cases under his care in the Govan Combination Poor House. He found abnormal pulsating vessels to be present in 7 out of 250 males examined, five times on the right side and twice on the left side. In 2 of these cases the pulsation was communicated to the right tonsil. In 150 females abnormal pulsating vessels were noted in 6—twice on the right side and four times on the left side. Forty children were examined with negative results.

In my own cases the urine was not examined, but Dr. Allison found slight albuminuria in two of the male patients. In all others the urine was normal.

CHRONIC MIDDLE-EAR DEAFNESS.

By W. Sohier Bryant, A.M., M.D.,
New York.

Our grandfathers classified ear diseases in two categories—those that got well without treatment and those that resisted all treatment. In our day there are very few cases of chronic middle-ear deafness that cannot be improved. The exceptions are the cases of malformation of the middle ear, the cases of advanced stapes fixation and those of extremely advanced oto-sclerosis.

The amount of the possible improvement in hearing is in inverse ratio to the pathological changes. Chronic deafness from past or present suppuration of the middle ear can, without exception, be helped by treatment. The amount of help depends upon the power of the patient to make repair and to substitute parts which have been lost. Deafness following middle-ear catarrh is more resistant.

When we realise that about 98 per cent. of the cases of chronic deafness are due in whole or in part to middle-ear disease, then we appreciate the great frequency of chronic middle-ear deafness. About 84 per cent. of the cases of chronic middle-ear deafness are due to middle-ear diseases alone, while 14 per cent. are due to middle-ear diseases combined with diseases of the inner ear. Of the cases of chronic middle-ear deafness, about 83 per cent. are due to chronic middle-ear catarrh alone; 15 per cent. are due to present or past suppuration of the middle ear; 1 per cent. due to stapes fixation and less than 1 per cent. to congenital malformation of the middle ear. The fifteen cases which are the result of suppuration are often complicated by chronic middle-ear catarrh.

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We see, therefore, that 98 per cent. of chronic cases of middle-ear deafness are due in whole or in part to "chronic middle-ear catarrh."

Chronic middle-ear catarrh makes about 69 per cent. of all chronic deafness, while middle-ear suppuration causes about 13 per cent. of chronic deafness. The causes of chronic middle-ear catarrh arise in the naso-pharynx and affect the middle ear by interfering with the Eustachian tube. The aim of treatment is, first, to restore the functions of the Eustachian tube, and second, to correct the defects of the middle ear. By treatment of naso-pharynx prophylaxis of these defects is easily assured.

The causes of stapes fixation are trophic disturbances. Not only must these disturbances be checked but their recurrence must be prevented.

The chief difference between the ætiology of middle-ear suppuration and chronic middle-ear catarrh is pyogenic bacterial infection. Suppuration occurs almost never independent of naso-pharyngeal disease. Prophylaxis of chronic middle-ear deafness due to suppuration is secured by preventing purulent inflammation through care of the naso-pharynx. But if suppuration has already begun the hearing is preserved by immediately stopping the suppuration and by treating the naso-pharynx appropriately. If any suppuration should exist in chronic middle-ear deafness it must immediately be arrested. If perforations of the membrane exist they must be closed by the growth of cicatrices. In order to compensate for the important parts of the sound-conducting mechanism which may have been lost it is necessary to adjust mechanical appliances. Adhesions of important parts must be loosened.

Besides showing the second stage of stapes fixation (10), the following cases also show the three conditions caused by chronic middle-ear suppuration, together with their nine methods of treatment (1-9). The thirteen conditions of chronic middle-ear catarrh and their treatment are also shown (11-24).

(1) Case No. 12076.—A man, aged thirty-four. Chronic middle-ear suppuration with impaired hearing for six years. Perforation of Shrapnell's membrane. Politzer's acoumeter heard less than 3 ft. Nine weeks later after cleansing treatment and cessation of suppuration acoumeter heard at 35 ft. Improvement has persisted to the present time, covering a period of three years.

(2) Case No. 13016.—A man, aged twenty-seven. Chronic middle-ear suppuration for four years; small perforation of mem-

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brana vibrans and considerable loss of hearing. Acoumeter heard at 3 ft. Three months later, after cleansing treatment and cessation of suppuration, acoumeter heard at 30 ft. Improvement has continued over three years.

(3) Case No. 14214.—A woman, aged fifty-three. Effects of chronic middle-ear suppuration; large, dry, posterior perforation of drum membrane. Acoumeter heard at 12 in. The other ear worthless. The perforation was caused to cicatrise over by aid of paper dressings. Six weeks later acoumeter heard at 8 ft. Improvement has continued.

(4) Case No. 13000.—A woman, aged twenty, who had been rejected in a civil service examination. Effects of chronic middle-ear suppuration. Adhesion of malleus handle to promontory. Perforation of drum head had already closed. Watch heard at 5 in.; the other ear worthless. Two and a half months later, after forcible catheterisation and relaxation of the bands of adhesion, watch heard at 17 in., and applicant passed a successful civil service examination. Improvement retained.

(5) Case No. 13070.—A doctor, aged forty-five. Long-standing suppuration and large perforation in membrana vibrans. Acoumeter heard at 10 in. One week later, after cleansing treatment and cessation of suppuration, the perforation was closed with paper dressings; acoumeter heard at 12 ft.

(6) Case No. 14207.—A woman, aged twenty-four. Suppuration since childhood; total loss of the drum membrane and the three ossicles. Watch heard at 1 in. Other ear of little use. One week later, after cleansing treatment and cessation of suppuration, tympanic ballast was adjusted, watch heard at 36 in. Improvement continues over three years.

(7) Case No. 12077.—A woman, aged twenty-seven. Suppuration since childhood; loss of drum head and cicatrical attachment of malleus to promontory; early impairment of hearing. Acoumeter heard at 12 in. in right ear. Left ear absolutely deaf. Cleansing treatment and cessation of suppuration. Acoumeter heard at 4 in. Tympanic ballast then adjusted, and acoumeter heard at 8 ft. Ballast caused return of suppuration. A mastoid antrectomy was performed in order to allow the use of the tympanic ballast. After convalescence acoumeter heard at 13 in. Ballast adjusted, acoumeter then heard at 9 ft. Watch heard at 2 in. Condition remains the same. Functional tests without tympanic ballast: Tone perception, high limit 16,800 single vibrations (Edelmann-Galton). Tone perception, low limit fork 1024 single

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vibrations. Bone conduction 0. With tympanic ballast in place: Tone perception, high limit 39,400 single vibrations; low limit, fork, 128 single vibrations. Bone conduction, fork, 512 single vibrations heard on mastoid. A tone gap existed for a time, fork 2028 double vibrations not heard by air conduction while other forks were heard.

(8) Case No. 14478.—A man, aged seventy-five. Chronic middle-ear suppuration of many years' duration with poor hearing. Watch heard at 4 in. My modified radical mastoid operation was performed. Cessation of suppuration and watch heard at 10 in.

(9) Case No. 13038.—A woman, aged twenty-four. Suppuration since infancy; loss of all tympanic contents; tympanic caries. Watch heard at contact. Radical (Schwartz-Stacke) mastoid operation performed. Convalescence complete in three weeks without skin-grafts. Cessation of suppuration and watch heard at 10 in. The patient has retained the improvement now for four years.

(10) Case No. 14229.—A man, aged sixty-seven. Stapes fixation in the second stage. Deafness commenced eight years ago; hearing has been very bad for three years; this condition was possibly aggravated by business failure. Hearing variable. Drum membrane whitish and opaque. Position, contour, and light reflex normal; malleus movable. Acoumeter heard, right ear at 4 in., left ear at 3 in. Loud conversation heard in right ear at 6 in., left ear at 32 in. Watch not heard in either ear. Bone conduction much diminished. Fork, 128 single vibrations; low limit for tone perception by bone. Fork, 256 single vibrations not heard by air. High notes well heard. Treatment by general hygiene and regulation of blood-supply of the middle ear. Six months later, acoumeter heard in right ear at 7 ft., watch at 20 in.; in left ear, acoumeter at $4\frac{1}{2}$ ft., watch not heard at all. Improvement has continued now for a period of four years.

(11) Case No. 13083.—A man, aged forty-seven, had noted deficiency in hearing for eighteen years. Drum heads good colour, fair contour and position, light reflex very small. Nares partially occluded by hypertrophies and irregularities. Fossæ of Rosemüller partially closed by adhesions. Tubal mouths slightly obstructed by thickened mucosa. Watch heard in right ear at 15 in.; in left ear at 4 in. Astringents and irritants to naso-pharynx. Three years later watch heard at 48 in. in left ear and at 84 in. in right ear. Improvement maintained.

(12) Case No. 14528.—A man, prematurely old at forty-seven.

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First noted impaired hearing thirty-four years ago; losing ground ever since in spite of much treatment. Has not heard watch in right ear for twenty-one years, and in left twenty-five years. Flat, opaque, retracted drum membranes; no light reflex; rigid. Nares hypertrophic; inflation by Politzer's method or catheterisation impossible. By air conduction, right ear, low-tone limit fork 1024 single vibrations; high-tone limit fork 2048 single vibrations. Left ear, low limit 512 single vibrations; high limit 4096 single vibrations. Bone conduction decreased. Right ear, low-tone limit by bone conduction 1024 single vibrations; high-limit fork 8192 single vibrations. Left ear, low limit by bone, fork, 1024 single vibrations; high limit 8192 single vibrations. Very loud voice heard at 1 ft. in right ear, left ear at 8 in. Bougies, local astringents, and stimulation. Portions of lower turbinates removed. Eight months later, low-tone limit in left ear, fork, 256 single vibrations; right ear, fork, 268 single vibrations. High-tone limit 40,000 single vibrations in both ears. Acoumeter heard in right ear at 15 in., in left at 27 in. Watch heard, light contact, on both ears. Loud conversation heard in right ear at $5\frac{1}{2}$ ft.; left ear at 4 ft. Eustachian tubes patulous. Appearance of drum membrane much improved in every respect; good light reflex, colour, position and surface, still somewhat opaque.

(13) Case No. 14177.—A woman, aged thirty-eight. Has undergone much injudicious treatment. Eustachian tubes used to be closed, now cannot close. Diminished hearing began fifteen years ago. Membrana tympani thin, flaccid, readily movable. Acoumeter heard at 20 in. in right ear. Treated by rest, stimulation, and collodion splints. After six months, acoumeter heard at $4\frac{1}{2}$ ft.; watch at $2\frac{1}{4}$ in. Improved function of Eustachian tube.

(14) Case No. ——.—A man, aged forty-three. For several years hearing has been impaired; drum head retracted, good colour, contour and reflex. Does not move on inflation. Watch heard at $1\frac{1}{2}$ in.; after inflation heard at 24 in. Treatment, inflation and pharyngeal astringents. One month later, watch heard at 18 ft.

(15) Case No. 14696.—A man, aged twenty-seven. Impaired hearing for a number of years; much deafness in family. Drum membranes slightly congested along malleus handle and periphery, and depressed, small, light reflexes; inflation difficult. Nasal engorgement. Left ear, watch heard at 5 in.; right ear, watch heard at 9 in. Bone conduction slightly prolonged. Low notes well heard. High limit, left ear, 39,000 single vibrations (Edelmann-

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Galton); right ear, 44,000 single vibrations. Treated by inflation, removal of part of lower turbinates and astringents. Three days later watch heard at 12 ft.; left ear at 10 in. Improvement maintained.

(16) Case No. 13012.—A man, aged sixty-seven. Some difficulty in hearing for a number of years. Membrane very thick and white, with thinner areas. Large light reflexes. Inflation slow. Acoumeter heard in right ear at 25 in.; in left ear at 7 in. High-tone limit, left ear, 29,000 single vibrations (Edelmann-Galton). Right ear, 20,000 single vibrations. Right ear, low-tone limit, 102 single vibrations. Treatment, astringent to naso-pharynx and aural stimulation. Two weeks later acoumeter heard in right ear at 5 ft., left ear at 14 ft.

(17) Case No. 14649.—A man, aged fifty-eight. Extremely deaf for two years; hearing difficult many years. Thick, flat, contracted drum heads; no light reflexes; Eustachian tubes fairly patulous. Hears nothing by bone conduction. Cannot hear his own voice or a slap on the cheek. Hears very loud noise close to his ear. Treated by nasal counter-irritation and tympanic stimulation. After several treatments acoumeter heard in right ear at 2 in., left ear at 5 in. High-tone limit, right ear, 24,000 single vibrations (Edelmann-Galton); left ear, 22,000 single vibrations. Low limit, left ear, fork 250 single vibrations; right ear, fork 1096 single vibrations. Eight months later, ordinary voice heard by air at 4 ft. Low-tone limit, fork 128 single vibrations, by air in both ears.

(18) Case No. 14160.—A woman, aged fifty. Hearing has been defective twenty-five years. Partial nasal obstruction. Drum head depressed, very thin, transparent and lax. Inflation not perfect; watch not heard. Right ear, the better ear, acoumeter heard at 5 ft. Low-tone limit, 256 single vibrations. Treated by nasal astringents, removal of part of lower turbinates and aural stimulation. Fifteen months later watch heard at 36 in. Low-tone limit, fork 113 single vibrations. High limit 43,000 single vibrations (Edelmann-Galton).

(19) Case No. 14128.—A man, aged forty-five. Impaired hearing many years. Right ear absolutely deaf; left ear, relaxed drum membrane. Patulous Eustachian tubes. Acoumeter heard at 7 in. Treatment, paper splints and collodion. Six months later left ear heard watch at 1½ in.; acoumeter at 12 ft. Resiliency of drum membrane restored. Improvement maintained.

(20) Case No. 12099.—A woman, aged thirty-nine. Had long

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noted trouble in hearing. Right ear, the best ear. A large part of the drum membrane calcified. The tube not perfectly patulous. Acoumeter heard at 2 in. Treated by inflation, astringent to naso-pharynx and tympanic stimulation. One month later, right ear, watch heard at 18 in. Mobility and elasticity of the sound-conducting mechanism much improved.

(21) Case No. 14179.—A man, aged forty-one. Has been a little deaf for a number of years. Left ear shows a somewhat depressed grey membrane with irregularly-depressed surface after inflation, indicating bands of adhesions running to the inner tympanic wall. No history or evidence of suppuration. Tympanic inflation difficult. Acoumeter heard at 3 in. Treatment, inflation and tubal astringents. Four months later, acoumeter heard at 4 ft. in left ear. Adhesions appear to be entirely relaxed.

(22) Case No. 14177.—A woman, aged thirty-eight. Noted impairment in hearing fifteen years ago. Previously tubal stricture, much injudicious treatment; now permanently open tubes and abnormally movable left drum membrane and malleus, loss of elasticity of membrane and extreme laxity of mallear ligaments. Bone-conduction much increased, low notes deficient, high notes well heard. Left ear, acoumeter heard at 25 in. Treatment by collodion splints, rest and irritation of pharyngeal mouth of tube. Five months later watch heard in left ear at $4\frac{3}{4}$ in., acoumeter at 10 ft.

(23) Case No. 14861.—A woman, aged thirty-five. Some difficulty in hearing for at least two years. Tympanic membrane fairly normal in appearance. Malleus immovable. Right ear, watch heard at 17 in.; left ear, at 3 in. High tone limit, left ear, 40,000 single vibrations (Edelmann-Galton); right ear, 48,000 single vibrations. Gille positive, low limit left ear, fork, 134 single vibrations; right ear, 174 single vibrations. Bone-conduction, normal duration. Treated by tympanic and tubal stimulation. Six weeks later, left ear, watch heard at 9 in.; right ear at 21 in. High tone limit, right ear, 85,000 single vibrations; left ear 92,000 single vibrations. Low limit, 128 single vibrations both ears.

(24) Case No. ——.—A boy, aged thirteen. Always had slightly defective hearing. Watch heard at 20 in. in both ears. Mastoiditis and operation treated with my modified blood-clot dressing. After convalescence from the operation the ear operated on for mastoiditis; heard the watch at 12 ft.

Summary.—We have seen that all forms of middle-ear

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deafness except the congenital cases are amenable to treatment, and that the amount of improvement justifies the effort expended.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

Fourth Ordinary Meeting, February 7, 1908.

J. B. Ball, M.D., *President, in the Chair.*

Abstract of Proceedings, by Dr. Dan McKenzie.

Sir Felix Semon read a list of the names of British laryngologists who had signified their intention of being present at the International Congress of Oto-Laryngology at Vienna in April-May of this year, and drew attention to the fact that up to the present no single British representative had intimated a purpose of reading a paper on any subject connected with their work.

The following cases and specimens were shown:

A Case of Multiple Hereditary Developmental Angeiomata (Telangiectases) of the Skin and Mucous Membranes Associated with Recurring Hæmorrhages.

By Dr. Parkes Weber (introduced by Sir Felix Semon.)

This case was fully described in the *Lancet*, July 20, 1907, and was shown at the meeting of the Clinical Section of the Royal Society of Medicine on Friday, January 10, 1908. Special points of interest, apart from the changes on the external integument, were that there were small angeiomata over the tongue, the mucous membrane of the mouth, inside both nostrils, on the posterior wall of the pharynx, and on the anterior surfaces of the glottis, and that during the last six years the patient had been subject to very frequent epistaxis.

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