying tubercular manifestations on mucous surfaces could have little difficulty in recognizing their appearance in the upper air tract. Some mistakes on my part, and a wider experience in this branch of our special work, have changed the views I formerly held, and I now consider it most difficult and I might almost say impossible to arrive at a correct diagnosis in certain cases. Of course, this does not refer to patients who have all the typical, local and general symptoms, but rather to those where they are absent and the conditions simulate some other affection. No part of the respiratory tract is immune from tuberculosis, but certain points in the upper air passages seem more liable than others. These in order of frequency are the larynx, pharynx, trachea, tongue and nasal chambers. If time permitted it would be most interesting and instructive to consider what determines the special localities, and by what means the infection is conveyed. We can not stop for this now, and must hasten on to the text of the paper.

THE THREE STAGES OF THE DISEASE.

We have to make a diagnosis at three distinct stages of this disease as it occurs in the larynx.

1. The premonitory or pretubercular stage.
2. The stage of infiltration or thickening.
3. The stage of ulceration.

Is there a premonitory stage, and can we recognize it? I certainly believe that more or less definite symptoms precede every local deposit of tubercle in the larynx, but as they are not pathognomonic they can not be depended on. Many catarrhal inflammations have a close relation with tuberculosis on mucous surfaces, but it is often difficult to determine whether they are cause or effect. I have frequently seen a profuse and intractable laryngeal catarrh or laryngorrhea continue for several months in a tubercular patient before there were any definite symptoms observable in the larynx. Local pallors have for years been named in text-books as an early sign of tuberculosis. I can not agree with this statement, as the majority of my cases did not present this condition. In a great number of cases of pulmonary tuberculosis, which I have had an opportunity of observing in private practice and at the Loomis Sanitarium in Liberty, the mucous membrane of the soft palate, larynx and pharynx was extremely pale. This condition remained to my personal knowledge from two to six years without any deposit in the upper air tract. We would naturally think that impaired nutrition, local anemias or catarrhal inflammations of a mucous membrane would make it more susceptible to any infections, but I do not believe that any of these conditions alone or combined would determine a tubercular infection, but that a personal equation must always be considered. Recurring and persisting hyperemias, infiltrations and

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Laryngology and Otology, and approved for publication by the Executive Committee: Drs. Emil Mayer, C. R. Holmes and G. H. Makuen.

tumefactions are, in the writer's experience, the most usual and characteristic signs of early laryngeal tuberculosis. They appear as patches or may involve the whole interior of the larynx. The interarytenoid space, ventricular bands, posterior third of vocal cords and epiglottis are the usual places for early circumscribed infections. Any of the enumerated symptoms, occurring in the situations described, should cause some anxiety and a careful watching of their progress, and especially so if pulmonary tuberculosis already existed. These symptoms may be present, however, without being tubercular even in a tuberculous patient. Cold, rheumatism and voice strain will produce laryngeal redness and thickening, which may continue at intervals for years.

One of my patients, a lady, had an acute interarytenoid folliculitis every winter, and occasionally during the summer, for ten years to my personal knowledge. It was accompanied by great local thickening of the mucous membrane and some edema over the arytenoid bodies. During several unusual severe attacks small strips of ulceration appeared, but healed after the acute symptoms subsided. For several years I feared a tubercular infection, and other physicians who saw the case expressed the same opinion. As time passed these fears proved unfounded, and I constantly see this lady in perfect health, other than occasionally suffering from the attacks described.

Another case, showing the difficulty which often confronts us, is that of a Mr. G., who consulted me for a hoarseness he had had for three months. He caught cold and became hoarse for the first time in his life, and although the other symptoms of cold subsided the hoarseness continued. I found him a fine specimen of manhood, with a perfect family and personal history. The mucous membrane of the interior of the larynx was a brick red color, slightly paler over the vocal cords and possibly a little thickening of the ventricular bands.

From the history and in the absence of any chest symptoms and negative sputa reports I consider the case one of neglected laryngitis. He remained under my treatment for about three months, with some improvement, and as summer arrived I sent him to the mountains. He returned to the city in September with more hoarseness, considerable cough and slight rise of temperature and pulse and a loss in weight of four pounds. The mucous membrane of the larynx was much redder and more thickened, especially in the center of the right ventricular bands and had the appearance of a tubercular larynx, although no bacilli were found, and the examinations of the chest were negative. A month later he had a profuse tracheal and bronchial catarrh and a few bacilli were found in the sputa and urine. From this time the disease made rapid progress, and six months later the patient died of laryngeal, pulmonary and renal tuberculosis.

If clinical facts and ordinary skilled observations can be depended on, it does seem that this infection primarily occurred in the larynx, and the first symptoms observable were general redness and tumefaction. Small papillomatoid excrescences in the interarytenoid space are considered by some as pathognomonic of tuberculosis. This belief is erroneous, as I have frequently seen a similar condition in syphilis and chronic laryngitis. A greyish appearance in the posterior commissure is also very puzzling at times. It may result from a thin tenacious mucus covering the surface, or a smooth fibrous-looking membrane resulting from voice strain or a superficial tuberculous deposit. The latter has a decided edematous appearance, the papillæ in the ary-

tenoid space stand up as small pyramids covered with a mantle of grey. Small ulcerations soon develop between the papillæ, but as time progresses and the periods of activity and quiescence occur, larger ulcers form. In some cases efforts at repair produce excessive granulation tissue, which at times become so large as to be designated as tubercular tumors. The nature of these masses are difficult to determine when seen for the first time, but, if tubercular, there is always a history of pulmonary and laryngeal diseases, extending over some years.

STAGE OF EDEMA AND ULCERATION.

An edematous or semi-solid appearance of the mucous membrane is usually a precursor of tubercular ulceration, especially when it occurs over the arytenoid cartilages, ary-epiglottic folds and epiglottis, and at times the swelling is so great as to seriously interfere with respiration and deglutition. Small points of ulceration soon follow and after coalescing give the so-called characteristic worm-eaten appearance. Superficial inspection, in my belief, is most likely to cause the described conditions. The single, large, deep tubercular ulcer is rather infrequent and occurs on the ventricular bands and in the arytenoid space, and results from a deep lymphatic infection. Syphilitic ulcers may occupy the same locations as tubercular ulcers, and at times it is difficult to distinguish them by their macroscopic appearance. As a rule the syphilitic ulcer is large, although it may be small and multiple in the secondary stage. It spreads rapidly and appears more quickly after the first laryngeal symptoms. That is to say, there may be a history of hoarseness for a few days only and on examination a large ulcer is found.

In tuberculous ulceration there is always a long history of hoarseness or pain with other laryngeal symptoms running a chronic course. Pain is an important diagnostic symptom and I do not believe much tubercular ulceration can occur without pain on swallowing. On the contrary, a very large syphilitic ulcer may be present without pain. The characteristic appearance of a tubercular ulcer will be described later on, as the opportunities for observing it are better in the pharynx.

PHARYNGEAL TUBERCULOSIS.

The pharynx, in my experience, is the next frequent location for tubercular invasion. Time will not permit me to discuss the so-called latent tuberculosis of the tonsil, and I will confine my remarks to observations of parts giving the usual clinical symptoms. The pharyngeal infections are usually secondary to pulmonary and laryngeal tuberculosis.

I have seen a number of such cases pass upward along the lateral pharyngeal folds from the larynx and rapidly invade the pillars of the fauces and soft palate, and in many instances the lymphoid tissue at the base of the tongue.

I have several times had the opportunity of watching these cases from the beginning to their termination and the process of invasion is very interesting. The mucous membrane has first a pearly grey tense appearance, but within forty-eight hours is covered with minute yellow spots, such as seen in Figure 1. At first these spots had a thin covering of epithelium, but within twelve hours this broke down and bright yellow, curdy-looking secretion dotted the surface. This was easily brushed away, leaving extremely small openings plugged with yellow secretions. As soon as this secretion appeared the mucous membrane lost its tense edematous appearance. Within a week the small ulcerations coalesce, leaving large irregular ulcerating surfaces. A case

of primary pharyngeal tuberculosis¹ was of great interest and the local conditions are well demonstrated in Figure 2. This infection followed an operation for the removal of adenoids in a girl of 19 years of age, and proved rapidly fatal. Within a year another case has come to my attention, which had many remarkable features, and seemed to have primarily started in the pharynx. Later, however, it was discovered that the kidneys were the seat of a tuberculous process. This, of course, raised the question of the throat being secondary to the renal infection.

This patient had a slight sore throat in August, 1901, which made its appearance as an unhealthy greyish-looking membrane, covering the left tonsil, and soon the right tonsil was also involved. A diagnosis of diphtheria and later syphilis was made. After six weeks the temperature began to rise, and the ulceration extended up on the left side to the soft palate. Tubercle bacilli were now present in great abundance. Several of the best known physicians in New York reported that their examination of his lungs revealed no disease. His death resulted from uremic coma, and emphasizes the

Fig. 1.—Secondary pharyngeal tuberculosis.

importance of a careful urinary examination in all tubercular cases.

TRACHEAL TUBERCULOSIS.

This is more often present than is generally supposed, and I have many times found a tracheal ulcer which had not been suspected. The difficulties surrounding a thorough examination of the trachea are very great and sometimes can not be overcome. Tubercular ulcers are usually found on the anterior wall of the trachea just below the vocal cords.

The symptoms produced are a constant burning or a tickling sensation, referred to this region, accompanied by a violent explosive cough. It is not unusual for ulcerations to attack the rings of the trachea, and in these instances small pieces of cartilage may be expelled by coughing. If the local manifestations can not be seen in the trachea the symptoms just described would make us reasonably sure of the diagnosis.

TUBERCULOSIS OF THE TONGUE.

It has been customary to state that lingual tuberculosis is rare, and this is true of primary infections, but does not apply to secondary cases. During the past six years I have seen fifteen cases of tuberculosis of the tongue, fourteen of which were secondary and one I

believe primary. Much scepticism exists as to the possibility of a primary infection in any part of the upper air tract. I want, however, to go on record as a believer in the possibility of this occurrence.

A secondary lingual infection is usually a late manifestation of a laryngeal and pulmonary disease. It makes its first appearance as a small isolated greyish

Fig. 2.—Primary pharyngeal tuberculosis.

nodule in the situation of some previously recognized abrasion. This nodule soon breaks down into a painful ulcer, which appears flat and irregular in shape, or as a deep fissure. In either case there is no surrounding infiltration and the margins of the ulcer adhere closely to the underlying surface, and if separated the tubercular process will be seen to burrow beneath the mucous

Fig. 3.—Secondary tubercular fissures of the tongue.

membrane and in some instances to the extent of a fourth of an inch. This condition is well shown in Figure 3, and is a marked contrast to the lingual fissure in Figure 4. The latter is a representation of a syphilitic fissure in a patient who innocently contracted the primary sore on the lip. You will notice the entire absence of any burrowing character to these fissures.

The base of a tubercular ulcer can be carefully studied on the tongue, and we find it consists of a pearly grey glistening membrane, which is adherent closely to the

1. Reported in the New York Medical Journal, Sept. 19, 1896.

underlying tissues, and differs so entirely from other ulcerations that I believe it is characteristic of tuberculosis on mucous surfaces. The tubercular fissures cause a great deal of pain, which is more or less intermittent, depending on the activity or quiescence of the disease. Figure 5 represents what the writer believes to be an instance of primary invasion on the tongue.

Mr. D., age 30, had no family history of tuberculosis and descended from an exceptionally strong and sturdy family, and his personal history was also good. Four years previous to my seeing him he was under the care of a dentist, for about ten days, having his left upper molar prepared for filling. Two marginal points of the tooth were exposed and were very sharp during this time, and Mr. D. was in the habit of touching the points with the tip of his tongue. The latter soon became sore, and an examination showed a red elevation with a fissure on its surface. This gradually increased in size, and some two weeks later the surrounding mucous membrane became puffy and the fissure gradually enlarged and presented a small, painful ulcerated surface. Medical advice was sought, and various applications were recom-

Fig. 4.—Secondary syphilitic fissures of the tongue.

mended and employed for a year or more. During this time the ulcer spread and embraced the entire tip of the tongue, chiefly on the right side. His general health remained good and he continued at his usual business.

The tongue, however, became so painful that he consulted a surgeon, who removed a piece of tissue embracing the ulcerated surface. Microscopic examination revealed the presence of tubercle bacilli. The day following the operation Mr. D. noticed a small white spot on the mucous membrane near the former ulcer. The cut surface of the lingual wound granulated, but the margins did not adhere. Two months after the operation the small white spot already referred to became an ulcer, and gradually spread until in eight months it extended over the entire surface of the original operation. Four months later his voice became husky, owing to infiltrations in both arytenoid cartilages and the interarytenoid space, and he could speak only in a whisper. It was two years after the tongue affection before any pulmonary disease was discovered, but at no time was this extensive.

NASAL TUBERCULOSIS.

A tubercular ulceration on the anterior part of the triangular cartilage of the septum is by no means rare, but I have only observed two cases in other parts of the nasal chambers. The infection is very slow in progress and produces few, if any, symptoms which would point to the presence of an ulceration. A perforation is often the first evidence we have of its presence.

MEDICINAL TREATMENT.

The pessimistic views of some writers seem hardly justified in the light of our present results. Personally I believe that a great deal can be done for these cases if we are willing to give the necessary thought and attention to each individual patient, and not treat them all as a class to receive one line of treatment. I will not repeat the remedies and methods recommended by other observers, but confine my remarks to personal experiences. For clearness we may divide the treatment into medicinal, surgical and climatic.

Fig. 5.—Primary tuberculosis of the tongue.

In the early stages, when only redness of the larynx exists, soothing sprays and warm inhalations, followed by mild astringents, should be employed. When congestion is combined with thickening a spray of adrenalin should be added to the treatment, and in marked cases of thickening submucous injection of lactic acid or creosote may be used. These injections should be given only during the quiescent stage and not while there is any temperature, indicating pulmonary or laryngeal activity. In ulcerative conditions I strongly urge that no irritative applications be used during any active process, but rely entirely on soothing and cleansing sprays and applications of iodoform and fluid benzoin. As a warm inhalation the following:

R. Iodoform	grs. iv
Menthol	grs. iv
Chloral hyd.	grs. iv
Fluid benzoin	℥i

The benzoin preparations are of special value for applications in the larynx, as they cling to the mucous membrane for hours and keep the medication in con-

tact. During an interval of quiescence, the ulcerations may be treated more actively with 25 per cent. solution of lactic acid, or the No. 2 creosote solution recommended by me. This latter solution certainly relieves pain more successfully than lactic acid, but regarding their relative effect on tubercular tissue there is little choice. The granulation tissue which appears on ulcerating surfaces during the process of repair has to be protected and stimulated in the most careful manner. I know of nothing more useful in this purpose than nitrate of silver in weak solutions.

Pain is an important consideration and varies from a slight degree on swallowing to a continuous and intense suffering. Warm inhalation of menthol and iodoform are sufficient for the slight cases, but cocain, orthoform and creosote are necessary for those of greater severity. When the general soreness and aching of the larynx is not relieved by the remedies mentioned, application of cold should be used. This may be done by menthol, camphor and chloral hydrate in equal proportions, externally applied, or by the ice coil, bag or pack. In some cases we have to resort to internal medication to assist us in the relief of pain. The elixir of paraldehyde may be sufficient, but usually morphin or codein in some form is necessary.

SURGICAL MEASURES.

Any surgical treatment must be restricted to selected cases and for experienced operators. In my practice and also in that of my fellow workers I have seen considerable harm result from the indiscriminate use of the curette. A recent case greatly impressed this on me.

A Japanese with a tubercular infection involving the arytenoids and epiglottis consulted me, and, after learning the nature of his trouble, expressed a determination to return to his native country. The obstruction to respiration was so great that something had to be done immediately to relieve the dyspnea, and I used the curette, removing a quantity of thickened tissue. Within thirty-six hours the lateral pharyngeal mucous membrane puffed up and presented the characteristic swollen or grey edematous appearance of a tubercular invasion. Twenty-four hours later this spread to the left palate and lymphoid tissue at the base of the tongue.

If time permitted I could quote many similar instances. I now employ the curette only in the following conditions: To relieve dyspnea and dysphagia in advanced cases; to remove tumefied tissue and for scraping ulcers during a quiescent period. In the latter cases my plan differs slightly from that usually recommended. After cleansing and cocaineizing the surface I use a dull curette to remove all the necrotic tissue, taking care not to cause any bleeding. After this has been done and the pearly grey floor of the ulcer thoroughly exposed, I apply such remedies as the necessity of the case indicates.

CLIMATIC TREATMENT.

I would rather take my chance with a good climate without special medical treatment than the best of treatment in a poor climate. Just what is the best climate is not easily decided. Residence near the sea or any large body of inland water or in large cities is a bad place for tubercular throats. In the early stages before ulceration or during the quiescent stage of ulceration a dry and cold atmosphere is beneficial. If the process in the larynx is in a stage of activity a moderate temperature is important. High winds, especially east and north, and damp foggy days are bad for all ulcerations, especially the active cases. As a rule all tubercular

throats are better in a moderately warm, dry climate, free from dust and winds. I have seen a number of throat infections entirely arrested by climatic measures alone, but, of course, the permanency of any arrest must remain an open question. In my opinion the future of all arrested cases, either laryngeal or pulmonary, depends on an early diagnosis and the patient's financial ability and willingness to keep himself under climatic and hygienic surroundings suitable for his highest state of existence.

7 East Fifty-fifth Street.

DISCUSSION.

DR. EMIL MAYER, New York City.—The importance of the early recognition of tuberculosis is a subject that is as near to us as any one subject that I know of. It comes to us in so many different ways. In a case that came under my observation the young man had a bad tubercular history, his father, mother, one brother and sister having died of tuberculosis, and the young man came to me feeling that he was going to have tuberculosis.

There was nothing to be seen in the pharynx, and yet he had attacks of laryngeal spasm. For my benefit he succeeded in having an attack in my office, and it was an alarming one. He had a slight deposit of lymph in the nose, which was examined carefully, but no tubercle bacilli were found. He was examined by one of our best medical men, but no evidence of any pulmonary trouble was found, and the diagnosis of no tuberculosis was made. With the exception of a short cough, these were the only symptoms he had. He was advised to go abroad for the benefit of his health. In three weeks time he went abroad, and an examination of his nose then showed tubercle bacilli. We have all of us seen interarytenoid thickening, which usually speaks for tuberculosis that will supervene in a comparatively short time. Shortly before coming here I saw a young man who appeared before me two years ago with an interarytenoid thickening which is still present, but I believe tuberculosis will eventually appear in those cases. One thing I would like to speak of is the use of cocain for the relief of pain. I believe, with the preparation of orthoform in powder, we can almost invariably stop the pain without cocain, and I am more impressed by that in that I have seen, within a fortnight, a woman in the last stages of tuberculosis who was advised to use cocain and got rest from its use. She gets only temporary relief, but she has developed now the cocain habit. I make that as a suggestion, and I think Dr. Chappell will agree with me that if we have other methods just as efficient and can avoid these drugs that will make the patients still more unhappy, it is an important consideration.

DR. CLEMENT THEISEN, Albany, N. Y.—I do not know whether the Doctor spoke of the rare form of hypertrophic tuberculosis sometimes seen. I will briefly report a case that I saw about a year ago. A gentleman walked into my office one day, and the first thing that impressed me was his curious husky voice. I think the aphonia of laryngeal tuberculosis is different from the aphonia of anything else. He seemed to be otherwise in perfect health. Examination of the lungs was negative. On laryngoscopic examination I found absolutely nothing to indicate laryngeal tuberculosis. There was only a diffuse thickening over the cords and ventricular bands. I made a very careful examination of the larynx, and several examinations of the sputum were made, but nothing was found. I told him, however, that I was strongly inclined to think that he had laryngeal tuberculosis and that I thought his only chance was to go west. He started west, but for some reason returned to New York and was seen by a number of well-known laryngologists, who made different diagnoses. The case was reported by one gentleman as a case of diffuse pachydermia laryngis. Six or seven examinations of the sputum were made, which were negative, and nothing, I believe, was found in the lungs. In the Adirondacks he was seen by Dr. Trudeau, tubercle bacilli were found in the sputum, and he died about six weeks after going to

the woods. I believe it was a case of primary hypertrophic tuberculosis.

I used to curette my cases of tuberculosis when not too far advanced, but I have given that up, for I believe it is of service only in the earliest cases, when the tuberculous process first starts. When we remember that the tuberculosis begins in the deep tissues first and is, as a rule, secondary to pulmonary involvement, we can see that curettage is of doubtful value, for we can never be sure that we have removed all the tuberculous tissue. I agree with Dr. Mayer in regard to orthoform. I believe it will relieve the pain. I use it in the form of Frazer's tablets. I think the effect is much more lasting than from cocaine, and there is no danger of acquiring a dangerous habit, although this danger need not be considered in the advanced cases.

DR. F. J. QUINLAN, New York City—The title of the paper is "The Early Appearance, Diagnosis and Treatment of Tuberculosis of the Upper Air Tract." It seems to me the Doctor has given us especially the treatment of the more advanced stages, when there is tumefaction and breaking down of tissue. I know nothing more perplexing than the early appearance of pharyngeal or buccal tuberculosis. If one were to be guided by the appearance without the subjective symptoms, I think he would narrow himself down to a small and limited field of symptoms. We should not be satisfied with the local appearance alone. When we have only a small degree of infiltration about the superficial structures, with hardly any evidence but a suggestive cough and slight huskiness as well as a little pain from time to time in deglutition, we are not justified in making a diagnosis without entertaining the range of subjective symptoms as well. I have never seen a case in which I felt satisfied as to early diagnosis, and I think we are handicapped without the consideration of these other subjective symptoms. I have known case after case in which there were no bacilli reported in the sputum and yet there was a tuberculosis. I think the pulse, temperature and respiration must always be a valuable adjunct to our means of diagnosis, as well as the repeated examination of the sputum. I am very much pleased that Dr. Chappell has given so much thought to this subject, but I hoped that he would emphasize more suggestive points as to the earlier appearances.

DR. GEORGE C. SROUT, Philadelphia—There were three features in the paper which especially appealed to me: First, the more favorable prognosis we may now give these cases, as compared with that of a few years ago, and this is more often true of course in the early stages. The second point is as to the relative importance of climate and local treatment; and the third is as to the use or disuse of instruments in ulcerative tubercular laryngitis.

In regard to prognosis, I would like to record a case seen three years ago. A woman, apparently about 30 years of age, presented herself at my office, having suffered with a severe cough for some months past, with emaciation, rise of temperature and the general symptoms of tuberculosis. The laryngeal appearance showed marked swelling of the left arytenoid region, there was a small interarytenoid ulceration, and tubercle bacilli were found in abundance in the sputum. A careful examination of the chest eliminated lung symptoms. So, also, as far as possible, tuberculosis in any of the other organs was eliminated. She grew steadily worse for a while, and at one time the dyspnea was so bad that it was thought tracheotomy would be necessary, but after a few months of local treatment (asepsis and lactic acid principally) the whole condition cleared up; the tubercle bacilli disappeared from the sputum, and the woman is to-day apparently perfectly well, and she has no signs of tuberculosis in any organ. Would not even the few cases—such as the above—which we all meet warrant us in giving a favorable prognosis in a certain percentage of these early cases of tubercular laryngitis?

As to climate, if in the homes we will enforce the same rules that are enforced in the Adirondacks and the other resorts, it seems to me we can get much the same results. I think probably most of us in the large cities have had patients under observation whom we could not send away,

but who, by persisting in keeping in the open air and taking exercise, have often recovered. I have in mind at least two such cases which have practically recovered. As to the Adirondacks, while they are an admirable place of rustication for any of us, my experience with cases of tubercular laryngitis has been unfortunate in that locality, for only one case of the five or six which I have sent there has shown improvement.

As to operative interference, experience would seem to argue against curetting or otherwise roughly handling the inflamed larynges. The less said about the curette the better. I have never had any favorable results in my work from operative interference in any case.

DR. W. S. ANDERSON, Detroit—There is only one point which I wish to make in regard to the treatment, and that is the use of intratracheal injections. While not a new method, I think it is not appreciated by the profession generally. The intratracheal injection of one or two drams will give relief in many cases when no other method will, and it does not interfere in any way with the use of other means. I use a syringe with a curved canula, which is introduced between the vocal cords. I use olive oil as a vehicle and dissolve in it 5 per cent. of camphor-menthol and 2 per cent. of guaiacol; 2 per cent. of iodoform may be used in olive oil. The relief in most instances is very marked, and it does not cause spasm or irritation except in a very few cases. If more generally used, I am sure the profession would get gratifying results from this method.

DR. T. W. CORWIN, Newark, N. J.—I have used, for about two years, tracheal injections of about the same character mentioned by the last speaker and in a great many cases they have given satisfactory results.

DR. CHARLES H. BAKER, Bay City, Mich.—Dr. Chappell referred to laryngeal cases being worse near large bodies of water. I would like to ask whether his observation is that laryngeal tuberculosis occurs more frequently in those sections than in other parts of the country. I practice near the Great Lakes, and I see few cases of laryngeal tuberculosis compared with general tuberculosis. As to local treatment, the Doctor did not mention one thing that I have found to give great relief. When tumefaction occurs before ulceration and when there is great distress, ichthol in emulsion or oily solution or a watery solution—it makes little difference in what form it is applied—gives relief and seems to have an immediate ameliorating effect on the tubercular condition, causing often marked improvement without the use of any other local treatment. Of course, the usual constitutional treatment is given in addition.

DR. SARGENT F. SNOW, Syracuse, N. Y.—In the treatment of these tuberculous conditions I have always found the lactic acid applications to be very satisfactory. But as my experience has gone on I find myself relying less and less on local treatment. In the past six or eight years it has been my fortune to have a number of cases that I have sent to the Adirondacks and Catskills. Sometimes the ulceration was so extensive that the voice was completely lost, and I could see no chance for good results, but if I sent such a patient to the mountains and kept him there winter and summer, the local problem was solved. I have had a case under observation for nine years in which there was an ulceration so extensive that it seemed impossible to have the voice restored. She is now teaching singing, in connection with her school work. This patient has been in the Adirondacks all the time, except, perhaps, two weeks at home in the summer. She has taught school continuously, and she has now two very good vocal cords.

It seems to me that the real question is as to whether there are tuberculous conditions in the other air passages; are they patients whose general condition is satisfactory? If the general tuberculosis is well in the second stage or further, we can do but little good. If they are in the primary or the early part of the second stage, a practically continuous residence in the Adirondacks solves the problem. Local treatment is to be commended for those who are compelled to remain at home.

DR. B. A. RANDALL, Philadelphia—The question of early diagnosis is important. In otologic work one is loath to strip

and examine a patient, and yet the appearance of the ears and upper air passages often directs our attention to tuberculosis. The altered rhythm of respiration may make the case so plain that it will not be necessary to strip the patient. It seems to me that this is too important an indication to be ignored, for before there is moist crackling or other changes in the pulmonary sounds at the apices, this prolonging of the expiratory sound may be readily determined.

DR. WALTER F. CHAPPELL, New York City—I only advocate cocaine in advanced cases, when orthoform and other remedies have failed. Orthoform is very good in some cases, but it fails at times. Dr. Baker asked about the frequency of tuberculosis of the larynx in the regions near large bodies of fresh water. I do not know that laryngeal tuberculosis is more frequent near large lakes, but the cases do badly there and at the seashore.

A CASE OF SARCOMA OF THE MAXILLARY SINUS, EXCISION OF THE UPPER JAW, WITH REMARKS.*

JOSEPH S. GIBB, M.D.

Professor of Laryngology and Rhinology, Philadelphia Polyclinic.
PHILADELPHIA.

In the preparation of a paper on malignant diseases of the nose and accessory sinuses read at the last annual meeting of the New York State Medical Association, occasion was given to search the literature of the subject. Among the many points of interest I was impressed with the unusual lack of literature on the subject of sarcoma of the accessory sinuses. So far as I was able to ascertain there are but four cases of sarcoma reported. Of these three cases were of the maxillary sinus and one of the frontal and ethmoid cells. This, of course, does not represent the frequency of sarcoma in this locality. We are all more or less familiar with these cases, either from personal experience or report.

It shows, however, a lack of appreciation of the importance of the subject, for our knowledge of rare and peculiar cases is increased by the publication of similar cases in which the individual methods of observation and treatment are outlined. With these thoughts in mind, and for the reason that the subject is of deep interest to me, I have considered the following case not unworthy of report:

NARRATION OF THE CASE.

F. O., male, aged 63, previous health good, family history unimportant. Early in October, 1901, he noticed a swelling below the left eye and suffered somewhat from irritation of the lids. For the relief of this condition he came to the eye department of the Episcopal Hospital. Soon after his first visit he became conscious of an irritating discharge from the left nostril and breathing from this side became obstructed. He was then referred to the nose and throat department where I saw him for the first time about October 15.

Examination.—There was tumefaction over the left cheek bone and puffiness of the left lower lid. An irritating discharge from the left naris excoriated the upper lip immediately below the entrance to the naris and he experienced much difficulty in breathing through this nostril. Examination revealed a mass occupying the left nasal cavity. This mass was reddish in color and rather soft; it bled upon the slightest touch. The growth filled the naris so that all the anatomic points were obscured.

Suspecting the nature of the growth a piece was snared off for microscopic examination. Free bleeding followed this slight operation. Suspicion pointed to the antrum as the source of the growth because of the accompanying swelling of the cheek and eye. Transillumination of the sinus gave distinct evidence of the presence of a body within the antrum.

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Laryngology and Otology, and approved for publication by the Executive Committee: Drs. Emil Mayer, C. R. Holmes and G. H. Makuen.

Operation.—The nature of his case was pointed out to the patient and he was advised to have an excision of the upper jaw. He readily consented and was accordingly admitted to the hospital for this purpose. Some delay in the time of operation ensued because of the illness of the surgeon to whom the case belonged, so that a week or more elapsed. In this brief period the growth increased with amazing rapidity and the general symptoms became alarming. The growth absorbed the anterior wall of the antrum, appearing on the cheek, the skin over which became tense and red and palpitation elicited distinct fluctuation, and gave every evidence of the presence of a purulent collection. The growth also absorbed the hard palate and fluctuation was distinct in the roof of the mouth. He became septic and delirious, requiring restraint, and it was feared extension had taken place to the cerebral cavity. However, December 7, though his condition was not favorable for operation, he was prepared for the same and Dr. Hutchinson removed a portion of the superior maxilla and a large quantity of a semi-solid, sarcomatous-looking mass, pus and broken-down tissue from the antrum. The wound was thoroughly cleansed and every suspicious-looking mass curetted away. The wound was then packed with iodoform gauze.

Recurrence and Reoperation.—He reacted well from the operation, and by the 16th the wound seemed clean and healthy.

December 24 (17 days from the date of the operation) a small nodule was noticed on the posterior wall of the antrum. This continued to grow rapidly and by the middle of February filled the entire cavity and projected into the mouth. Ligation of the external carotid artery of the left side and complete excision of the superior maxilla, including the floor of the orbit and excision of all enlarged glands, were now advised. In consultation with Dr. Davis we agreed that this offered the most favorable chance for the patient and that should recurrence take place the carotid of the right side could be ligated. Accordingly on the first of March Dr. Davis first tied the external carotid artery and removed a few enlarged lymphatic glands in the neck. He then made a complete excision of the superior maxilla. The patient reacted well from the operation and has since continued to do well, showing no evidences of recurrence at the present time.*

The piece of growth snared from the nose was submitted to two competent pathologists and pronounced giant-celled sarcoma. Later a piece of growth in the antrum was examined by another pathologist who designated it a mixed round and spindle-cell sarcoma.

The interest in this case centers (1) in the location of the sarcoma, (2) the rapidity of its growth, (3) the means of diagnosis, and (4) the treatment.

LOCATION.

That the maxillary sinus is an unusual site for the development of malignant growths is attested by the few cases which have been reported. That it is not so infrequent as the statistics would lead us to believe I am convinced from my own experience and that of professional friends with whom I have discussed the subject. Several cases have come to my notice, though not directly under my control, where it seemed probable the starting point was the maxillary sinus. There can be no doubt in the case reported that the maxillary sinus was the original site.

THE RAPIDITY OF GROWTH.

Sarcoma of the nares is slow of progress as compared with other malignant diseases affecting this region. From a careful analysis of 111 cases it was found the average duration extended over a period two and a half to three years and that the growth was rather slow in extending.

There is very little data on which to base conclusions in the similar condition affecting primarily the maxil-

* The patient died in the early summer. He was suddenly seized with acute maniacal delirium and died before he could be removed to the hospital. No autopsy was obtained. It is probable the symptoms were due to an extension of the sarcomatous process to the meninges.