

Annual report of the Massachusetts Charitable Eye and Ear Infirmary, 1873.

Contributors

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Royal College of Surgeons of England

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ANNUAL REPORT

23.

OF THE

MASSACHUSETTS CHARITABLE

EYE AND EAR INFIRMARY.

1873.



BOSTON:

ALFRED MUDGE & SON, PRINTERS, 34 SCHOOL STREET.

1873.

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OFFICERS FOR THE YEAR 1872-1873.

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Microscopist and Curator of the Pathological Cabinet.

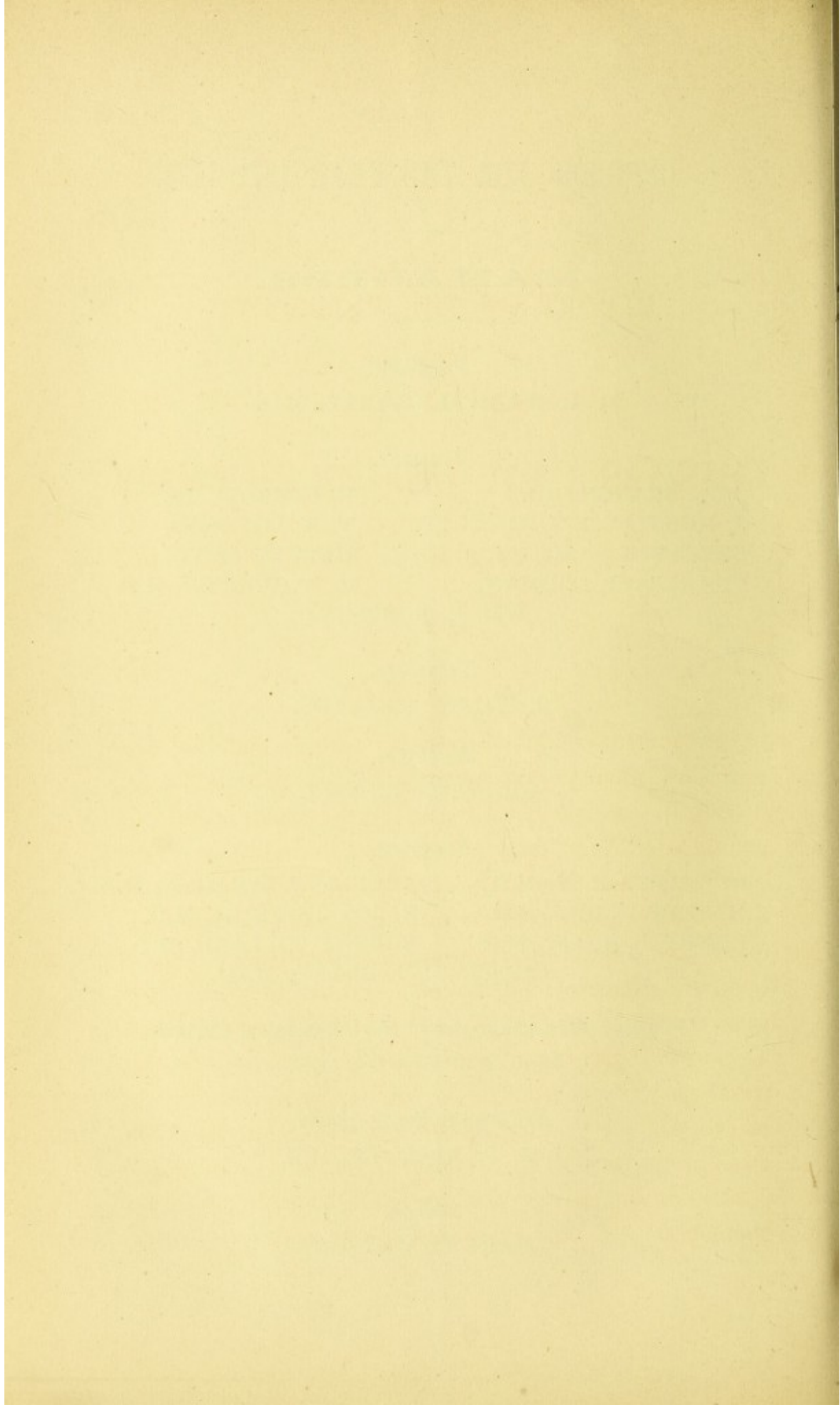
B. JOY JEFFRIES, M.D.

Assistant to the Surgeons.

WM. P. BRECHIN, M.D.

Matron.

MARY G. WATSON.



REPORT OF THE PRESIDENT
OF THE
MASSACHUSETTS
CHARITABLE EYE AND EAR INFIRMARY
TO THE MANAGERS.

1872.

GENTLEMEN:— The Massachusetts Charitable Eye and Ear Infirmary has performed its beneficent work during the past year with unabated success, and in its accustomed quiet way. Its present condition, however, is a cause both of satisfaction and anxiety, — of satisfaction for the amount of good that has been done, and of anxiety, because the Institution has not been able to meet the increased demands that have been made upon it. A reference to the Surgeons' Reports of previous years shows that in 1867, the number of individuals who presented themselves at the regular hours of consultation was 3,918; in 1869, the number was 4,448; and in 1871, the number was 5,258; during the present year, 5,975 have presented themselves, exclusive of the occupants of beds in

the house. A similar rate of increase would raise the number of out-patients ten years hence to 10,000 annually. The financial resources of the Institution have not increased in an equal ratio with the patients.

Your Treasurer makes the following statement in his report: —

“The present condition of the Infirmary, financially, is far from satisfactory. We have run behindhand the past year 2,480 dollars, as 293 dollars, amount of bank-tax previously paid and since refunded, is included in this year's receipts. In estimating for the coming year, we cannot calculate upon any increase of income from our investments; our expenses, on the other hand, with the annual increase of patients, will be larger, and we shall probably have to report another deficiency at the end of the year of more than 3,000 dollars, unless lessened by some unexpected donations. The idea of encroaching upon our fixed investments for present support is inadmissible, as this would preclude the hope that this Institution will, in the course of time, with the annual State appropriation, become self-sustaining, in fully meeting the large demands of the future. Although liberal donations and legacies have been the chief source of its growth and prosperity, and though we have faith that their continuance will not fail in the long future as an abundant resource, yet the fact that the year has passed without any aid from these sources, shows how precarious is dependence upon them for immediate necessities. We shall continue to have ample means to give attention to all out-door patients that may ap-

ply for relief. It is the hospital accommodations required for those who must have medical treatment and in-door care, which cause nearly all the cost of carrying on the institution. We might readily make all right financially, by a charge to the house patients individually, corresponding to the cost of their board (the amount received from pay-patients the last year being only 548 dollars for the year), or by shutting off from house accommodations many of those who are now received gratuitously.

“Neither course would accord with the views of the Board, whose policy, on the contrary, has been not only to extend the benefits of the Infirmary to the greatest number of the poor, but to give proper care and treatment to the worst cases, by furnishing all the medical attention and accommodations essential to *success* in treatment. To change this policy now would be taking a long step backward. The alternative is to rely upon an increase of the State appropriation, or an appeal to the benevolent for contributions.

“We had indulged the belief that the current appropriation of the State, 6,000 dollars, would have been increased at least to an extent proportionate to the increased cost of supporting the Infirmary, and the increased demands upon it by the community (the patients increasing in number about ten per cent every succeeding year); but the last grant was limited to that of the preceding year. It is essential to the prosperity of the Infirmary, supported as it has been by the generosity of friends, and now de-

pendent upon their bounty for its growth, it being, too, a beneficiary of the State, that economy should continue to be a conspicuous feature of its management. The advantage of economy is not only in immediate gain, but it strengthens our claims to the attention of the benevolent, and will go far to secure their aid."

The report of your Board of Surgeons presents clearly, not only the labor which its members have performed, and the extent of the service which they have so efficiently rendered the community, but also the urgent demand for increased hospital accommodations, as shown in the accompanying extract from their report: —

"Within five years but few additional beds have been created, and the number of patients who can be accommodated in the building is still restricted to forty. Meanwhile, the operations for cataract alone have increased from thirty-four, in 1867, to sixty-four, in 1872. Room for them has only been obtained by rejecting cases, less urgent, but still in great need of careful nursing and constant treatment. Nearly fifty of these cases, entering the house blind and helpless during the present year, have been restored to useful vision, and thus prevented from passing the residue of their lives a burden to their friends, in the first instance, and indirectly to the community at large. They were all, it is needless to say, in humble circumstances, and entirely unable to have purchased the relief freely afforded them by the charity. No fact could be adduced which would more amply jus-

tify the aid extended to us by the State during so many years, and long, we trust, to be continued. The calls on us for assistance were never more urgent or as numerous as at present, the prospect of their increase at no time as sure. We need imperatively an additional number of beds for the patients, to whom a lack of room now obliges us to deny admission. For these beds we have ample space. The sixty-four blind from cataract in the present year, will have more than a hundred annual representatives ten years from now, at our present rate of increase. Cases of other serious diseases, requiring residence in the hospital for successful treatment, grow in proportion.

Such is the clinical and financial condition of the Massachusetts Charitable Eye and Ear Infirmary, an institution situated in a large and growing city, the business centre of a thickly settled and prosperous State. The calls upon its services have increased annually with the increased knowledge, on the part of the public, of the value of the treatment which it affords. It appears that the patients applying for relief belong almost exclusively to a class dependent upon their daily labor for the support, not only of themselves but of their families, and liable, in case of disablement from disease of the eye or ear, to become a burden upon the community and the State. In evidence of this, a reference to the tables of cataract operations alone, during the past year, shows 40 per cent of the cases to have been males who were still capable of labor.

That the demands upon the charity of the Institution are principally from the poorer classes in our immediate community, is shown by the fact that of the out-patients treated at the Infirmary during the past year, 95 per cent belonged in Massachusetts, and of this number about one half were residents of Boston; and that the increased demand comes largely from our immediate neighborhood is proved by a comparison with the report of 1872, which shows the number of out-patients from Massachusetts during this year to exceed by 357 cases the whole number treated during the year preceding.

Appended herewith are the statistics which show the work of the Infirmary for the past year; an admirable paper on Cataract Operations, by Dr. Hasket Derby; and notes on the Aural Surgery of the Institution, by Dr. C. J. Blake.

EDW. H. CLARKE,

President.

II. STATISTICS.

CLASSIFICATION OF PATIENTS, DISEASES, AND OPERATIONS.

Out-Patients.

Whole No. eye patients	. . . . .	4,501
“ “ ear “	. . . . .	1,474
		<hr/>
Total eye and ear patients	. . . . .	5,975
Males	. . . . .	3,226
Females	. . . . .	2,749
Residents of Boston	. . . . .	2,709
“ “ other parts of Massachusetts	. . . . .	2,900
“ “ Maine	. . . . .	133
“ “ New Hampshire	. . . . .	107
“ “ Vermont	. . . . .	32
“ “ Rhode Island	. . . . .	20
“ “ Connecticut	. . . . .	7
“ “ other States	. . . . .	32
“ “ British Provinces	. . . . .	29
“ “ Foreign Countries	. . . . .	6
		<hr/>
		5,975

House Patients.

Males	. . . . .	280
Females	. . . . .	171
		<hr/>
Total	. . . . .	451

Out-Patients Continued.

Eye Patients.					
Males				2,470	
Females				2,031	
				<hr/>	4,501
Ear Patients.					
Males				756	
Females				718	
				<hr/>	1,474
Total					<hr/> 5,975

DISEASES OF THE EYE.

Lids.

Erysipelas					2
Eczema					12
Abscess					17
Blepharadenitis					217
Hordeolum					34
Chalazion					71
Ectropium					6
Entropium					10
Trichiasis					36
Distichiasis					1
Ptosis					4
Symblepharon					2
Œdema					9
Epithelioma					3
Warts					6
Nævus					1
Congenital defects					2
Xanthelasma					1
Lupus					2
Molluscum					1
Herpes					1

Conjunctiva.

Conjunctivitis, catarrhal	651
" blenorrhoeic	15
" " neonatorum	14
" granular	441
" phlyctenular	166
Ecchymosis	14
Pterygium	23
Pinguecula	3
Œdema	2
Tumors	3
Abscess	1

Cornea and Sclera.

Keratitis	245
" traumatic	9
Abscess of cornea	4
Ulcer " "	345
Leucoma	115
Staphyloma anterior	33
Keratoconus	2
Tumor of cornea	1
Deposit of lead on	3
Arcus senilis	2
Sclero-keratitis	11
Scleritis	6
Tumor of sclera	1
Discoloration of sclera	1

Iris.

Iritis, rheumatic	122
" syphilitic	15
" traumatic	10
Prolapse	8

Statistics.

	4
Dialysis	2
Wound of	1
Foreign body on	1
Coloboma	13
Mydriasis	9
Posterior synechia	5
Anterior "	

Choroid.

	17
Choroiditis	13
Sclerotico-choroiditis, posterior	15
Irido-choroiditis	10
" sympathetic	15
Glaucoma	

Ciliary Body.

	1
Cyclitis	

Retina.

	3
Hyperæmia	14
Retinitis	13
" albumenurica	2
" pigmentosa	6
" apoplectica	13
Separation of	2
Hyperæsthesia	

Optic Nerve.

	9
Congestion of disc	20
Neuro-retinitis	47
Atrophy	

Vitreous.

	1
Hemorrhage into	11
Membrane and opacity of	

Statistics.

15

Foreign body in	4
Muscae volitantes	16

Lens.

Cataract, hard and soft	107
“ incipient	18
“ congenital	5
“ traumatic	30
“ capsular	4
“ cretaceous	11
Dislocation	1

Lesions of Globes.

Mikrophthalmus	1
Hydrophthalmus	3
Phthisis bulbi	35
Exophthalmus	2
Intraocular tumor	2

Affections of Percipient Apparatus.

Amblyopia	70
Amaurosis	12
Hemeralopia	2
Nyctalopia	1

Refraction and Accommodation.

Myopia	64
Hypermetropia	79
Astigmatism	6
Paralysis of accommodation	1
Presbyopia	27
Asthenopia	94

Muscular Affections and Neuroses.

Paralysis and paresis	9
Diplopia	10

Strabismus convergens	66
“ divergens	17
Neuralgia, 3d pair	4
“ 5th pair	9
Ciliary neuralgia	9
Insufficiency internal recti	2

Lachrymal Apparatus.

Epiphora, and obstruction of lachrymal ducts	52
Affections of lachrymal passages	141
Abscess of lachrymal gland	1

Orbit.

Disease of	1
----------------------	---

General Injuries.

Foreign bodies on conjunctiva	23
“ “ “ cornea	335
Burns	44
Blows and cuts	141
Abrasion of cornea	6
Unrecorded	59
Unfit	59

RECAPITULATION OF DISEASES OF THE EYE.

Lids	438
Conjunctiva	1,333
Cornea and sclera	778
Iris	190
Choroid	70
Ciliary body	1
Retina	43
Optic nerve	76

Statistics.

17

Vitreous	32
Lens	176
Globe	43
Percipient apparatus	85
Refraction and accommodation	271
Muscular affections and neuroses	126
Lachrymal apparatus	194
Orbit	1
General injuries	549
Unrecorded	59
Unfit	59

 4,524

OPERATIONS ON THE EYE.

Cataract.

Method of Graefe (cataracta simplex)	64
“ “ “ following irito-choroiditis	1
“ “ “ “ congenital cataract	1
“ “ “ “ traumatic “	1
Linear method	7
Discission	6
Removal of dislocated lens	2—82
“ “ opaque capsule	1
Agnew's operation for opaque capsule	3

Iridectomy.

For artificial pupil	52
“ irito-choroiditis	1
“ glaucoma	9
“ iritis, old	1
“ abscess of cornea	3
“ anterior staphyloma	1
“ sclero-keratitis	7—74

Posterior-synechia, Passavant's operation	4
Hernia of iris	5
Anterior staphyloma, Critchett's operation for	1
" " removal of	1
Iridotomy	1

Enucleation of Eye.

For sympathetic ophthalmia	18
" anterior staphyloma	3
" disorganized eye	14—35
Peritomy	2
Pterygium	5
Tumor of cornea	1
Tattooing of cornea	1
Paracentesis of cornea	22
Strabismus convergens	48
" " secondary operation for	1
" divergens	1
Entropion	3
Trichiasis	27
" Arlt's operation for	2
Canthoplasty	2
Chalazion	24
Plastic of lids	1
Nævus	1
Epithelioma of lid	4
" " conjunctiva	2
Removal of orbital tumor	3
" " foreign body in anterior chamber	1
Exploratory operation for cyst of orbit	1
Miscellaneous	20
<hr/>	
Total	379

REPORT ON SIXTY-FOUR CATARACT EX-
TRACTIONS ACCORDING TO THE
METHOD OF VON GRAEFE,

*Performed at the Massachusetts Charitable Eye and
Ear Infirmary, Boston, in the Year 1872, by the
Surgeons of the Infirmary.**

COMPILED BY

DR. HASKET DERBY, BOSTON.

THE amount of vision obtained has been, as far as possible, recorded. But it must be remembered that many of our patients come from a great distance, and are not in possession of the means to enable them to make a second visit to the city. The vision stated in the table is, therefore, in many cases that ascertained at the period of discharge, and may reasonably be supposed to have subsequently improved.

All our patients belong to the poorer classes, many of them being in an 'extremely destitute condition, and enabled to visit the Infirmary only by the charity of friends. It would be unfair, therefore, to institute a comparison between our figures and those of ophthalmic hospitals which contain private rooms designed to be occupied by the wealthy, whose superior health and greater powers of endurance are well known to furnish more favorable operative statistics. Could the surgeons of the Infirmary have included in this table the results of their private practice during the past twelve months, the percentage of success would doubtless have been materially increased.

* Drs. Gustavus Hay, Hasket Derby, Henry L. Shaw, Francis P. Sprague, B. Joy Jeffries, Robert Willard.

All done under Ether in Office

ANALYSIS OF CASES OF CATARACT OPERATED UPON BY THE METHOD OF VON GRAEFE.

NO.	SEX.	AGE	DATE.	OPERATION.	REMARKS.	DURATION OF TREATMENT.	RESULT.
1	male.	85	Oct. 12, '71.		Much inflammation, causing closure of pupil. Iridectomy five months later.	19 days.	v = $\frac{6}{100}$.
2	male.	80	Oct. 10, '71.	Normal.	Irido-choroiditis one week later.	21 days.	counts fingers.
3	male.	36	Oct. 20, '71.	Normal.	Did extremely well until the patient went out, contrary to orders. Severe inflammation and bleeding into anterior chamber ensued with immediate loss of vision.	24 days.	v = 0.
4	male.	40	Oct. 24, '71.	Normal.		21 days.	v = $\frac{20}{40}$.
5	female.	50	Oct. 31, '71.	Normal.		17 days.	v = $\frac{20}{30}$.
6	female.	50	Nov. 6, '71.	Normal.		18 days.	v = $\frac{30}{30}$.
7	male.	45	Nov. 3, '71.	Normal.	Did well till fourth day, when he left his bed and the ward, contrary to orders. Irido-choroiditis ensued.	27 days.	
8	male.	21	Nov 13, '71.	Normal.		19 days.	v = $\frac{18}{40}$.

NO.	SEX.	AGE.	DATE.	OPERATION.	REMARKS	DURATION OF TREATMENT.	RESULT.
9	male.	65	Nov. 23, '71.	Normal.		28 days.	v = $\frac{3}{8}$.
10	male.	61	Dec. 4, '71.	Normal.	Some opaque capsule remained in pupil.	16 days.	v = $\frac{10}{100}$.
11	female.	62	Dec. 11, '71.	Normal.		31 days.	v = $\frac{10}{100}$.
12	male.	54	Dec. 7, '71.	Normal.	Hemorrhage into anterior chamber in consequence of blow on eye.	30 days.	v = $\frac{100}{100}$.
13	female.	68	Dec. 8, '71.		Patient very restless, wound remained open several days.	29 days.	v = $\frac{4}{100}$.
14	male.	71	Dec. 14, '71.	Normal.	Patient did well till an attack of pyæmia supervened, which proved fatal.		
15	male.	22	Dec. 29, '71.	Normal.	Extensive sclerotic-choroiditis.	26 days.	
16	male.	41	Dec. 30, '71.	Normal.		18 days.	v = $\frac{10}{100}$.
17	male.	58	Jan. 2, '72.	Normal.	Some cortical substance remained in pupil.	17 days.	v = $\frac{10}{100}$.
18	female.	63	Jan. 4, '72.	Some vitreous lost.	Lens cretaceous and dislocated, much pain and inflammation ensued.	55 days.	v = 0.

Cataract Extractions.

19	male.	66	Jan. 5, '72.	Normal.		28 days.	v = $\frac{80}{80}$.
20	male.	63	Jan. 5, '72.	Normal.		4 days.	v = $\frac{15}{15}$.
21	female.	43	Jan. 11, '72.	Normal.	Some opaque capsule remained.	9 days.	Unrecorded.
22	male.	77	Jan. 11, '72.	Normal.		14 days.	v = $\frac{10}{10}$.
23	female.	63	Jan. 25, '72.	Normal.		26 days.	v = $\frac{10}{40}$.
24	male.	50	Feb. 1, '72.	Scoop used.	Capsule in pupil.	26 days.	v = $\frac{15}{15}$.
25	male.	63	Feb. 2, '72.	Normal.		18 days.	v = $\frac{20}{20}$.
26	male.	24	Feb. 13, '72.	Normal.	Much capsule in pupil; secondary operation June 3.	11 days.	v = $\frac{20}{20}$.
27	male.	52	Feb. 15, '72.	Normal.		15 days.	v = $\frac{20}{20}$.
28	male.	30	Feb. 26, '72.		Traumatic cataract, vision 19 days after operation $\frac{10}{60}$. Fundus subsequently became obscured through vitreous opacities which suddenly developed.	20 days.	
29	male.	24	Feb. 29, '72.		Traumatic cataract.	25 days.	v = $\frac{10}{10}$.

N ^o	SEX.	AGE	DATE.	OPERATION.	REMARKS.	DURATION OF TREATMENT.	RESULT.
30	male.	60	Mar. 16, '72.	Normal.		20 days.	v = $\frac{1}{100}$.
31	male.	60	Apr. 2, '72.	Normal.		15 days.	v = $\frac{1}{100}$.
32	male.	42	Mar. 15, '72.	Normal.		11 days.	v = $\frac{1}{60}$.
33	male.	79	Mar. 18, '72.	Normal.	Patient reads Snellen I with + 2 $\frac{1}{2}$.	23 days.	v = $\frac{1}{16}$.
34	male.	70	Mar. 20, '72.	Normal.	Severe attack of colic the night after operation. Suppuration of cornea ensued.	28 days.	v = 0.
35	male.	68	Mar. 22, '72.	Normal.	The iris was cut with the knife and folded in, so it was grasped with the forceps. Wound healed a little slowly. Patient reads Snellen I at 4 inches with + 2 $\frac{1}{2}$.	30 days.	v = $\frac{1}{40}$.
36	male.	62	Mar. 29, '72.	Normal.		25 days.	v = $\frac{1}{3}$.
37	male.	80	Mar. 29, '72.	Normal.		28 days.	v = $\frac{1}{3}$.
38	female.	43	Apr. 2, '72.	Normal.	Cataract followed a blow on temple received two years before. It was found to be soft.	16 days.	v = $\frac{1}{40}$.

39	male.	20	Apr. 4, '72.		Cataract consequent on an explosion of gunpowder, and preceded by iritis. Projection upwards deficient.	22 days.	
40	female.	53	Apr. 9, '72.	Normal.		32 days.	v = $\frac{3}{80}$.
41	male.	71	Apr. 12, '72.	Normal.	Patient reads Snellen I with +2 $\frac{1}{2}$.	19 days.	v = $\frac{1}{4}$.
42	female.	64	Apr. 20, '72.	Normal.	A posterior polar cataract in a patient very feeble.	21 days.	v = $\frac{10}{100}$.
43	male.	55	Apr. 24, '72.		Cataract traumatic, preceded by iritis; and at time of operation partially absorbed.	23 days.	v = $\frac{7}{100}$.
44	female.	16	Apr. 27, '72.			16 days.	Unrecorded.
45	female.	62	May 3, '72.	Normal.		8 days.	v = $\frac{2}{40}$.
46	female.	72	May 2, '72.	Normal.	Iritis supervened, subsequently trachoma, necessitating long after-treatment. Patient reads Snellen 4 $\frac{1}{2}$ with +2.	64 days.	v = $\frac{1}{6}$.
47	female.	50	May 3, '72.	Normal.		22 days.	v = $\frac{2}{80}$.
48	female.	64	May 8, '72.	Normal.	Projection inwards, before operation, uncertain.	19 days.	v = $\frac{3}{80}$.

N ^o	SEX.	Age	DATE.	OPERATION.	REMARKS.	DURATION OF TREATMENT.	RESULT.
49	female.	58	May 8, '72.	Normal.	Catarrhal ophthalmia supervened.	41 days.	v = $\frac{1}{3}$.
50	male.	67	May 21, '72.	Normal.	Irido-choroiditis ensued.	31 days.	
51	male.	80	May 27, '72.	Normal.		13 days.	v = $\frac{2}{100}$.
52	male.	73	May 27, '72.	Normal.		19 days.	Unrecorded.
53	male.	68	June 1, '72.			26 days.	v = $\frac{2}{30}$.
54	male.	57	June 3, '72.	Normal.	Blow on eye six days after operation; much hemorrhage into anterior chamber.	24 days.	v = $\frac{15}{60}$.
55	male.	71	June 3, '72.	Normal.	Hemorrhage into anterior chamber and iritis, capsule in pupil; secondary operation proposed.	39 days.	v = $\frac{5}{60}$.
56	female.	69	June 18, '72.	Normal.	An invalid for years, imbecile, requires to be constantly attended by daughter.	15 days.	v = $\frac{10}{100}$.
57	male.	74	June 28, '72.	Normal.	Some opaque capsule remained in pupil.	14 days.	v = $\frac{1}{30}$.

58	female.	65	July 11, '72.	Normal.	Cortical substance remaining in pupil. To return for secondary operation, but failed to do so.	18 days.	Unrecorded.	
59	female.	64	July 13, '72.	Normal.		14 days.	v = $\frac{2}{6}$.	
60	male.	55	Aug. 6, '72.	Normal.		18 days.	v = $\frac{1}{10}$.	
61	male.	63	Aug. 6, '72.	Normal.	Panophthalmitis Phth. Bulbi one eye from blow.	45 days.	v = 0.	
62	female.	45	Aug. 10, '72.	Normal.	Large floating opacities found in vitreous.	17 days.	v = $\frac{1}{20}$.	
63	male.	23	Aug. 8, '72.		Iritis ensued.	24 days.	v = 0.	
64	male.	74	Sept. 18, '72.		Pupil dilated slowly and slightly under atropine at time of preliminary examination. Probable entire corneal suppuration.	Still under treatment Oct. 1, 1872.		

REMARK.—It would seem from the foregoing table, that the average duration of after-treatment of these cases was 22.6 days; such, however, was not in reality the case, as many patients from remote parts of the country were kept in the Infirmary some time after they were in a condition to leave it, in order that an approximation might be made to the glasses they would ultimately require, and the expense of a second journey from home be avoided.

SUMMARY.

IN the majority of these cases the disease was senile, one case of posterior polar cataract occurring in a patient aged 64. Of the nine comparatively young patients, one suffered from a gunpowder explosion, one from a blow, one from a cut, and one was the subject of sclerotico-choroiditis posterior.

The patients who lost an eye were aged respectively 70, 63, 63, 36, and 23. Iritis and closure of pupil took place with one of 85. Irido-choroiditis with one of 80 and one of 67; hemorrhage into anterior chamber with one of 71, while one of 71 died of pyæmia.

During the healing process iritis happened 3 times, irido-choroiditis 3, vitreous opacities developed once, and in one case suppuration of the cornea supervened on an attack of colic. One patient went out prematurely, in disobedience to orders, and lost his eye.

Seven patients required a secondary operation:—

I	aged 85,	for consequences of iritis.
I	“ 71,	for capsular obstructions.
I	“ 61,	“ “
I	“ 57,	“ “
I	“ 50,	“ “
I	“ 24,	“ “
I	“ 21,	“ “

The results of vision are as follows. Each fraction is given as recorded, and, where not reduced to lowest terms, expresses of course the distance from the test in which the patient stood:—

$\frac{2}{3} \frac{0}{0}$	1	$\frac{1}{6} \frac{0}{0}$	3
$\frac{2}{3} \frac{0}{0}$	1	$\frac{1}{10} \frac{5}{0}$	1
$\frac{2}{3} \frac{0}{0}$	1	$\frac{1}{7}$	1
$\frac{4}{4} \frac{0}{0}$	2	$\frac{1}{8} \frac{0}{0}$	4
$\frac{1}{2}$	4	$\frac{5}{4} \frac{0}{0}$	1
$\frac{5}{5} \frac{0}{0}$	4	$\frac{1}{10} \frac{0}{0}$	4
$\frac{6}{6} \frac{0}{0}$	2	$\frac{5}{5} \frac{0}{0}$	1
$\frac{1}{3} \frac{0}{0}$	1	$\frac{1}{10}$	1
$\frac{2}{6} \frac{5}{0}$	1	$\frac{9}{10} \frac{0}{0}$	1
$\frac{1}{4} \frac{2}{0}$	1	$\frac{1}{20} \frac{5}{0}$	1
$\frac{1}{5} \frac{5}{0}$	2	$\frac{5}{10} \frac{0}{0}$	1
$\frac{1}{6} \frac{5}{0}$	2	$\frac{1}{2}$	1
$\frac{1}{4}$	1	0.....	5
$\frac{1}{4} \frac{0}{0}$	2	Died.....	1
$\frac{2}{8} \frac{0}{0}$	1		—
$\frac{2}{10} \frac{0}{0}$	2		54

Of the remaining ten unrecorded cases, two failed to present themselves for a secondary operation, which would undoubtedly have restored them to useful vision. One had had an attack of irido-choroiditis, and when last heard from was in an unpromising condition. The remainder left the Infirmary before their vision could be noted, or the records relating to them filled out.

Of the two cases of *congenital malformation*, the more interesting was that of the right ear in a girl three years of age, the left ear being perfectly normal, and the hearing good. In this case the long diameter of the auricle formed an angle of 45° with the vertical plane of the head; the position of the helix was barely indicated by a slight reduplication of the superior portion of the auricle, and the anti-helix represented by a slight elevation above the superior border of the concha; the whole of this portion of the auricle resembled that of the chimpanzee, or of the cases of dementia given by Prof. Laycock. The meatus was represented by a slight depression bounded anteriorly by a well-formed tragus, which latter was supplemented anteriorly by a small cartilaginous nodule, as in the cases described by Gruber. The perception for musical tones on this side of the head seemed to be good, and the integument covering the meatus could easily be depressed by means of a probe. Under these circumstances an exploratory operation was advised, but unfortunately the patient did not return at the time appointed. The family history gave no corresponding cases of malformation, and the patient herself was perfectly healthy and otherwise well developed.

The case of *spurious othæmatoma* occurred in a woman thirty years of age who received a severe blow upon the left ear from a fall, fracturing the cartilage and causing extravasation on both anterior and posterior surfaces of the auricle. Anteriorly the swelling extended from the fossa of the helix to the lower border of the concha, and posteriorly from the curve of the helix to about the centre of the concha.

Shortly after the accident, and following exposure, the auricle became red and painful; an opening one inch in length was made into the lower portion of the posterior swelling, resulting in the discharge of about one ounce of laudable pus, and the complete emptying of both sacs. The cavity was syringed with a weak solution of carbolic acid, and a cloth tent introduced; this was continued for about a week, after which, the walls of the sac being kept in apposition by means of compress and bandage, and the opening allowed to heal, the patient recovered rapidly with comparatively little deformity, the depression of the concha being only partially obliterated, and the elevation of the anti-helix being plainly discernible.

The *fibrous tumor* of the lobe occurred in a negro woman twenty-three years of age ; that removed from the right lobe by means of the usual triangular cuts with the scissors was about an inch in diameter, and included the perforation which had been made for an ear-ring. The cuts were made to follow the outline of the tumor as closely as possible, and the edges brought together by means of straps, uniting by first intention for about a third of their extent, and healing finally with but little deformity. A fibrous tumor of nearly the same size was subsequently removed from the left ear of the same patient by Dr. Shaw.

Of the cases of *accumulation of cerumen* in the meatus in males, 39 occurred in the right ear, 53 in the left ear, and 59 in both ears ; in females, 24 in the right ear, 33 in the left ear, and 27 in both ears. The average age of the cases collectively was 35 years. In the females, as a rule, the trouble had been of short duration, and the accumulated mass was soft and easily removed ; in the males, on the other hand, the cerumen plugs were generally more firmly impacted, and the cerumen mingled throughout with fine dust or other foreign matter, which was sufficient, on closer examination, to indicate the occupation of the patient. Such cases occurred principally in coal-heavers and stokers, machinists, wood-turners, street-laborers, and stone-workers. The more obstinate cases were found usually in old men of the laboring class in whom there was a tendency to eczema of the auricle and meatus ; in such cases it was the practice to soak the cerumen plug thoroughly with warm water, and then to pass a flattened probe between the ceruminous mass and the floor of the meatus to the depth of half an inch, thus making an opening for the entrance of the water in syringing.

Other instruments than the syringe were rarely employed in the extraction of these plugs, and as a preliminary treatment tepid water, as a rule, was found to be a better solvent than any of the solutions recommended by various writers. In clinical practice, where it is necessary to treat a large number of cases in a few hours, much time may be saved by filling the meatus with warm water, and introducing a large-sized Politzer's manometer, which may be refilled from time to time until the softening process is complete.

Among the more remarkable cases was one in a man 76 years of age ; two firm plugs of cerumen filling the inner end of the meatus being found to be covered with a dense growth of *aspergillus flavescens*, the removal of the masses permanently relieved the symptoms characteristic of the presence of this fungus. The foreign bodies, consisting of beans, pins, insects, a piece of slate pencil, a round glass button and a small cockle-shell, were removed by syringing, with the exception of the three latter, in which it was necessary to resort to the forceps, the method of Löwenberg, and the blunt hook before the extraction could be effected.

Of the cases of *eczema of the auricle* and meatus, about 60 per cent. occurred in children under ten years of age, and of this number two-thirds were females, the disease affecting, as a rule, children of the very poor, poorly nourished, and unclean. The treatment in these cases consisted usually in the application of olive oil, which was allowed to remain over night, and washed off with weak warm soap-water in the morning ; one or two applications were generally sufficient to soften the large crusts, and the subsequent treatment consisted principally in the use of the benzoated oxide of zinc ointment, as being more easy of application than any form

of wash, and in the more severe cases, in addition, a daily dressing of the parts affected with charpie dipped in a mixture of glycerine and water, to which the sulphocarbolate of zinc was sometimes added. In the adult cases the affection could usually be traced to exciting causes, among which the pernicious practice of cleansing the ear with a pin or ear-spoon played a prominent part.

The majority of the cases demanded general as well as local treatment, such as the use of tonics, preference being given to preparations of iron and quinine, and a more generous diet.

One of the cases of *wound of the meatus* occurred in a girl 11 years of age, who was recovering from a slight inflammation of the right membrana tympani. The point of a hard-rubber syringe had been thrust forcibly into the ear, tearing the integument of the meatus to the depth of half an inch, and rupturing the membrana tympani. The accident was followed by severe, deep-seated lancinating pain, accompanied by vomiting and occasional vertigo; the patient was brought to the clinic immediately after the occurrence of this accident, and an attempt to syringe the ear resulted in a severe attack of vomiting and considerable dizziness and dimness of vision. A leech was applied in front of the tragus, and instillations of warm water and the application of an ointment of the extract of hyoscyamus and morphia over the mastoid recommended. On the day following the pain was much relieved and the nausea and vertigo had not recurred; the tepid instillations were continued until the blood coagula had been entirely removed, when the wounds both of the meatus and membrana tympani healed readily with but slight impairment of hearing.

The second case was that of a laboring man, 36 years of age, who received a severe blow upon the region of the left mastoid, resulting in a slight wound of the meatus and an extensive rupture of the membrana tympani; there was considerable hemorrhage, which was followed one hour later by severe deep-seated pain, accompanied by nausea and

vomiting. On the second day a thin discharge appeared ; this soon became purulent and offensive, and with the change in the character of the otorrhœa there occurred occasional attacks of vertigo, accompanied by deep-seated throbbing pain. At the time of admission the meatus was found to be somewhat congested, and the membrana tympani perforated, and giving passage to a copious purulent secretion. Syringing with the tepid water, the instillation of a warm solution of sulpho-carbolate of zinc, six grains to the ounce, and the internal administration of the hydrate of chloral relieved the pain and accompanying symptoms, and diminished the quantity and fetor of the discharge ; the final result being a closure of the perforation and partial restoration of hearing.

The cases of *otitis externa circumscripta* were equally divided between males and females, the left being the affected ear in about 50 per cent of both. In both sexes the inflammation of the meatus accompanied some disturbance of the digestive organs, and was generally attended by constipation, in all but two or three cases there was a tendency to further development of furunculi, which was combated by general treatment, including a gentle laxative, tonics, and a more generous diet. The local treatment consisted, as a rule, in free incision and subsequent syringing with warm water. The full development of furunculi was sometimes prevented by the application of a saturated solution of nitrate of silver.

Of *otitis externa diffusa* over 57 per cent. were in females ; the majority of the cases in both sexes occurring during the autumn and winter months, and affecting one side only.

As in the preceding affection something more than local treatment was required in most of the cases, the

patients being usually of the poorer class and ill nourished; in such as did not belong especially to this class, the trouble could be traced to some special cause, as direct injury to the part, or excessive exposure. Most of the patients had been suffering from severe pain for one or two days before applying for relief, and the disease was consequently at that stage which is characterized by extreme congestion and great tenderness, and to which the treatment recommended and employed by Gruber is especially applicable, namely, free incision of the congested parts, from one to three cuts, varying from a quarter to three quarters of an inch in length, being made from within outwards parallel to the long axis of the meatus, bleeding being encouraged by subsequent syringing with warm water. Aside from the almost immediate relief afforded by this method of treatment, it possesses the further advantage of arresting the progress of the inflammation, and preventing structural changes which might have a subsequent effect upon the hearing. One of its drawbacks is the possibility of the recurrence of granulations springing from the edges of the cuts. This complication, however, generally accompanies only cases in which the incision has been delayed until the parts have become œdematous.

The cases recorded under the heading *myringitis*, were those in which the membrana tympani was especially the seat of inflammation, and the affection being one which seldom occurs uncomplicated, a more careful record was kept with the view of ascertaining so far as possible the cause. Of the thirty-six cases recorded, 8

occurred in the month of August, all of them in males, of whom 7 were under thirty years of age; and in 5 of these the inflammation was directly traceable to sea-bathing as the immediate cause. In July there were 6 cases of myringitis, all of them in males, and in 2 cases traceable to sea-bathing. In March, April, and May preceding, there were no cases recorded.

In February, 4 cases, 3 being females. In January, 8 cases, 5 males and 3 females; of these latter, all of the males, with one exception, were under thirty years of age, and engaged in occupations which implied exposure to cold and wet, and to sudden changes of temperature.

In December, 2 cases, both females, the disease being directly traceable to exposure to inclement weather. A further review shows that those cases of myringitis occurring during summer months were principally in young males, and traceable to a cause pertaining at that season, while of the cases occurring during the winter months, more than half were females under thirty years of age; and of the males 50 per cent. were children under ten years of age, and the remainder young men whose occupations rendered them liable to exposure.

A comparison with private records confirms the conclusions which would be drawn from the above table with regard to the ætiology of myringitis; the majority of cases, during the summer months, occurring in young males during the season of sea-bathing, and more or less directly attributable to the effect of cold salt-water entering the ear; during the winter months myringitis occurred more frequently in young females with the

advent of snowy weather, and with the cold wet weather of spring-time, there being fewer cases, as a rule, in the interim during settled cold weather, and these cases occurring principally in males as the result of especial exposure. The majority of the cases applying at the Infirmary were in the acute stage of the disease, the membrana tympani being much congested and swollen, the point of insertion of the malleus being represented by a depression, and the inflammation being accompanied by considerable congestion of the meatus; the hearing had generally decreased to a minimum, being on an average from $\frac{1}{7\frac{1}{2}}$ to $\frac{5}{7\frac{1}{2}}$ for the watch. The immediate treatment in most of these cases consisted in *free scarification of the membrana tympani*, from two to four cuts being made in each case, the points selected for incision being those of greatest prominence or greatest degree of congestion, care being taken not to cut through into the tympanum. The amount of hemorrhage was in no case sufficient to fill the inner end of the meatus, but the pain and sensation of fullness were almost immediately diminished and the hearing increased.

Subsequent treatment consisted in the use of the air-douche or catheter, preferably the former, and such general treatment and attention to the condition of the pharynx as the case required. As a rule, it was not necessary to repeat the scarification.

Of the cases of *otitis media purulenta* 51 per cent. were males of an average age of 21 years; the average age of females suffering from the same disease being 15 years; of males 20 per cent. and of females 36 per cent.

were under 10 years of age. In about 25 per cent. of these cases, in both sexes, the purulent inflammation was accompanied by the presence of granulations springing from the middle ear, or from the outer surface of the membrana tympani.

In the majority of these latter cases, the otorrhœa had persisted for a considerable time, but in a few patients in whom perforation of the membrana tympani and purulent discharge were found accompanied by well-marked granulations ; the commencement of the disease dated back from two to three weeks only. Such cases occurred principally during the winter months in young males, and the granulations were generally noticeable for their exuberance, and for the readiness with which they disappeared under the application of nitrate of silver.

Among the more obstinate cases were two in which there existed in addition to perforation of the lower portion of the membrana tympani an opening above the short process of the malleus. In both of these cases the larger portion of the purulent discharge found its exit from the middle ear through the inferior opening, while the cavity above was filled with soft granulations, which could be reached only through the superior opening. In addition to the usual treatment, strong solutions of the sulpho-carbolate of zinc were injected through the latter perforation by means of a middle ear-syringe, and pledgets of cotton-wool soaked in a saturated solution of nitrate of silver were introduced every alternate day. Under this treatment the granulations finally disappeared, the discharge diminished, and a very vexatious complication was overcome.

The treatment in uncomplicated cases of purulent otorrhœa consisted in frequent and thorough syringing with tepid water and the instillation of solutions of the sulpho-carbolate of zinc, of from four to ten grains to the ounce; this double salt seems to have a more beneficial effect in such cases than solutions of the sulphate of zinc of the same strength, and possesses the still further advantage of more appreciably diminishing the fetor of the discharge.

In long-continued cases the saturated solution of nitrate of silver was applied with good results, especially in children, and in several cases where the discharge was distinctly muco-purulent Yearsley's treatment of packing the middle ear with dry cotton wool had a beneficial effect. In such cases it was the practice to cleanse the ear thoroughly by means of the air douche and syringing, and after drying to pass small pledgets of fine jewellers' wool through the perforation in the membrana tympani, packing them in by means of a probe. These could be easily removed on the following day and the packing repeated. The discharge gradually diminished in quantity and became more tenacious, so that towards the latter part of the treatment it became necessary to moisten the pledgets slightly before extracting.

Of the more serious cases of purulent inflammation of the middle ear there were none in which it became necessary to open into the mastoid cells, although redness, swelling and tenderness over the mastoid region were not rare accompaniments during the winter months. These patients were taken into the Hospital, if possible,

and leeches freely applied behind the ear, in each case with relief and a subsidence of the alarming symptoms.

Of the cases of *otitis media catarrhalis chronica* 52 p. c. were males, with an average age of thirty-five years ; and 48 p. c. females, with an average age of thirty-four years ; and in about 95 p. c. of the cases in both sexes tinnitus aurium was or had been a prominent symptom of the existence of disease. In addition to the usual application to the pharynx and naso-pharyngeal space ordinarily required in these cases, and the use of the air douche and catheter, with the injection of medicated solutions and vapors, repeated myringotomy was resorted to by the writer in several cases.

The cases chosen for this treatment were those in which the disease had persisted for a long time, the hearing being very considerably diminished and the Eustachian tube with difficulty permeable, the perception for sound conveyed through the bones of the head, however, being good, and the membrana tympani concave, thickened, and opaque, but without congestion, calcareous deposits or further structural change. The operation was performed with the adjustable myringotome, and repeated every third or fourth day, different portions of the membrane being chosen for each incision ; during the experiment all other treatment, with exception of the use of the air douche, was suspended. In all cases the openings healed readily within forty-eight hours, and without perceptible improvement, until after the third or fourth incision had been made, when the Eustachian tube was found to have become much more readily permeable, the hearing to have increased in

varying degree, and in some cases the tinnitus aurium to have sensibly diminished. The theoretical grounds on which this treatment was instituted, and the reasons for improvement, probably are the diminished resistance to passage of air into the middle ear through the Eustachian tube, the membrana tympani being perforated; and, secondly, the irritation consequent upon the repeated incisions resulting in a diminution of the thickening of the membrana tympani. In none of the above cases was there any liberation of secretion in the middle ear by means of the incisions which would account for the improvement in hearing; these cases, moreover, improved still further under subsequent treatment by means of the catheter.

In the cases of *serous accumulation* within the middle ear, of which six were males and two females, myringotomy was also resorted to as the readiest means of arriving at an early termination of the disease, in all cases with beneficial results, and, so far as could be determined, without subsequent detriment to the hearing. In one case in which the peculiar form of sac described by Politzer* persisted after the liberation of the secretion, repeated incisions were made which resulted in a contraction of the sac and considerable improvement in hearing.

The two cases of *otitis intermittens* occurred in males who were subject to malarial fever. The affection was characterized by pain of a neuralgic character, conges-

* *Beleuchtungsbilder des Trommelfells.* The Membrana Tympani in Health and Disease. Translated by Drs. A. Mathewson and H. G. Newton. W. Wood & Co., New York. 1869.

tion of the membrana tympani, and accumulation of secretion within the middle ear; the attack was in each case coincident with general malarial symptoms, and followed the course of the febrile attacks in its increase and abatement. In both cases local treatment of the aural trouble gave no relief until supplemented by the administration of quinine, when the aural symptoms disappeared with the subsidence of the primary affection.

Of the cases of *deaf-mutism* 61 per cent. were males; in four of these cases the loss of hearing dated from an otitis media purulenta following scarlet fever, and in three cases, in which the membrana tympani was of normal appearance, the deafness was traceable to a disease, the symptoms of which agreed with those given by Voltolini* as characteristic of otitis labyrinthica.

In connection with the cases of perforation of the membrana tympani a series of *experiments* was instituted *with regard to perception of high musical tones*, a summary of which has already been published.† Cases in which it was necessary to perforate the membrana tympani were also availed of for the same purpose, the object being to account, if possible, for the discrepancy in the statements of various authors with regard to the limit of perception of high musical tones, and also the limit of such perceptions, and the conditions of the sound conducting portion of the ear favorable thereto.

For this purpose a series of König's rods of white tempered steel, ranging from 35,000 v. s. to 85,000 v. s.

* Monatsschrift für Ohrenheilkunde.

† Transactions of the American Otological Society, 1872.

was employed, the rods being suspended at a uniform distance from the ear by means of loops of fine wire and set in vibration by a stroke from a steel hammer. The results obtained were such as not only to stimulate to still further investigation, but to establish the value of the instrument for diagnostic purposes. In the majority of the cases of chronic catarrhal inflammation of the middle ear the limit of perception terminated at 35,000 v. s.; in the exceptional cases it reached 40,000 v. s., and even 50,000 v. s., but in these cases the membrana tympani was found to be very concave, uniformly thickened, and varying its position but slightly under the action of either the air douche or catheter. This correspondence between the perception of a higher tone and a concave membrana tympani would be accounted for by the increased tension of a membrane of uniform thickness, responding more readily to shorter sound waves. The same point was illustrated in a case of *voluntary contraction* of the musculus tensor tympani.

The patient was a woman thirty years of age, who applied at the Infirmary for relief from a slight pharyngeal catarrh. The membrana tympani was transparent and of normal appearance, with exception of a slight central depression, the result of temporary closure of the Eustachian tube.

Upon voluntary contraction of the muscle the long process of the malleus was seen to move inwards, together with the central portion of the membrana tympani, the hearing for the voice and for all deeper tones diminished, and that for higher tones increased from 35,000 v. s. to 40,000 v. s.

The same observation was confirmed in another case occurring in private practice, in which the perception for high tones increased from 40,000 v. s. to 50,000 v. s.

during contraction of the musculus tensor tympani, the hearing for deeper tones proportionately decreasing. In this case the hearing was fully normal when the muscle was not voluntarily contracted. In cases of perforation of the membrana tympani in which the opening had become closed by the formation of a cicatrix, the perception for high tones was increased, provided, however, that the cicatrix was firm and tense; if at all relaxed the perception for higher tones seemed to be diminished; the only exceptions to this rule occurred in cases where the cicatrix was in contact with the descending process of the incus; in one case, in which a band of cicatricial tissue extended from the posterior edge of the perforation to the lower end of the long process of the incus a tone of 55,000 v. s. was distinctly heard. In two of the three cases of otitis media catarrhalis in which the test with the König's rods was supplemented by the application of the galvanic current the perception for high tones was increased 5,000 v. s. during the passage of the current, the cathode being applied in front of the ear and the anode held in the hand of the opposite side. The same increase of perception under the use of the cathode with from four to eight cells of a Stöhrer battery was found in corresponding cases in private practice.

Of the cases at the Infirmary during the past year in which *electricity* was employed either *as a means of diagnosis or of treatment*, two may be cited as showing especially beneficial results.

The first patient, a female, sixteen years of age, applied at the Infirmary, in July, for relief from deafness of the left ear, which had been

first noticed six years previously, and had gradually and steadily increased without tinnitus aurium or other subjective symptoms.

The watch (72 inches normal hearing distance) was not heard when pressed upon the auricle, or in contact with the head; the tuning-fork was heard only slightly. The meatus was normal, the membrana tympana somewhat concave, and very slightly opaque, and the Eustachian tube free. The general health was good, with exception of a slight tendency to constipation; the menses, which had appeared two years previously, were regular. The current from six cells of a Stöhrer battery was applied at intervals of three days, the cathode in each case being applied in front of the tragus; there was no dizziness and no subjective symptom, with exception of a slight ringing on the opening of the cathode. Following the first application of electricity, the hearing increased to contact for the watch, and continued to increase steadily with each application until the eighth sitting, having reached a distance of eighteen inches, when the patient unfortunately passed from observation.

In the second case, that of a woman thirty years of age, both ears were affected, the hearing having steadily diminished during a period of four years. Within three months there had been occasional tinnitus aurium. On both sides the meatus was normal, and the membrana tympani very slightly opaque, and somewhat concave. On the right side there was no perception whatever for the watch, while on the left the perception was good, and the watch was heard at a distance of four inches from the auricle. The general health was good, and there was nothing in the history or the appearances to account for the deafness, with exception of a slight catarrhal trouble of the middle ear; there was, moreover, no improvement in hearing following the use of the air douche.

No formula of reaction could be obtained on account of the vertigo accompanying the use of more than eight cells of the Stöhrer battery; but under the use of the cathode, with six cells, the hearing improved in the right ear to contact with the watch, and in the left ear to six inches for the watch.

The same current was applied at intervals of five days from August 5th to August 20th. at which date the hearing in the right ear re-

mained the same, but in the left ear had increased to twenty-eight inches. The patient was next seen on November 6th. The hearing had not diminished, and was still further increased to thirty-six inches.

It was necessary to refer many interesting cases of deafness associated with cerebral disease, and with injury to the cranium, to other institutions, on account of the necessity of retaining all available beds either for operative cases in the ophthalmic department, or for cases of accident requiring hospital treatment.

