using a fine-bladed Killian speculum, the thin, jagged edge of a piece of metal could be seen and felt lying across the upper part of the nose at the level of the middle turbinal body. One end of it was imbedded in the middle turbinal, and the other transfixed the septum, without, as far as could be seen, actually perforating the mucosa of the right side. By gentle manipulation and compression of the expanded portion of the piece of metal, it was easily removed without more damage to the nasal mucosa, and it turned out to be the empty casing of a rifle bullet, which, fortunately for the man whom it struck, had left the lead behind before it hit him.

The explanation seems to be that the bullet kicked off a sandbag parapet which existed on the intervening ground between the opposed trenches, the impact separating the lead from the casing, the photograph bearing this out, as it shows the nickel casing to be much damaged about its base. The casing being of comparatively light weight and its velocity much diminished, it got no further than the interior of the nose after fracturing the nasal bone and nasal process of the left superior maxillary. It lay point upwards, the expanded end downwards, and would have defied any attempt at blind removal, which procedure would certainly have been attended by considerable damage to both septum and outer wall of nose.

SOCIETIES' PROCEEDINGS.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

May, 1914.

(*Continued from vol. xxx, p.* 506.)

Tuberculosis of the Middle Ear.—H. H. Briggs (Asheville).—The frequency of tuberculosis of the middle ear in persons suffering from tuberculosis elsewhere in the body has been placed at 25 per cent. Of 1500 school children examined by Westmacott, 2 per cent. were found to have tuberculosis of the middle ear. The disease is probably of far greater frequency than statistics show, and the true diagnosis is often mistaken because its onset is so insidious that attention is not easily called to the condition, and no observation is made. Moreover, when the case presents itself the condition usually has passed from that of a pure tuberculous process and become a mixed infection, the symptoms of the suppurative condition masking the true nature of the initial disease. The careless manner of classifying all discharging ears as suppurative otitis media, without recourse to the microscope or inoculation tests, is unfortunate.

The middle ear must be regarded as belonging anatomically and bacteriologically to the upper respiratory tract, as insisted upon by Goldstein, who considers primary tuberculous infection of the middle ear of respiratory origin.

Among the predisposing factors may be classed general debilitating diseases, the hereditary influence of tuberculosis, syphilis, association

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with tuberculous individuals, unhygienic environment, overcrowding, poor food, cachexia; in short, any condition of surroundings or constitution which induces a lowering of the systemic power to combat infection. Among the predisposing causes of more immediate influence may be regarded (1) the existence of a tuberculous lesion elsewhere in the body, especially pulmonary tuberculosis with cavitation, and tuberculous disease of the glandular system; (2) abnormal conditions of the upper respiratory tract, including the presence of naso-pharyngeal adenoid growths, which have been shown by microscopic examination and inoculation tests to be the frequent seat of a latent tuberculosis; (3) infancy and childhood offer a predisposition for various reasons.

The channels of infection are: (1) Mechanical, through the Eustachian tube, either air-borne or introduced into the tympanic cavity by the aid of particles of mucus or foreign matter during the acts of swallowing, coughing, sneezing, or blowing the nose. (2) Infection along the Eustachian tube by other than mechanical means. (3) Through the blood-channels. (4) Through the lymphatics. (5) *Viâ* the external auditory canal. (6) By extension of an intracranial infection through the internal auditory canal, Fallopian canal or the labyrinth. This is mentioned as merely a possibility.

To the author the mechanical theory of infection, especially secondary, seems simplest, easiest, and most probable in the great majority of cases. The great number of cases occur in early childhood and advanced phthisis, when the conditions favourable to the mechanical passage of infectious material through the Eustachian tube are at their maximum.

Clinically, two rather distinct forms of tuberculosis of the middle ear manifest themselves—acute and chronic. In each may be found all the changes, from slight infiltration of the mucous membrane to extensive necrosis of the temporal bone. Rapid loss of tissue is characteristic of the acute form, resulting from ulceration of the tubercles throughout the mucosa. In the chronic form the process runs an asthenic course, and infiltration, caseation, and necrosis follow less rapidly and with more characteristic tuberculous sequence.

The essential symptom which differentiates tuberculous otitis from other forms is the absence of pain. Even though the destructive process is rapid and the appearance of the membrana *per se* simulates an acute purulent otitis there is seldom any complaint of pain.

In determining the diagnosis, the family history should be carefully considered with regard to tuberculosis, and the patient's habits, residence, and environment should be ascertained to determine whether there has been an undue exposure to tuberculous persons or unhygienic surroundings. Facial paralysis, especially in children, occurs in one-third of the cases, against 1 to 2 per cent. in non-tuberculous conditions, and is of special diagnostic significance. The sanious and foul condition of the discharge, especially when particles of bone are incorporated, excites suspicion. Marked impairment of hearing, absence of headache, occurrence of hæmorrhage, are considered by some as diagnostic points. Tuberculin injections and blood-pressure changes are also considered. The only positive means of diagnosis, however, are: (1) Finding microscopically in the discharge or granulations the tubercle bacillus, or (2) giant and epitheloid cells and caseation in the tissue; (3) by experimental inoculation, reproducing tuberculosis.

The prognosis is, as a rule, unfavourable.

The treatment naturally divides itself into hygienic, dietetic, medical, and surgical, as the case indicates. The use of tuberculin has proved so

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successful in so many forms of tuberculosis that no tuberculous process in any way localised can be considered invariably to contra-indicate its use. The author could see no reason why it should not be indicated and of decided value in properly selected cases of tuberculosis of the middle ear.

FRANK R. SPENCER mentioned a method of making the diagnosis of tuberculosis of the middle ear, consisting of cleansing the canal first, introducing an aspirator which he had brought from Berlin, aspirating, and injecting the pus into a guinea-pig. The pus, when aspirated, might not show tubercle bacilli, but the organisms could be positively demonstrated after the injection into the guinea-pig by the examination of the animal's organs several weeks later.

Corrective Rhinoplasty.—Lee Cohen (Baltimore).—Where the nose has been partially or completely destroyed by disease or trauma, the individual so disfigured is not only an object of pity, but is not accorded the privileges in the social and commercial world enjoyed by other persons. Since the appearance of Tagliacozzi's work, in A.D. 1597, rhinoplasty for the relief of such conditions has been an accepted surgical procedure. For some reason, however, corrective rhinoplasty has not received the attention which it merits. Rhinologists in general have shown but little inclination to develop this line of surgery, although the feasibility and advisability of the work have been proved by the excellent results obtained by Roe, Joseph, Berens, and others for a number of years past. This indifference may be due to the fact that there has been absolutely no systematic treatise on this work until the appearance of Joseph's article in the "German Handbuch" about a year ago. An operator, however clever, might lack sufficient originality to develop a proper technique along these lines, in the absence of such literature.

Previous to the appearance of Roe's publications only methods calling for skin incisions were described as applicable to external nasal deformities. Credit should always be given to Roe as the originator of the subcutaneous method.

The deformities considered are divided into two classes: (1) idiopathic or congenital; (2) acquired. To the former belong the over-developed nose, hump nose, congenital saddle and pug nose, while to the latter belong all sorts of grotesque alterations in shape and position of the nose caused by fracture or dislocation, and by destruction of the bony or cartilaginous framework from syphilis, tuberculosis, and lupus. For practical purposes a further subdivision is generally made into deformities affecting the bony and those affecting the cartilaginous portions, although both are frequently involved at the same time. The various types of deformity have been admirably described by Roe, whose classification seems the most comprehensive.

In all methods of correcting these deformities the main object should be to avoid marring the subsequent appearance of the nose by scar, or, in other words, to work entirely from within. From these subcutaneous operations incisions, as first advocated by Roe, should be made within the vestibule of the nose, generally above the lower lateral cartilage of the left side, and subsequently, if necessary, on the right side, cutting through the mucous membrane and the cartilage to the under surface of the skin. Whether this incision is made close to the septum or more laterally depends on whether it is desired to alter the line of the nasal dorsum only, or whether the nasal processes are to be severed from their attachment to the superior maxillary. It is surprising to see with what ease one can, with a very small straight knife, undermine the skin over

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the entire nose through a small incision on one side, owing, of course, to the flexibility of the cartilaginous portion. By following the course of the knife under the skin with the index finger on the outside it is not difficult to avoid injury to the skin. The skin having been undermined, one proceeds with the subsequent steps of the operation, working under the skin as if it were a tent, and guiding the movements of the various instruments with the left hand over the outside of the nose. The technique for the correction of the various conditions named is given in detail, and a number of cases reported.

Dr. JOHN O. ROE (Rochester) said that Dr. Cohen's paper was a verification of the old saying that "imitation is the sincerest flattery," and protested that he had originated the procedures described.

Dr. COHEN said he had no intention, in his references to Dr. Roe's work, of detracting therefrom. He insisted, however, that there was no systematic description of this work prior to that mentioned in the paper. He had operated upon about ten cases before he ever saw Dr. Roe operate.

The Efficacy of Vaccines in the Treatment of Chronic Diphtheria Carriers.—Arthur I. Weil (New Orleans).—The occasional persistence of the Klebs-Loeffler bacillus in the throats and noses of patients for weeks and sometimes months after their complete clinical recovery has been a source of annoyance and concern to everyone who has had to deal with diphtheria patients. The necessity for complete isolation of such patients as long as the organisms in virulent form are present, self-evident though it is, entails a serious loss of time, and inconvenience to the patient. This is true of not only those carriers who have just recovered from an active diphtheria, but likewise of that other class in whom, though they have never had an active diphtheria, nevertheless, either through contact with diphtheria patients or otherwise, the Klebs-Loeffler bacilli are present. The necessity for isolation is just as great, and the presence of the germ just as persistent, as in those who have actually suffered from the disease.

It is the eradication of the diphtheria bacilli from the nose, throat, and ears of both classes of carriers, and the resultant stamping out of a diphtheria epidemic in a public institution—an orphan asylum—that forms the basis of this communication.

After a year or more of sporadic outbreak of the disease, constantly recurring in spite of the most careful isolation of the diphtheria patients, twenty-four cases finally remained in the isolation wards of the infirmary in which all the active cases had been treated. The patients were classified in three groups: (1) Those who, having had an active diphtheria infection, had been clinically well for a period of two weeks or longer, but in whom live diphtheria bacilli were still found in the cultures. The period during which a positive culture had persisted after complete clinical recovery varied from three months to something over two weeks. There were nine of these patients, who were considered *chronic active carriers*. (2) Those in whom, though they have never had an active diphtheria, the culture showed the presence of diphtheria bacilli. It is impossible to know just how long they had been carriers, since the bacilli were found in routine examinations of all children in the institution. There were twelve of these, and they were considered *chronic passive carriers*. (3) Those who had an active diphtheria infection, but in whom less than two weeks had passed from the time of their complete recovery to the beginning of the vaccine treatment. This group comprises three patients who are called *active carriers*. Of the three active carriers

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comprising group 3, in one case ten days and in the other two about nine months elapsed between their complete clinical cure and the last positive culture. The cases, however, are too few to allow any definite conclusions to be drawn.

In drawing conclusions as to the value of the vaccine treatment in the twenty-one chronic carriers, the possibility must not be lost sight of that many, if not all, might have cleared up without the use of vaccines. In view of the fact, however, that practically all the cases showed a marked diminution in the number of bacilli present shortly after the treatment was begun, and that all of them eventually did clear up with large doses, the belief would seem to be justified that the vaccines are of some value. At any rate it has been shown that large doses of diphtheria vaccines can be used without the slightest inconvenience to the patient. From the author's experience, large doses give better results than smaller ones. Whether autogenous or stock vaccines are the more useful is a matter of opinion.

THE OTO-LARYNGOLOGICAL ASSOCIATION OF NORWAY.

Christiania, October 17, 1912, *and April* 28, 1913.

Report by Prof. UCHERMANN.

Actinomycosis.—Wetterstad demonstrated two cases of actinomycosis. In the first, a boy, aged nine, on his admission into hospital pus was found in the right auditory meatus with, on the anterior wall, a granulation protuberance of the size of a pea. On the right cheek there were two abscesses of the size of a Spanish nut. When pressed, yellow matter flowed out of the auditory passage through the said granulation. Actinomycotic granules were found in the matter. Healing followed scraping and treatment with potassium iodide.

The other patient, a countryman, aged fifty-four, noticed pain, when swallowing, in his throat—on the right side—and some dyspnœa. After three weeks the abscess in the throat broke, and the trouble ceased. At the same time the patient observed a lump on the outside of his throat under the right angle of the jaw. This lump steadily increased in size. On admission, there was a red thickening of the skin between the right angle of the maxilla and the sternum, as hard as wood, on some points rather prominent, and here there was soft infiltration. In the pharynx, near the root of the tongue on the right side, a red infiltration was seen, turning the epiglottis towards the left. The soft parts were incised and scraped. Here also actinomycosis was demonstrated. Upon treatment with potassium iodide in increasing doses, only a small infiltration, of the size of a walnut, remained, in which no actinomycotic grains were traceable. Continuous treatment with potassium iodide.

A third case, a grown-up girl, was treated in the hospital for the same disease. The illness began with a swelling in the right cheek, and the patient was admitted with a diagnosis of possible malignant tumour.

All the patients were from the country; all had carious teeth. Upon microscopical examination of one patient's teeth, however, nothing abnormal was found.

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