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Original Communications

THE VALUE OF NITROGLYCERIN AS A PREVENTATIVE OF HEMOPTYSIS IN PULMONARY TUBERCULOSIS

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There is no symptom nor complication in the course of a case of pulmonary tuberculosis which causes so much alarm to the patient and anxiety to the attending physician as hemoptysis. No matter how scanty the hemorrhage may be, it is not to be regarded lightly. In the vast majority of cases a recurrence is to be expected. And if it be at all profuse the possibility of death from suffocation, from subsequent exhaustion, or bronchopneumonia is never to be disregarded.

The frequency of this complication may be said to be about 60 per cent. of all cases. Varying estimates are given by different authorities, ranging from 25 to 80 per cent. From the records of 4,466 cases at the Phipps Institute it occurred in 49.9 per cent. At the Adirondack Cottage Sanitorium, in 1795 cases it occurred in 44.1 per cent. Of one hundred consecutive cases admitted to the Toronto Free Hospital previous to May 1st, 1908, the records show a percentage of 47.

These figures show the frequency of this symptom as observed in institutions—a frequency which is perhaps surprising, and somewhat greater than ordinary clinical experience would suggest. A common observation, moreover, in connection with the occurrence of hemoptysis in institutions has been that they do not often occur as isolated cases.

The general rule is that they appear as it were in epidemics. This has suggested that some common factor is a causative agent, and different authorities and investigators have suggested as this common factor (1) the presence of mixed infection, or (2) atmospheric changes.

In regard to mixed infection, all that can be said as the result of the investigations that have been made is that in a certain percentage of cases of hemoptysis mixed infection has been found. In no case, however, as yet has it been proven to be a causative agent, nor have the advocates of this theory given any explanation which adequately covers those cases in which mixed infection is present over long periods without hemoptysis. Nor does any such theory explain why as high a percentage as fifty of all cases of pulmonary tuberculosis never have hemoptysis. Special work has been done along this line at the Phipps Institute, and their conclusion on the point is that, "There is little doubt but that hemoptysis is mostly due to a mixed infection. It is probable that the offending agent most frequently is the pneumococcus. The pneumococcus seems to have a peculiar faculty of bringing about an exudation of the blood."

Some hemorrhages no doubt are due to ruptured blood vessels, but even in these it is probable that micro-organisms have something to do with the softening and breaking of the blood-vessels. Aneurismal blood-vessels frequently exist in large cavities. They are subjected to severe strain in coughing, but rarely rupture. One cannot help but think that when they do rupture it is because their walls have undergone a change.

In regard to atmospheric changes, it has been the observation of the writer that hemoptyses have usually occurred in groups of from three to ten. As a matter of fact out of one hundred consecutive hemoptyses only five occurred as isolated cases. They have generally occurred when the barometric pressure was extremely low or high, or following rapid changes from one extreme to the other; when the degree of humidity was great; when the amount of precipitation was large; and when the wind was of high velocity, and frequently from an easterly direction.

For example, in May, 1908, hemoptysis occurred at the Toronto Free Hospital for Consumptives on the seventh (8 cases), the fifteenth (1 case), the sixteenth (2 cases), the thirtieth (1 case), and the thirty-first (1 case), each of which corresponds with significant atmospheric conditions.

For on looking over the records of the Meteorological Station, Toronto, which were very kindly placed at our disposal by Mr. R. F. Stupart, Director, we find: On the seventh the degree of humidity great, the amount of precipitation large, the barometric

pressure falling, and an east wind of the highest velocity for the month.

On the fifteenth and sixteenth we find the degree of humidity great, and an east wind of high velocity.

On the thirtieth and thirty-first we find the degree of humidity great, the largest amount of precipitation for the month, and a variable wind shifting from east to west.

In January, 1909, hemoptysis occurred on the seventh (1 case), the seventeenth (7 cases), the eighteenth (2 cases), the nineteenth (2 cases), the twentieth (1 case), the twenty-second (1 case), the twenty-sixth (1 case), the twenty-seventh (1 case), the twenty-eighth (2 cases), the twenty-ninth (2 cases), the thirty-first (1 case).

On the seventh we find the highest barometric pressure for the month immediately following a low pressure—a rise of .85 in the minimum pressure, and a great degree of humidity.

On the seventeenth we find a rapid fall of barometric pressure, the second largest amount of precipitation for the month, preceded on the sixteenth by a north-east wind of very high velocity.

On the eighteenth and nineteenth we find a rapid change from high to low barometric pressure, and a great degree of humidity.

On the twenty-second the hemoptysis was due to over-exertion.

From the twenty-sixth to the thirty-first we find rapid changes of barometric pressure. We find the lowest pressure and the highest velocity of the wind for the month on the twenty-ninth. We also find a very high degree of humidity, and precipitation the largest for the month on the twenty-ninth, with north and east winds of fairly high velocity. The conditions are shown on the following charts:

—May, 1908.—

Date	Barometric Pressure Max.	Barometric Pressure Min.	Humidity Max.	Precipitation	Wind Velo.	Direction	Hemoptyses
1	29.25	29.16	64	.01	33	N.W.	
2	29.32	29.16	92	.03	32	W.	
3	29.65	29.48	64		19	N.W.	
4	29.75	29.66	49		11	E.	
5	29.82	29.72	39		18	E.	
6	29.64	29.47	99	.38	29	E.	
7	29.38	29.21	98	.85	41	E.	8
8	29.20	29.15	78	.04	22	E.	
9	29.31	29.07	79	.08	41	N.	
10	29.45	29.39	58		29	N.W.	

Date	Barometric Max.	Pressure Min.	Humidity Max.	Precipitation	Wind Velo.	Direction	Hemoptyses
11	29.42	29.30	64	.05	22	S.W.	
12	29.51	29.17	89	.04	29	S.W.	
13	29.80	29.71	95	.35	18	E.	
14	29.82	29.75	93	.15	24	E.	
15	29.77	29.72	96	.1	28	E.	1
16	29.72	29.61	98	.19	15	S.W.	2
17	29.74	29.68	85		9	W.	
18	29.74	29.45	79		25	E.	
19	29.41	29.38	97	.25	19	E.	
20	29.61	29.43	86		15	E.	
21	29.71	29.66	95	.08	23	E.	
22	29.73	29.67	93		21	E.	
23	29.85	29.75	83		12	N.W.	
24	29.92	29.87	73		10	N.	
25	29.85	29.57	70		18	E.	
26	29.53	29.35	95	.19	12	C.	
27	29.52	29.38	94	.19	12	C.	
28	29.53	29.40	88		13	E.	
29	29.51	29.45	84	.32	13	W.	
30	29.45	29.26	99	.33	13	S.E.	1
31	29.51	29.29	97	1.2	17	W.	1
			—January, 1909.—				
1	29.88	29.84	98		27	W.	
2	29.89	29.79	84		36	W.	
3	29.74	29.61	90		18	W.	
4	29.65	29.41	96		8	S.	
5	29.41	29.30	100	.24	17	W.	
6	29.95	29.30	88	.01	30	S	
7	30.31	30.15	95	.01	12	N.	
8	30.18	29.96	75	.03	20	S.	
9	29.86	29.70	90	.01	21	W.	
10	29.71	29.52	98	.06	8	S.W.	
11	29.93	29.64	83	.02	22	N.W.	
12	30.17	29.84	97	.40	12	N.	
13	30.27	30.00	93	.01	25	S.	
14	29.84	29.63	97	.02	25	S.W.	
15	30.28	29.86	78		20	N.	
16	30.31	30.01	91	.20	36	N.E.	
17	29.90	29.76	88	.46	25	N.W.	7
18	30.23	30.08	95		18	N.	2
19	29.82	29.56	86		26	S.W.	2
20	29.88	29.70	88		11	S.W.	1
21	29.71	29.63	90		16	S.E.	

Date	Barometric Max.	Pressure Min.	Humidity Max.	Precipitation	Wind Velo.	Direction	Hemoptyses
22	29.76	29.70	99	.33	11	E.	1
23	29.61	29.49	100	.21	14	S.E.	
24	29.47	29.33	100	.01	34	S.	
25	29.58	29.44	79		37	W.	
26	29.72	29.55	79		24	W.	1
27	29.39	29.17	88	.02	33	N.W.	1
28	29.60	29.48	97		16	N.	2
29	29.27	28.93	95	.49	49	N.E.	1
30	29.40	28.94	100	.13	28	N.	
31	30.10	29.59	100		33	N.	1

It is of interest to note further that cases admitted from different parts of the province have given a positive history of hemoptyses occurring on the same dates as those here, and the records of other institutions show co-incident hemoptyses.

As an example, it may be said that on January 17th, 1909, there were:

4 cases at the Toronto Free Hospital.
3 cases at the King Edward Sanatorium.
3 cases at the Muskoka Hospital; and
2 cases from Toronto,
1 case from Niagara Falls,
1 case from Wellington.
1 case from Brantford,
1 case from Weston, subsequently admitted to the hospital, all of whom were positive as to the date above mentioned.

Unless these cases are to be considered as mere coincidences, they must be regarded as showing in this connection that great or rapid changes in atmospheric conditions are associated with the incidence of hemoptysis. And the explanation would seem to be that, while in health rapid changes have an appreciable but not serious effect because the body through the nervous system is able to accommodate itself to the changed conditions, in disease this power of accommodation is lacking and equilibrium is suddenly disturbed.

And whatever may be the exciting cause of the hemorrhage, it seems reasonable to suppose that the blood-pressure in the pulmonary area plays an important part in its production. About blood-pressure in the lesser circulation, either in health or disease, very little is known. Janeway, however, says that, "In the lesser circulation, as is well known, much lower pressures obtain, since this is true for the right ventricle as compared with the left. The direct estimation of blood-pressure in the pulmonary artery is very difficult, without producing markedly

abnormal conditions. The best experiments by Bentner, Lichtheim, Bradford and Dean, and Knoll, have shown values, as compared with the aortic pressure, between 1:2.6 and 1:13.4. These were in the rabbit, dog and cat. In all probability it does not average more than one-fifth the height of mean aortic pressure."

As to blood-pressure in tuberculosis, the same authority may be quoted as follows: "In tuberculosis the early studies of Marfan led him to believe that low tension is one of the commonest symptoms of phthisis, appearing even in the incipient stage."

"Since that time systematic observations on the blood-pressure of consumptives have been published from several European sanitoria, by Burckhardt, John, and Naumann, all with the Gärtner tonometer. All agree that hypotension is the rule in the more advanced cases, running roughly parallel with the impairment of general bodily vigor. Burckhardt, in rather a small series, found the pressure regularly diminished early in the second stage of the disease, and in advanced phthisis, rapid pulse and subnormal tension were invariable."

Naumann studied one hundred cases, from which all who had fever, arterio-sclerosis, heart lesions, pleural adhesions, or albumin or sugar in the urine, were carefully excluded. They were, therefore, patients with chronic, practically inactive and uncomplicated pulmonary tuberculosis. In this they differ from Burckhardt's, most of whom had an active febrile process.

Of these one hundred patients,

In sixty-nine the blood-pressure was over 130 mm. (G.).

In thirteen the blood-pressure was 115 to 130 mm. (G.).

In eighteen the blood-pressure was under 115 mm. (G.).

Naumann considers these high, normal, and subnormal values.

It does not seem possible, however, to assign any limits of blood-presure as being the normal condition found in pulmonary tuberculosis.

The following are the results of 50 cases taken at random from patients in residence at the Toronto Free Hospital for Consumptives:

Name.	Readings.	Name.	Readings.
S. S.	124 mm.	A. G.	106 mm.
H. M.	119 mm.	J. D.	120 mm.
R. C.	100 mm.	J. P.	95 mm.
C. D.	106 mm.	C. R.	106 mm.
W. S.	120 mm.	L. L.	122 mm.
L. H.	104 mm.	L. A.	95 mm.
J. T.	110 mm.	J. B.	120 mm.
A. W.	96 mm.	E. P.	88 mm.

Name	Readings	Name	Readings
W. S.	102 mm.	L. W.	132 mm.
W. H.	108 mm.	M. D.	108 mm.
S. G.	104 mm.	R. S.	124 mm.
M. L.	108 mm.	E. D.	124 mm.
L. P.	76 mm.	M. E.	128 mm.
W. G.	140 mm.	R. D.	106 mm.
M. P.	118 mm.	J. C.	116 mm.
E. T.	88 mm.	J. M.	128 mm.
K. J.	96 mm.	E. W.	66 mm.
E. D.	96 mm.	M. G.	116 mm.
S. D.	110 mm.	E. V.	116 mm.
G. S.	120 mm.	C. P.	128 mm.
C. M.	120 mm.	C. G.	118 mm.
R. W.	134 mm.	M. M.	108 mm.
M. O.	140 mm.	R. W.	138 mm.
L. B.	130 mm.	H. M.	120 mm.
J. S.	145 mm.	E. H.	128 mm.

The following are like readings from individuals apparently in good health.

Name.	Readings.	Name.	Readings.
W. D.	125 mm.	K. J.	110 mm.
F. M.	126 mm.	M. B.	120 mm.
W. B.	132 mm.	F. H.	127 mm.
E. D.	85 mm.	M. K.	120 mm.

These show a wide range and demonstrate that the personal element is much stronger than any due to the disease.

"Naumann attempts to correlate the higher tension in sixty-nine of his cases with the tendency to hemoptysis. Of fifty-one patients who had bleeding at some time 86.2 per cent. showed a pressure above 130 mm. Of these 44 with hypertension (?) and haemoptysis. 24 were in the early stage."

Although it is at the present time practically impossible to accurately measure the blood-pressure in the pulmonary area, there are reasons for thinking that in tuberculosis it is higher than in health. We know that accentuation of the pulmonic second sound occurs very frequently in pulmonary tuberculosis. At the Phipps Institute in 732 new cases examined in one year this sign was noted in 455, or 63.37 per cent. And while it may be admitted that the exact significance of this accentuation of the pulmonic second sound in tuberculosis has not yet been satisfactorily determined, it is not unreasonable to consider it as an indication of an unusual burden on the pulmonic circulation.

We know that this accentuation is considered to occur with any pulmonary or cardiac disease which increases blood-pressure

within the pulmonary circuit, and that it may be also due in part to hypertrophy of the right ventricle resulting from a damming back of blood in the lungs in mitral disease or obstructive pulmonary disease. That the pulmonary condition was the cause in nearly all the cases referred to above is evidenced by the fact that in the same 732 cases the record of heart lesions is as follows:

Aortic stenosis	08.
Pulmonic stenosis	02.
Mitral stenosis	04.
Mitral regurgitation	15.
Mitral regurgitation and stenosis	03.
Dilated right heart	80.

It is not therefore an unreasonable hypothesis to consider the frequent appearance of this accentuated second sound as being due to a rise of tension within the pulmonary area, due to the resistance to the onward flow of blood through the myriads of pulmonary capillaries. But whatever may be the normal pressure in the pulmonary area in any particular patient suffering from pulmonary tuberculosis, it is evident that if hemoptysis is to occur a point must be reached at which the pressure is too great for some particular vessel to withstand. And when it is remembered that, in pulmonary tuberculosis the vessel from which a hemorrhage takes place is probably one weakened by the progress of the disease process, it is not necessary that the pressure in that particular area be even higher than normal. It is evident, also, that the strain on a particular vessel wall may be altered by a change in the pressure either within or without the vessel. And if hemoptysis is to be prevented it is necessary, since the pressure outside the vessel wall is not under control, to endeavor, if possible, to keep the pressure within the vessel considerably below the danger point.

Much has been written and many suggestions made in regard to the treatment, immediate and subsequent, in the case of hemoptysis, but very little, if anything, has been done along the line of its prevention. It will readily be seen that this is a subject of some value, significance and interest.

Many authorities claim that it is impossible to permanently maintain a reduction of pressure in the pulmonary area by means of any therapeutic agent. This, however, is a statement which cannot very well be proven, since no experimental observations of blood-pressure in the pulmonary area have been made without the production of conditions far removed from the normal. Clinical observations, however, go to show that increase of pressure in the systemic area produces an accompanying

increase in the pulmonary area.

This is evidenced by the occurrence of isolated cases of hemoptysis due to the physical exertion, emotional excitement, or mental disturbance, in all of which cases we find an increase in the systemic pressure. Conversely, it is reasonable to suppose that a reduction in the systemic pressure would be accompanied by a reduction in the pulmonary pressure, and that therefore hemorrhagic cases with a blood-pressure perilously near the danger point might be placed in a position of comparative safety if the maximum pressure in the pulmonary area could be lowered sufficiently to allow a working margin without the danger point being reached.

One of the most useful therapeutic agents capable of producing such a result seems to be nitroglycerin.

It is said by Cushny that nitroglycerin, "which is really the trinitrate of glycerine, (CH_2 (ONO_2) CH (ONO_2) CH_2 (ONO_2), is broken up by alkalies into glycerine, nitrates, and nitrites, and almost all the effects are due to the nitrites formed."

The action is described as follows:

"The flushing and dilatation of the arterioles of the head is found to be accompanied and followed by a profound fall in the blood-pressure. The heart is accelerated at the same time, and seems not to be responsible for the change. The cause, as has been repeatedly demonstrated, is the dilatation of the peripheral vessels, both arterioles and veins widening under the influence of the drug; the vessels of the abdominal organs and the head are more affected than those of the extremities.

Its action commences very soon after its administration, and lasts much longer than that of amyl nitrite.

Erythrol tetranitrate and mannitol hexanitrate act more slowly, and the fall of pressure is more gradual, and lasts longer than under any others of the series."

It is generally considered that nitroglycerin is extremely poisonous, and that therefore it is given in exceedingly minute doses. With this precaution, however, it can be given over long periods without any apparent injurious effects. For example, 1/100 of a grain may be given four times a day for weeks, or 1/400 of a grain may be given for months.

CASE No. 1.

Time.	Readings on First day	Time.	Readings on Second day
9.15 a.m.	120mm.	9 a.m.....	128mm.
9.45 a.m.	108mm.	10 a.m.	112mm.
10.15 a.m.	110mm.	11 a.m.....	112mm.

Time.	Readings on First day.	Time.	Readings on Second day.
10.45 a.m.	102mm.	12 a.m.	116mm.
11.15 a.m.	108mm.	1 p.m.	126mm.
11.45 a.m.	116mm.	2 p.m.	110mm.
2.00 p.m.	110mm.	3 p.m.	110mm.
3.00 p.m.	116mm.	4 p.m.	108mm.
4.00 p.m.	116mm.	5 p.m.	114mm.
5.00 p.m.	110mm.		

Time.	Readings on Third day.	Time.	Readings on Fourth day.
9.00 a.m.	126mm.	6 a.m.	118mm.
10.00 a.m.	112mm.		
11.00 a.m.	110mm.	9 a.m.	128mm.
12.00 a.m.	114mm.		
1.00 p.m.	118mm.		
2.00 p.m.	108mm.		
3.00 p.m.	116mm.		
4.00 p.m.	114mm.		
5.00 p.m.	118mm.		

Case 1.—This is a record of an "up"patient, whose average blood-pressure at 10 a.m. was found to be 124mm. He had breakfast in bed on the morning on which the record begins, and remained in bed until the morning of the fourth day. Nitroglycerin 1/100 gr. was given after the readings charted at 9.15 a.m., 12.45 a.m., 5 p.m., and again at 9 p.m. the first day. The same dose was given on the second and third days at 9 a.m., 1 p.m., 5 p.m., and 9 p.m., after the pressure was recorded.

The extreme drop at 10.45 a.m. on the first day must have been due to some extraneous cause, for all cases on treatment and also all control cases show the lowest record at this hour.

The rise at 1 p.m. on the second day must have been due alos to some extraneous cause, for all control cases show a similar elevation.

The record on the fourth day was taken on awakening at 6 a.m. No nitroglycerin had been taken since 9 p.m. the previous night. Patient got up for breakfast, and the 9 a.m. record was taken afterwards.

CASE NO. 2.

Time.	Readings on first day.	Time.	Readings on second day.
9.15 a.m.	124mm.	9 a.m.	114mm.
9.45 a.m.	106mm.	10 a.m.	104mm.
10.15 a.m.	106mm.	11 a.m.	110mm.
10.45 a.m.	96mm.	12 a.m.	110mm.
11.15 a.m.	98mm.	1 p.m.	118mm.

Time.	Readings on First day	Time.	Readings on Second day
11.45 a.m.	110mm.	2 p.m.	108mm.
12.15 p.m.	108mm.	3 p.m.	110mm.
12.45 p.m.	112mm.	4 p.m.	108mm.
2.00 p.m.	114mm.	5 p.m.	110mm.
3.00 p.m.	112mm.		
4.00 p.m.	114mm.		
5.00 p.m.	112mm.		
5.00 p.m.	110mm.		

Time.	Readings on third day.	Time.	Readings on fourth day.
9.00 a.m.	118mm.	6 a.m.	106mm.
10.00 a.m.	112mm.		
11.00 a.m.	108mm.	9 a.m.	124mm.
12.00 a.m.	112mm.		
1.00 p.m.	116mm.		
2.00 p.m.	108mm.		
3.00 p.m.	114mm.		
4.00 p.m.	112mm.		
5.00 p.m.	112mm.		

Case 2.—The same remarks hold for this case as in No. 1. This patient has the disease in a more active form, which might account for the wider fluctuations.

CASE No. 3.

Time.	Readings on first day.	Time.	Readings on second day.
9.15 a.m.	126mm.	9 a.m.	104mm.
9.45 a.m.	114mm.	10 a.m.	102mm.
10.15 a.m.	104mm.	11 a.m.	104mm.
10.45 a.m.	98mm.	12 a.m.	102mm.
11.15 a.m.	100mm.	1 p.m.	106mm.
11.45 a.m.	104mm.	2 p.m.	110mm.
12.15 a.m.	102mm.	3 p.m.	102mm.
12.45 a.m.	104mm.	4 p.m.	104mm.
2.00 p.m.	104mm.	5 p.m.	106mm.
3.00 p.m.	104mm.		
4.00 p.m.	102mm.		
5.00 p.m.	104mm.		

Time.	Readings on third day.	Time.	Readings on fourth day.
9.00 a.m.	108mm.	6 a.m.	104mm.
10.00 a.m.	106mm.		
11.00 a.m.	104mm.	9 a.m.	106mm.
12.00 a.m.	104mm.		
1.00 p.m.	108mm.		

Time.	Readings on Third day
2.00 p.m.	106mm.
3.00 p.m.	104mm.
4.00 p.m.	106mm.
5.00 p.m.	104mm.

Case 3.—This is a record of a control case not on treatment. The average blood-pressure was previously found to be 104mm. The patient is an advanced case, with fairly active febrile process.

CASE No. 4.

Time.	Readings on first day.	Time.	Readings on second day.
10.00 a.m.	68mm.	10 a.m.	84mm.
11.00 a.m.	70mm.	11 a.m.	88mm.
12.00 a.m.	70mm.	12 a.m.	88mm.
2.00 p.m.	68mm.	2 p.m.	86mm.
3.00 p.m.	78mm.	3 p.m.	88mm.
6.00 p.m.	78mm.	6 p.m.	92mm.

Case 4.—This is a record of a case which had been taking 1/100 gr. of nitroglycerin three times a day for twelve weeks. The nitroglycerin was discontinued the previous day. The first record shows a fluctuation between 70 and 78. Not until seven days later did the readings maintain the rise as shown, and then fluctuated between 84 and 92. Cases 3 and 4 are patients confined to bed.

CASE No. 5.

Time.	Readings
0 min.	120mm.
	110mm.
	105mm.
10 min.	105mm.
	105mm.
	108mm.
20 min.	110mm.
	110mm.
	110mm.
30 min.	110mm.

Case 5.—This is a record showing the rapid fall and subsequent rise of blood-pressure when a hypodermic tablet of 1/100 grain of nitro-glycerin is placed on the tongue of a patient.

The following routine treatment of hemoptysis, including nitroglycerin, has been found very efficacious:

At the Time of Hemoptysis.

Morphine Sulphate, gr. 1/4, hypodermically, only if the hemorrhage is profuse, or in case of extreme nervousness.

Absolute Rest.—Both of mind and body.
No talking.
Semi-recumbent Position.
Chipped Ice, Salt, or Snow.
The following are also sometimes of value:
Aconitine, gr. 1/200.
Atropine, gr. 1/50-1/25.
Amyl Nitrite m.v.
Ligation of the extremities.
During subsequent 48 hours.
Nitroglycerin, gr. 1/100, q.q.h., by mouth.
Calcium Chloride, gr. xx. q.q.h., for three days only; or lactate.
Purgative, Calomel Sod. bicarb. gr. v. Saline.
Absolute rest in semi-recumbent position.
Diet—Cold milk, gelatine.
During remainder of first two weeks.
Nitroglycerin, as before.
Rest.
Saline quotid., a.m., a.c.
Diet—light.
Subsequently.
Nitroglycerin, gr. 1/400, q.q.h.
Laxative, if necessary.

A brief history of a few cases which have been treated, using nitroglycerin as a preventative.

Case 1.—Male, age 30, white, clerk, marked debility, cough troublesome in the evening, with about two ounces of expectoration, poor sleeper, appetite fair, bowels constipated.

Temperature, 100.2, pulse 120, respirations 28.

Weight 146—a loss of 14 pounds since August, 1907.

"Always had a cough." For past two years had enjoyed best health to his recollection. Caught cold November, 1907. Had la grippe for two weeks, followed by sciatica for six weeks. From the beginning of 1908 until admission in March he was under the care of his physician for recurring hemoptyses, having had 18 or more in all.

Treatment and progress. Admitted March 13th, 1908.

March 14th, 1908.—Nitroglycerin, gr. 1/100, q.q.h. Mist. Mag Sulph., one ounce, t.i.d., a.c.

March 15th.—Color in sputum.

March 19th.—Color in sputum.

March 23rd.—Hemoptysis, quantity measurable in ounces.

March 25th.—Hemoptysis, quantity measurable in ounces.

March 30th.—Slight hemoptysis, quantity measurable in drachms.

The same treatment was continued, except that on July 10th the dose of nitroglycerin was reduced to gr. 1/400. No more signs of blood appeared. Patient left institution in December. Has been at work since the beginning of January, 1909, and has continued the treatment. No more hemoptyses.

Case 2.—Female, age 19, white, domestic, debility slight, cough only troublesome in the morning, with about one ounce of expectoration, bowel movements irregular, menstruation ceased two months ago.

Temperature 98.2, pulse 100, respiration 28.

Weight about 100 pounds—twenty-eight pounds less than her best weight three years ago.

Mother and one sister dead of tuberculosis. Another sister, age 22, has the disease, and has had hemoptyses. She is now a patient in the Toronto Free Hospital.

The first noticeable symptom of the disease was the occurrence of hemoptysis in April, 1908. Since the first she has had twelve, the last before entrance being August 10th. The amount of blood lost has varied in amount, the largest amount being about ten ounces.

Admitted August 17th, as a bed patient. Because of her quiet disposition she was not put on routine treatment for hemoptysis, although she had a hemorrhage the day after admission. Calomel gr. Sod. Bicarb. gr. v., and a Saline being ordered, and to be given cold light diet. On August 24th, hemoptysis occurred. Was now ordered a saline quotid., a.m. a.c. On August 30th hemoptysis again occurred. Nitroglycerine, gr. 1/100, q.q.h., was now ordered. September 21st, sputum was colored, and for three days Calcium Chloride gr. xx. q.q.h., was given.

On October 4th, she began keeping her own "day" chart, as her condition had slightly improved, and she was allowed up for part of each day. The dose of nitroglycerin was now reduced to gr. 1/400. q.q.h. Slight traces of blood appeared on three occasions, but no special treatment was ordered, for it was hoped that the dose of nitroglycerin would be sufficient to prevent more serious trouble. On December the 9th, she attended a lecture given downstairs. On returning to her room hemoptysis occurred, the amount of blood lost being about six ounces. Was ordered Calomel gr. ; Sod. Bicarb. gr. v., and routine hemorrhage diet. On December 17th and 18th hemoptysis occurred four times, the total amount of blood lost being about ten ounces. Calcium Chloride gr. xx., q.q.h., was given for three days, and the dose of nitroglycerin was again increased to

gr. 1/100, q.q.h., which has since been given.

No hemoptysis has since occurred, although the course of the disease has continued progressively active.

Case 3.—Male, age 33, white, janitor, debility slight, cough troublesome at times, with about six ounces of sputum daily.

Temperature 98, pulse 94, respiration 24.

Weight 123 on admission, 147 on discharge.

Gave a history of the occurrence of hemoptysis about twenty times during the years 1902, 1903, 1904, and 1905.

Admitted December 13th, 1907. During February and April slight hemoptyses occurred. Was ordered Calcium Chloride gr. xx., q.q.h., and Saline quotid., a.m., a.c.

On May 7th a slight hemoptysis occurred. Was ordered routine treatment for hemoptysis. No recurrence.

Patient was discharged July 16th; condition very much improved.

Case 4.—Male, age 47, white, peddler, debility marked, cough troublesome in morning, with about two ounces of expectoration.

Temperature 99, pulse 68, respiration 24.

Weight two months ago 117, average weight 155, on discharge 125.

Was admitted December 5th, 1908, from St. Michael's Hospital, where he had been for eight weeks, for tubercular pleurisy. Gave a previous history of two slight hemoptyses in November. Large cavity formation found on examination in the apex of the right lung.

December 26th, was able to be up part of each day.

Hemoptysis occurred on January 17th, 1909, when he was ordered routine treatment for hemoptysis.

Patient went home March 16th, condition improved.

Of the eight cases which had hemoptysis on the 7th of May, 1908, there were four in residence on January 31st, 1909.

One of these, who had a previous history of over twenty hemoptyses during the years 1902, 1906, 1907 and 1908, had continued taking gr. 1/400 of nitroglycerin four times a day, and only on one occasion has had a trace of color.

Another, who had a previous history of six hemoptyses during the years 1902, 1906 and 1908, has taken gr. 1/400 of nitroglycerin four times a day, and has never had more than slight traces.

Summary.

1. While there may be other elements in the production of hemoptysis, it is evident that blood-pressure in the pulmonary area plays an important part.

2. Estimation of blood-pressure in the pulmonary area cannot ordinarily be made experimentally.
3. Clinical observation, however, goes to show that there is a relation between pulmonary pressure and systemic pressure.
4. Such preparations as nitroglycerine are capable of reducing blood-pressure in the systemic system. And by their use it would seem to be possible to keep the pressure in the pulmonary area in any particular case reasonably below the danger point.
5. The drug should be administered in small doses, and may be continued over long periods.
6. The results obtained here have been the result of the study of over six hundred cases of pulmonary tuberculosis in residence, and the treatment as carried out for nearly two years has given time to prove the efficiency of the same.
7. It would seem to be indicated that this drug should be administered in the morning some time before the hour of rising, and subsequently at, say 7.30 a.m., 11.30 a.m., 4.30 p.m., and 7.30 p.m., in order to have the result produced before the blood-pressure is raised by the exertion incident to toilet, meals, etc.
8. When gr. 1/100 of nitroglycerin will reduce the blood-pressure 15mm. in less than 10 minutes, as shown by the chart, page —, the same dose, given four times a day for say two weeks, should be sufficient to maintain a lower pressure than the individual's normal.
9. While the administration of nitroglycerine has not proven to be an absolute preventative, still, in the large majority of cases, with a previous history of hemoptysis, or the occurrence of the same while in residence here, it has been clearly proven to be efficacious in reducing the frequency of the complication, and in lessening the amount of blood lost when it does occur.

To Dr. W. J. Dobbie, Physician-in-Chief of the hospitals for advanced tuberculosis at Weston, the gratitude of the writer is extended for his courtesy and assistance, and in providing free access to the records and other data that have made this article possible.

THE RELATION TO THE EYE OF DISEASES IN THE NOSE, THROAT AND EAR—INTRA-OCULAR DISEASE.*

J. T. DUNCAN, M.D., TORONTO.

A prominent United States oculist has remarked that some fifteen or twenty years ago, specialists usually took as their field action the Eye, Ear, Nose and Throat. Of late years, however, he says that the tendency has been towards separation, and for each man to take but one of these departments.

Now, he says, the tendency is not to unite these specialties again, but, recognizing their interdependence, to more frequently consult, or rather, more frequently to refer suitable cases—the oculist to the rhinologist, or otologist, or vice versa, as cases require.

The reason for the changing attitudes is not far to seek. Up to a few years ago there seemed very little connection, for instance, between diseased conditions in the nose (and its accessory sinuses) and the eye or ear. But now, thanks to the labors of many rhinologists and oculists, the interdependence of the diseases in all of these parts becomes more and more manifest.

One of the most important of the studies in this connection is one which was communicated to the British Medical Association in 1904 by Professor Onodi, of Buda-Pesth. I do not purpose to go exhaustively into his work, leaving that for others to do; but I must summarize some of his results, from the standpoint of the oculist. The title of his paper was, "On the Disturbances of Vision and Development of Blindness of Nasal Origin, Induced by Disease of the Posterior Accessory Sinuses." Having found in the course of his experience and study evidence that blindness may be caused by disease of the accessory nasal sinuses, he first issued a circular letter to the leading clinicians and specialists of Europe. In this he asked four questions, but they may be summarized in the following way. He asked of them if they had observed cases in which inflammation of the accessory sinuses has produced optic neuritis or blindness. Some half-dozen replies are quoted, all answering in the negative. Up to 1904, then, the fact that nasal disease could be a cause of blindness was almost unknown. But Professor Onodi showed that the sphenoid or the ethmoid sinuses may be only separated from the optic nerve by bone so thin as to be diaphanous; that these sinuses may be full of pus; that where no

*Read at meeting of Academy of Medicine, Toronto.

drainage for the pus is provided it may so bulge the thin walls of the sinus as to press upon and injure the optic nerve. As a matter of fact, Professor Hirschberg's material showed that almost half the cases of one-sided optic neuritis are traceable to nasal disease. Mendel remarks that one-sided choked disc is mostly due to an affection of the orbit, double-sided mostly to an intracranial cause. Lapersomme insists on the characteristic of one-sided disease. He says, "Optic neuritis is rarely seen in inflammation of the frontal sinus, more often in inflammation of the maxillary or ethmoid, but it is produced, if at all, by inflammation of the sphenoidal sinus. A chief characteristic of neuritis due solely to sinus inflammation is that it is unilateral. . . ."

A double edematous neurites ought rather to make one think of an intracranial process. While Onodi thus calls attention to the fact that empyema of the accessory sinuses is a cause of optic neuritis, he also admits that it is not the only cause, and also calls attention to cases in which empyema of these sinuses has produced no effect upon the sight. In summing up, he says, "A causal connection and cure after treatment are asserted in the cases mentioned by Lor, Coppez, Hajek, Fleiss, Hoffman, Mendel, Halstead and Sargent F. Snow. Causal connection confirmed by necropsy are established in the cases of Duplay, Horner, Panas, Rouge, Russell, Raymond, Ottman, Demarquay and Voissius. In regard to the symptoms shown by such cases when they are brought to the consulting-room, Posey remarks that they closely resemble cases of eye strain, therefore refraction is usually advised. In some cases, he remarks, this is a distinct advantage to the patient, when atropin is used to dilate the pupils. The dilating action is of no advantage, but he says the atropin sometimes dries up the secretions in the sinus, and thus cures the condition.

Cure not taking place, however, dimness of vision (unilateral) would be noticed, vertigo and headaches. On ophthalmoscopic examination, the edges of one disc would show a slight "veiling" or even a woolly appearance, while the veins would show moderate distention. Concentric narrowing of the field of vision would now be noticeable. Probably now the case would be referred to a rhinologist for further examination, and in many of the cases, if pus is found, drainage of the sinuses completely relieves the ocular condition.

Other nasal conditions, however, may produce disease of the eye.

In one case, a hypertrophied turbinate was suspected to be the cause of optic neuritis, and on the removal of the turbinate the neuritis disappeared. In a case of nasal polypus, which was

injected with carbolic acid, iritis supervened, with optic neuritis, which later resulted in optic atrophy. One case of choroiditis was cured by drainage of the sinus, and Dr. Risley claims that not infrequently sinusitis does cause choroiditis, due, as is generally supposed to the impediment to the circulation caused by pressure upon the optic nerve. In regard to the extraocular muscles, this will be dealt with later.

The cornea may show herpetic blisters as a result of disease in the nasal chambers, affecting a portion of the fifth nerve there.

The pupil, again, may be affected by nasal disease. If there be an optic neuritis, and consequently a loss of the light sense, there will be slight dilatation, probably unilateral. If, however, the sinusitis is severe, the walls bulging from the contained pus, the third nerve may be paralyzed as its lower branch passes towards the ciliary ganglion, thus causing a widely-dilated pupil.

Asthenopia, headaches and neuralgias may be caused by sinusitis.

I have now to ask your attention to a remarkable case which shows the intimate connection of the nerve supply to parts of the nasal chambers and to the eye.

The spheno-palatine (Meckels) ganglion we know lies close to the spheno-palatine foramen. Owing to its position in the nasal chambers we can understand that inflammatory conditions in the chambers may at any time spread to and affect this ganglion. Greenfield Sluder (Trans. Laryng. Soc., 1904) reports a case of glaucoma which took on an acute access of pain, apparently caused by an extension of an inflammatory nasal condition to the ganglion. A 50 per cent. solution of cocaine was applied over the ganglion, and the pain in the glaucomatous eye soon ceased. There seemed to be no doubt that this was the cause and effect.

Lastly, I refer to an article by Hill Hastings (Trans. Am. Laryng., Rhinol. and Otological Soc., 1906), in which he claims that nasal disease produces:

1. Ptosis.
2. Edema of the eyelids.
3. Squint.
4. Pain in the eye.
5. Disturbances of vision.
6. Retro-bulbar neuritis.

Passing over diseases of the throat.

Ear diseases.

Irritation of the external auditory canal and cavity of the tympanum produces blepharospasm often. On the other hand, Rampoldi often checked blepharospasm of this kind by dropping cocaine into the ear.

Baginski produced, in 1881, nystagmus by injecting warm water into the cavity of the tympanum. Kipp observed three cases of nystagmus due to purulent inflammation of the middle ear. Chronic catarrh of the middle ear has often been noted as the cause of impairment of the activity of vision. It is also a curious fact that in two cases where an iridectomy was done an improvement of hearing was noticed. In the one case, the iridectomy was done for glaucoma, in the other for leucoma of the cornea. Kipp reports two cases of metastatic panophthalmitis in aural suppuration.

Nystagmus may only be named; it cannot be considered here. It is not a symptom of cochlear disease, only of vestibular. The symptoms of vestibular disease are:

(*a*) Dizziness.

(*b*) Loss of equilibrium.

(*c*) Nystagmus.

Ocular nystagmus shows slow and regular movements; aural nystagmus has a quick and a slow component; it is named from its quick component.

PROPOSED STERILIZATION OF CERTAIN DEGENERATES

By Robt. Rentoul, M.D.

It will interest those who agree with my proposal, made in 1903, that one way of lessening the ghastly total of degenerates would be to so surgically operate upon them that they could neither beget nor conceive. Already two States in America have adopted my proposal.

On January 1st, 1909, there were in England and Wales no fewer than 128,787 officially certified insane; and an increase of 2,703 in the year. But there are a great many at large who are not "officially" reported. In 1859 there were only 36,762 certified insane. The insane rate since then has increased by 250 per cent., while the population has increased by 81 per cent., and evidently—judging by our "do-nothing" policy—we are quite content to go on marrying and breeding more and more degenerates, and to expend yearly millions of pounds sterling upon these —an expenditure which gives us no results.

It may be that new proposals in an *old* country are always the product of an ill-balanced mind, or are to be labeled heretical. But on February 10th, 1907, the Legislature of the State of Indiana passed the following Act:

An Act entitled an Act to prevent procreation of confirmed criminals, idiots, imbeciles, and rapists—providing that superintendents or boards of managers of institutions where such persons are confined shall have the authority and are empowered to appoint a committee of experts, consisting of two physicians, to examine into the mental condition of such inmates.

Whereas heredity plays an important part in the transmission of crime, idiocy, and imbecility;

Therefore, be it enacted by the General Assembly of the State of Indiana that on and after the passage of this Act, it shall be compulsory for each and every institution in the State entrusted with the care of confirmed criminals, idiots, rapists, and imbeciles, to appoint upon its staff, in addition to the regular institution physician, two skilled surgeons of recognized ability, whose duty it shall be, in conjunction with the chief physician of the institution, to examine the mental and physical condition of such inmates as are recommended by the institutional physician and board of managers.

If, in the judgment of this committee, procreation is inadvisable, and there is no probability of improvement of the mental condition of the inmate, it shall be lawful for the surgeons to perform such operation for the prevention of procreation as shall be decided safest and most effective. But this operation shall not be performed except in cases that have been pronounced unimprovable.

Again, on August 12th of this present year, the State Legislature of Connecticut enacted:

An Act concerning operations for the Prevention of Procreation. Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1.—The directors of the State Prison and the superintendents of State Hospitals for the Insane at Middletown and Norwich are hereby authorized and directed to appoint for each of said institutions, respectively, two skilled surgeons, who, in conjunction with the physician or surgeon in charge at each of said institutions, shall examine such persons as are reported to them by the warden, superintendent, or the physician or surgeon in charge, to be persons by whom procreation would be inadvisable.

Such board shall examine the physical and mental condition of such persons, and their record and family history, so far as the same can be ascertained, and, if in the judgment of the majority of said board, procreation by any such person would produce children with an inherited tendency to crime, insanity, feeble-mindedness, idiocy, or imbecility, and there is no probability that the condition of any such person so examined will improve to such an extent as to render procreation by such person advisable, or, if the physical or mental condition of any such person will be substantially improved thereby, then the said board shall appoint one of its members to perform the operation of vasectomy or oophorectomy, as the case may be, upon such person. Such operation shall be performed in a safe and humane manner, and the board making such examination, and the surgeon performing such operation, shall receive from the State such compensation for services rendered as the warden of the State Prison or the superintendent of either of such hospitals shall deem reasonable.

Section 2.—Except as authorized by this Act, every person who shall perform, encourage, assist in or otherwise promote the performance of either of the operations described in Section 1 of this Act, for the purpose of destroying the power to procreate the human species; or any person who shall knowingly permit either of such operations to be performed upon such person—

unless the same be a medical necessity—shall be fined not more than one thousand dollars, or imprisoned in the State Prison not more than five years, or both.

There need be no objection to such an operation as is here suggested. It is very simple, practically painless, makes no difference at all to the bodily functions, and has no ill-effects of any kind. It prevents nothing but the power to procreate. It is the outcome of modern scientific knowledge, and must not be confounded with older and much more drastic methods.

In 1905 the House of Representatives and Senate of the State of Pennsylvania passed a sterilization bill, but the State Governor refused to sign it, holding that further time was necessary. But from what correspondents in the States tell me, there is every likelihood of many States following the good example of Indiana and Connecticut.

In this country the cry is often, "Let me alone"; "Don't worry us"; "Wrongs will right themselves"; or "I needn't worry; things will last my time." Such a mixed policy of hypocrisy and slavish desire to tread the beaten track will not work for good.

We howl about the increase of paupers. Yet we allow the pauper to leave the workhouse to get married. We howl about the increase of criminals. Yet we allow criminals to marry and to beget more criminals. And we howl about the increase of insanity and the feeble-minded. Yet we allow these to marry and to beget offspring fully qualified to perpetuate the weak-mindedness of their progenitors. Surely a noble and worthy national policy!

Some time ago I called attention to the fact that five feeble-minded women had given birth to fifteen feeble-minded infants.* Later still, Dr. Potts stated that in one workhouse sixteen feeble-minded women had given birth to 116 idiot children. Dr. Branthwaite, in his annual report (for 1905) on Inebriate Homes, states that 92 habitual inebriate women had had 850 babies.

What can these children become? More inebriates; more degenerates; because of women admitted 200 were found to be suffering from mental defect.

If we can, by sterilizing a large number of mental degenerates, people classified as habitual criminals, and vagrants, lessen the total of this world's suffering; lessen the number of children so cursed and weighted down by parental defects that they can never become useful citizens; and if we can lessen the unwise sum of money now expended upon the upkeep of our motley

*See "Race Culture or Race Suicide." 2nd Ed.

civilization—using it for better purposes—then let us give up the useless policy of breeding and cultivating a species of British subjects who will not only be a heavy millstone round our necks, but will go on breeding more degenerates to require more asylums and far greater expenditure.

Is it not time some very definite action in this great national question—for it affects each one of us—of needlessly breeding more and more degenerates, was taken? Our present criminal law is based upon hypocrisy and cant, and has no reference to the unnecessary suffering of so many poor degenerates.

Liverpool, England, Dec., 1909.

"A RESUME OF THE MILK CAMPAIGN IN THE UNITED STATES AND CANADA."

By Dr. Chas. J. Hastings, Toronto.
Chairman of the C.M.A. Milk Association

Mr. President and Members of the Hamilton Medical Society,—

The name of Dr. Henry L. Coit, of Newark, N.J., I am sure, is familiar to all of you as having been the first to conceive the idea by which pure milk might be obtained independent of either State or municipal legislation.

After two years' persistent efforts to obtain State or municipal assistance, in an effort to bring about a radical reform in the production and handling of milk, the Milk Commission of the Medical Society of New Jersey abandoned their efforts, after having received the following communication from the secretary of the State Board of Health:

"There is far more danger of weakening the law than there is prospect of its being made more stringent. It would afford us pleasure to be of service in this direction, but we really do not see how we can be at present."

Hence it was that necessity became the parent of the offspring afterwards christened "Certified Milk" by Dr. Henry L. Coit, and the first meeting of the Essex County Medical Society Milk Commission was held at the residence of Dr. T. Y. Sutphen, Newark, on the evening of April 15th, 1893. There the professional experts were appointed, and the machinery which has done such effective work was devised and adopted, the details of which are too familiar to all of you to require any further comment. The various commissions that had been formed between this and June, 1907, organized themselves into a body known as the American Association of Milk Commissions, and held their first annual meeting at Atlantic City on June 3rd, 1907, at which reports were presented from the Milk Commissions of twelve cities in the Union. Papers were presented on various phases of the best methods to be adopted in this great national campaign. The consolidation of the various milk commissions into the American Association of Milk Commissions was, obviously, for the purpose of mutual benefit, as set forth in the following definition:

"The purpose of this Association shall be to federate and bring into one compact association the Medical Milk Commissions of the United States, to exchange views and to adopt uniform methods of procedure in the work of the Medical Milk

Commissions; to fix chemical and bacteriological standards; to determine the scope of medical and veterinary inspection, and to foster and encourage the establishment of Medical Milk Commissions in other cities."

In June, 1908, this Association held its second annual meeting in Chicago, and in June, 1909, held their third annual meeting at Atlantic City.

While this association of milk commissions is not a part of the American Medical Association, yet they always meet at the same time and place as that Association.

Up to the present the Association has limited its work to the production of certified milk only. At the meeting in June last, at Atlantic City, there were fifty-six commissions in the United States. The executive of the Association decided to extend the franchise to the Dominion of Canada, and made the Milk Commission of the Canadian Medical Association and that of the Academy of Medicine, Toronto, component parts of the Association.

It is important to note that, notwithstanding the very admirable, well-organized work done by this Commission, that of the entire amount of milk consumed in the United States last year not quite one-tenth of 1 per cent. came up to the standard set for certified milk, and of the two million quarts consumed daily in New York City, only 16,000 quarts came up to the standard, or a little less than 1 per cent.

Work Being Done in Canada.

On June 10th, 1908, at the forty-first meeting of the Canadian Medical Association, held in Ottawa, on recommendation of the joint sections on Public Health and Laboratory Workers, a commission was appointed by the executive of the Association, to be known as the Canadian Medical Association Milk Commission, composed of representatives from various parts of the Dominion, to act in conjunction with the various boards of health in enquiring into the milk supply of the various cities and towns throughout the Dominion, and to endeavor to secure such legislation as would warrant them or each municipality in establishing a system of rigid inspection, and the adoption and enforcing of such rules and regulations as would be found necessary. In October, 1908, a milk commission was appointed by the Academy of Medicine, Toronto, which has devoted its time exclusively to the production of certified milk for sick babies. Contracts have been entered into with three of the leading dairies supplying the city, from which this milk can be obtained by all those willing to pay the price for it. The amount of Certified Milk consumed at present in Toronto per day is about —— quarts, which is sold at fifteen cents per quart.

In June, 1909, as you are all aware, a Milk Commission was appointed by the Ontario Legislature, as the result of a very able address delivered to that body by Mr. W. K. McNaught, M.P.P. I have reason to believe that this Commission has done most thorough and valuable work, and we are looking forward with interest to the presenting of their report, which, we trust, will be a valuable medium of education on this all-important subject, as well as result in the securing of such legislation for the municipalities as will enable them to have complete control of their milk supply. I have been very pleased to learn from your able President, Dr. Hutton, of the very valuable work done by your Commission here in Hamilton during the past summer. It certainly reflects a great deal of credit on those connected with it.

Our Commission has held twenty-six meetings, all of which have been well attended, and a marked interest manifested by the various members. As there were enough members in Toronto to constitute a quorum, we have been able to hold regular meetings, notice of which has been sent to the various members throughout the Dominion, and all members have been sent a synopsis of the proceedings accompanied by a request for comments and also for suggestions. The following committees have been appointed: First, a committee to prepare rules and regulations, for governing the production and delivery of milk. This committee secured literature from all the cities in the United States where efforts were being made to improve the milk supply, and where city ordinances were in force. From this accumulation of literature, rules and regulations have been compiled. Second, a Committee on Local Legislation, to take up the matter of milk legislation with the Local Legislature. This committee conferred with Mr. McNaught on different occasions, when he was preparing his address for the House, and went carefully over the different phases of the milk problem from the standpoint of both producer and consumer. Mr. McNaught expressed himself as being thoroughly in accord with the work done by the Commission. On November 18th, 1908, our Commission waited on and interviewed the Hon. Mr. Hanna, Provincial Secretary for the Province of Ontario, relative to securing the laboratories of the Provincial Board of Health for the use of the Commission in the analysis and bacteriological examination of samples of milk. Mr. McNaught was present and introduced the delegation. Mr. Hanna graciously acceded to the request, and promised the use of the laboratories for the purposes above indicated, adding that he did not know of any better use that the laboratories could be put to. Third, the

Committee on Federal Legislation. Representatives of this committee had a conference with Prof. McGill, of the Inland Revenue Department, Chief Analyst for the Dominion, re definition of Certified Milk and Pasteurized Milk, to be incorporated in the Food Adulteration Act. Again, on July 12th, a second deputation of the Commission went to Ottawa, and through the kindness of Prof. McGill, secured an interview with Mr. Gerald, Deputy Minister of Inland Revenue. The deputation was most cordially received by the Deputy Minister and Prof. McGill, who promised hearty co-operations, and assured us that the Governor-in-Council would include Certified and Pasteurized Milk among their list of articles in the public proclamation of food standards. The Deputy Minister asked that your Commission forward to the Department its definition of Pasteurized and Certified Milk, and if they met with the approval of Prof. McGill, would no doubt be accepted by the Governor-in-Council. The following definitions were promptly forwarded:

(1) Certified Milk is milk examined and guaranteed by any local Board of Health, or incorporated society or association of legally qualified medical practitioners. First, to be taken from cows semi-annually subjected to the tuberculin test, and found without reaction; all doubtful or suspicious cases to be excluded from the herd.

(2) To contain not more than 10,000 bacteria per C.C. in the Summer, and 5,000 in Winter, on delivery to the consumer.

(3) To be free from pus, blood, disease-producing germs, preservatives or other foreign matter, and not to have been heated in any way or frozen.

(4) It shall contain at least 12 per cent. of total solids, of which from 3½ to 4½ must be butter fat.

(5) It must be cooled to a temperature of 45 degrees within one-half hour after milking, and shall be kept at a temperature not higher than 45 degrees until delivered to the consumer.

Pasteurized Milk is milk which has been subjected, in a closed vessel, to a temperature of 150 F. for twenty minutes, or 140 to 145 for thirty minutes, and immediately thereafter refrigerated to at least 45, and kept to that temperature until delivered to the consumer.

In May, on invitation of Mr. John Ross Robertson, a deputation of the Commission accompanied him as his guests to New York City to inquire into the advantages and disadvantages of Pasteurization, and assist him in the choice of a Pasteurizing plant for the Children's Hospital, of Toronto. We spent two strenuous days in interviewing the leading experts on the milk problem in that city, among which were Thomas L. Darlington,

Commissioner of Health, New York City; Dr. Alfred F. Hess. Research Laboratory of the Board of Health of New York City; Dr. Charles E. North, Consulting Sanitary Expert; The Nathan Strauss Laboratories; The Walker Gordon Laboratories; Mr. Wilbur Philips, Chairman New York Municipal Milk Commission and Combined Charities; the Children's Hospital, New York City.

The work being done by Dr. Darlington and his staff is an education of itself, well worth a trip to New York City by anyone interested in this all-important life-saving problem. Dr. Darlington informed us that when they first began their inspection it was not unusual for them to lose a meal, as the conditions found in many cases were too awful to describe. Hundreds of cattle were ordered to be destroyed. Their city health ordinances require that all milk delivered in New York City must be kept at a temperature of not more than 50, but they experience great difficulty in inducing the railways to put on refrigerating cars. They got over this difficulty, however, by their staff examining a large shipment of milk, and, finding that the temperature was between 60 and 70, they dumped 28,000 quarts of this milk into the Hudson in one morning. The indignation of the producers was so aroused that they immediately demanded compensation from the railways. All sorts of tactics have been resorted to in order to detect uncleanly methods. On one occasion, when visiting a dairy farm, suspicion was aroused as regards the conditions of the milk utensils. They were assured, however, that they had all been carefully washed, and would again be washed and sterilized before being used. While Dr. Darlington was talking to the dairyman, one of his men sprinkled a few grains of carmine in the bottom of some of the milk cans. The consequence was that the following day they had a large shipment into the city of beautiful pink milk. The dairyman demanded to know what right they had to tamper with his milk cans. Dr. Darlington's reply was, "What right have you to violate our milk ordinances?" Replying to a query re Municipal Pasteurization, he said: "I am afraid to undertake it in a city the size of New York, on account of the abuse it has been subjected to; but," said he, "we send out an army of nurses to the homes of the poor to teach them how to pasteurize the milk in their own homes." Dr. Charles E. North, after a very interesting and instructive interview, informed us that he procured certified milk and pasteurized it in his own home before using. Special interest was taken in our visit to the Strauss Laboratory, Pasteurizing plant, and milk depots. No milk is accepted for pasteurization that falls below the standard

set for certified milk by New York City. Over four million bottles of this milk were used last year, and nearly one and one-half million glasses were sold to the poor in the parks at 1 cent a glass. In this noble charity, Mr. Strauss, we are informed, expended over $100,000 last year.

On June 7th, our Commission was represented by the Chairman at the third annual meeting of the American Association of Medical Milk Commissions, held at Atlantic City. At that meeting there were reports presented from twenty-seven Milk Commissions, and eighteen papers and addresses on the various phases of the milk problem and its relation to public health were read and delivered. The papers and addresses were all of a very profitable character, prepared and presented by such men as Dr. Henry L. Coit, Dr. Rowland Godfrey Freeman, of New York; Dr. E. C. Schroeder, Superintendent of the Experimental Station, Bureau of Animal Industry, Department of Agriculture, Washington, D.C.; Dr. John W. Kerr, Assistant Surgeon-General, United States Public Health, Marine Hospital Service, Washington; Dr. Wm. H. Park, Director of the Research Laboratory of the New York Department of Health, New York City; Dr. Thomas L. Darlington, Commission of Agriculture, Albany, N. Y.; Prof. H. W. Conn, Wesleyan University; Dr. H. A. Evans, Commissioner of Health of Chicago, and others.

We have communicated with all the local Boards of Health throughout the Dominion in cities of 10,000 or more, as to what they have done to improve the milk supply in their respective jurisdictions, in a general way, also what they are doing and what they propose doing in the future. Replies were received in most cases, accompanied in many cases with literature. These are being carefully tabulated, so that we may have a summary of all the work done.

As the aims and objects of the milk campaign now engaging the attention of all civilized nations is to save human life and diminish human suffering, our Commission has endeavored to ascertain the extent to which life is in danger by market milk along the following lines:

First.—The relation of milk to infant mortality.

Second.—The role played by milk in the spreading of communicable diseases.

Third.—Milk as a cause of tuberculosis.

Fourth.—Pasteurization; its effects on milk and the bacteria in milk.

Fifth.—What is being accomplished by Milk Commissions to remove the aforesaid dangers.

Attention was first drawn to the dangers to human life lurk-

ing in milk in an attempt to ascertain the cause for the appalling tide of infant mortality, when it was found that 90 per cent. were from the ranks of hand-fed children. It was also observed that there was an abrupt upward curve in the midsummer months and an equally sharp drop in the Fall. The marked increase in the months of July, August and September was found to be due largely to diarrheal diseases, there being very little fluctuation in the non-diarrheal cases. Of the 1,943 fatal cases collected by Dr. Emmett Holt, of New York, only 3 per cent. were exclusively breast-fed. Prof. Von Behring says that in Germany, of every 1.000 born alive, 237 succumb during the first year of life, and only 510 out of the 1,000 ever attain manhood, and not more than a third of those reaching maturity are found to be fit for military service. These sad facts, says Prof. Behring, are attributable in a large measure to the effects of infection derived in infancy from contaminated milk. In Leipsig, of every 1.000 children born in the month of August, 571 died, and of these, 430 were from diarrhea. In Berlin, Germany, the infant mortality among hand-fed children during the hot summer months is from twenty-one to twenty-five times greater than among those fed from the breast. In Australia, the authorities are gravely concerned about the awful infant mortality. Dr. Turner points out that in Brisbane during the summer months more than half of the bottle-fed babies died. Musket, of Sydney, made the statement that at least 50 per cent. of the children who have died in the last ten years in New Zealand and Australia might have been saved. Dr. Newsholm, of Brighton (Medical Officer of Health), in an article recently published in *The Lancet*, said: "Breast-fed children contribute but one-tenth of the diarrheal infant mortality." Dr. McLeary, Medical Official of Health for Hampstead, says that infant mortality, broadly speaking, is a mortality of hand-fed infants. In Germany, 41.3-7 per cent. of the entire mortality of the year occurred in the months of July and August. On the other hand, in Prague, Austria, where nearly every woman nurses her own babe, the hot summer months do not show any appreciable increase in the infant mortality. It is quite obvious, therefore, that gastro-intestinal disease is but another term for milk poisoning. While the marked similarity of these reports from the various European nations and the United States is very convincing, yet much more convincing are the recorded results for cities where market milk has been displaced by certified and pasteurized milk.

As regards the role played by milk in the spreading of communicable diseases, over 500 epidemics have been collected by the department at Washington, traced directly to milk.

Milk as a Cause of Tuberculosis.

The great significance of the second interim report of the Royal Commission on human and animal tuberculosis cannot be overestimated. Their conclusion was to the effect that a large proportion of tuberculosis contracted from food is due to the bacilli of bovine source, and that a very considerable amount of disease and loss of life, especially among children, must be attributed to cows' milk containing tubercle bacilli.

Dr. McCaw, Senior Physician to the Belfast Hospital for Sick Children, after twenty years' careful study of tuberculosis of children in connection with the seven leading hospitals for sick children in England, Ireland and Scotland, reported that 25.5 per cent. of all the children treated in these hospitals were suffering from some form of tuberculosis. This certainly demonstrates beyond questioning the presence of tuberculosis in children to an alarming extent, and at a period when milk constituted the principal article of diet.

Until recent years it has been thought that tuberculosis was contracted by inhalation; but it is now known that, in the vast majority of cases, the germs are taken into the stomach with either food or drink, and pass into the bowels, where they either set up local disturbance, or, penetrating the mucous membrane, are conveyed into the main lymph stream of the thoracic duct, through which they are conveyed to the blood stream, and thence to the right side of the heart; thence to the lung, where they are filtered out by the wonderful network of vessels in that organ. Here they may lie latent until the vitality of the parts is lowered by some inflammatory action, when they gain the ascendancy over the resisting forces of nature, and the host becomes the victim of tuberculosis.

The question is often asked: "Does the milk of a tuberculous cow, whose udder is not affected, contain tubercle bacilli?" The consensus of opinion is that it may do so, but this is not by any means the only source of milk contamination by tubercle bacilli. It has been demonstrated that a cow suffering from an attack of tuberculosis so slight as not to give any physical signs of disease may be excreting from the bowels 37,800,000 tubercle bacilli per day. The slightest particle of this excretion on the udder of a healthy cow may gain accesss to the milk, and in this way contaminate the entire milk supply of the herd. Then there is always the danger of contamination from those handling the milk.

Our Commission would like to draw special attention to the preponderance of all pathogenic germs in gravity cream, it having been demonstrated by Hess and Freeman, of New York,

especially, that from 75 to 90 per cent. of all pathogenic germs found in milk are above the cream line. In a bottle of milk well within the standard for a certified milk, after standing for twelve hours at room temperature, the upper two ounces of cream were found to contain 115,000 bacteria per C.C., while the milk in the same bottle only contains 6,000. When one couples with this the recent discoveries made by Schroeder, of Washington, of the frequency of tubercle bacilli in butter, and that after 90 to 160 days they were found to be but slightly, if at all, reduced in virulence, and the animals fed on this butter, or into which it had been injected, readily contracted the disease, it is obvious, therefore, that, measure for measure, we have in butter a greater danger of tubercular infection than we have in milk. "In fact," says Schroeder, "it is difficult to imagine a better environment for the conservation of the life and virulence of tubercle bacilli, not actively associated with tubercular lesion, than butter affords." In conclusion, Dr. Schroeder says: "Until we are certain that the milk delivered to us is obtained from healthy cows, in every way protected from exposure to tuberculosis, we should not use it until it has been pasteurized, and all cream that is not above suspicion should be pasteurized before it is used in the preparation of butter. The average market milk, unpasteurized, is to-day the most important cause tolerated by civilization for unnecessary disease, suffering and death." With such indisputable evidence of the manifold danger to human life in milk, and in view of the fact that, notwithstanding the efforts put forth by the various Milk Commissions of New York City for from ten to fifteen years, less than one per cent. of the milk consumed in that city last year came up to the standard of certified milk.

Therefore, having carefully reviewed the investigations made and the conclusions arrived at by the highest authorities and most ardent and careful workers in the campaign for milk that can be accepted as a safe food for human use, we strongly advise, in the interests of public health, that all milk not answering the standard set for certified milk be pasteurized, and that the milk, before being accepted as fit for pasteurization, must be at least microscopically cleaned and kept at the lowest possible temperature; and also that the shortest possible time elapse from the taking of the milk from the cow until it is pasteurized, and that immediately after pasteurization the milk be lowered to a temperature of 40 degrees and maintained at that until used, all pasteurization to be under control of the health department.

We would also recommend that as soon as possible the entire

source of milk supply of the Dominion be placed under rigid inspection of the various health departments, from the producer to the consumer, such inspection, at least, as will secure a clean milk.

The consensus of opinion of the most eminent authorities on the Continent of America is that pasteurization, such as we recommend, will destroy all disease-producing germs, and does not interfere with the digestability or food value of the milk, and from the investigations made by our Commission we can fully endorse the above statement, and therefore recommend the following classification for the milk supply of the Dominion:

First.—Certified Milk.

Second.—Inspected, Pasteurized Milk.

The inspection to be such as will insure a clean milk, by simply adopting cleanly habits such as apply to the care and production of any other article of diet placed on our tables, which case need incur but a slight increase of expenditure on the part of the producer.

We are having sub-commissions appointed and organized all over the Dominion.

We expect, by June next, to have from one-half to two-thirds of the milk consumed in Toronto officially pasteurized and therefore absolutely safe for human use.

SO-CALLED R.H. REFLEX NEUROTIC SYMPTOMS AND THE PSYCHIC FACTOR*

By Tom A. Williams, M.B., C.M. (Edin.), Washington, D.C.

At one time tremendous emphasis was laid upon the irritation of the nerve terminals as a source of neurasthenia, hysteria, and neuroticism in general. Innumerable turbinates have been shaved, appendages removed, and errors of refraction corrected on account of this notion. But extended experience has convinced even the most ardent specialist in rhinology, gynecology and ophthalmology, when they are possessed of scientific honesty and clear-mindedness, that comparatively few neurotic cases arise from purely reflex irritation.

There is still, however, much confusion as to the genesis of the psychoneuroses. The source of this confusion lies in the want of clear differentiation between symptoms referable to the autonomic nerves and those which often so closely resemble them, although originating psychically. A few examples will make this clear.

The abnormal frequency of micturition in the earlier period of gestation has its source, in all probability, in the stimulation of the afferent nerves from the neck of the bladder on account of the stretching of the tissues around the utero-vesical pouch by the rapidly expanding uterus. Any impulse passing by this track is necessarily interpreted as an irritation of the mucous membrane by urine, which experience has taught us to associate with need for micturition. There is really an illusion, comparable to that in one's toes when the nerves are stimulated in the stump of an amputated leg, or in the more familiar "funny bone" experience.

Now the sensations derived from these are totally unamenable to psychic influences, although, of course, the patient's response to the sensations is modifiable by the will.

Very different is the case of the nocturnal incontinence of children, perhaps one of the most typical of the misunderstandings of the theorem now being illustrated. This affection is purely psychogenetic, for it is due to a failure to educate the cortical inhibition so that it may maintain itself during the relaxation of sleep.

In connection with this, there is another common misapprehension that during sleep consciousness is suspended. That is

*See N.Y. Med. Jour., Jan. 22, etc.

not the case, as innumerable examples prove. Only two of these need be cited. One is the power which many people possess of appreciating the lapse of time while they are asleep. They can approximately judge the hour when they awake accidentally during the night, and can determine in advance the hour at which they should awake in the morning. Another series of facts shows that we are not even insensible to peripheral stimulation during sleep. For instance, by stimulation of the skin, muscles or special senses, the contents of dreams can be determined; not only that, but direct ideas can be inculcated in speech, and a psychotherapeutic method has been based upon this fact, especially in childhood—indeed, it has been particularly applied to incontinence of urine, on account of the supposed efficacy of what its exponents are pleased to call the "subconscious." We need invoke no such hypothesis; for suggestion during sleep, hypnosis, or any other "passive" state is more effective, merely because the idea invoked then dominates the field of consciousness uninterrupted by other extraneous stimulations; hence it is much more easy to gain the attention and make an idea penetrate in these states; but the technical skill which we call persuasive power is capable of doing the same, with the subject in no matter what state. The problem is merely one of fixing an idea in the patient's mind so that it may energize towards the desired end.—See author's *Considerations as to the Nature of Hysteria,* Int. Clinics, 1908; also *Requisites for Treatment of the Psychoneuroses, Dom. Jour., Month, Cyclp., etc.,* August, 1909.

LARYNGOLOGY AND RHINOLOGY.

IN CHARGE OF J. PRICE-BROWN.

The Anatomical and Clinical Relations of Meckel's Ganglion to the Nose, and Its Accessory Sinuses. G. SLUDER. (*New York Med. Journ.*, August, 1909.)

Several cases of severe neuralgia of migraine type are reported, associated with post-ethmoidal or sphenoidal sinusitis, or the two combined. Believing that the intense pain was due to pressure on or infiltration of Meckel's ganglion, applications of a saturated solution of cocaine (67 per cent.) were applied through the nose over the spheno-palatine foramen, with a remarkably good effect. A single drop was usually sufficient. A .4 per cent. of formaldehyde was nearly as effective in relieving the pain.

The Faucial Tonsils and the Teeth. HUDSON MAKUEN. (*Jour. Amer. Med. Assoc.*, June, 1909.)

The author describes in detail the inter-relationship which exists between diseased conditions of the tonsils and teeth. We cannot cure mouth-breathing and its disastrous effects invariably by removing adenoids and tonsils. Enlarged tonsils cause dental deformity by pressure on the molars. Degenerated tonsils should be removed, although they be inactive. When dental irregularities exist coincidentally, they should be regulated, in order to obtain the full advantage of throat operations.

Functional Relation of the Tonsil to the Teeth. GEO. H. WRIGHT. (*Boston Med. and Surg. Jour.*, May, 1909.)

The author considers that enlargement of the tonsils, without infection, coincides definitely with four periods of tooth eruption, between the ages of two and eighteen years. He discusses the development of the teeth and the lymphatic arrangements in relation with these organs. Then he offers the following six observations: (1) When the tonsil is normal, infection from the external surface is rare. (2) Secondary infection through the lymph-channels is the usual source. (3) There are four periods of molar eruptions, with some variations in time, when the tonsils may enlarge without infection or inflammation, as two, six, twelve and seventeen years. (4) Tonsils, though slightly enlarged, when not infected, return to normal with complete eruption of the teeth. (5) Diseased teeth are a prolific source of enlargement of the glands through proximity of mem-

branes, either directly by infection or by toxins. (6) In the treatment of the tonsil by the specialist, may we not include as a routine the observations as to carious teeth, and a recognition of these four periods of eruption coincident with slight enlargement?

Lipoma of the Larynx. M. A. GOLDSTEIN. (*Laryngoscope*, September, 1909.)

The writer opens by discussing at some length the many inaccuracies, discrepancies and erroneous quotations which appear frequently in reports of cases submitted for publication to medical journals. Cases of lipoma of the larynx are exceedingly rare, yet not rare enough to escape this misrepresentation; and to place the subject on a reasonable basis, the writer deals with it in detail, before entering into a discussion of his own case.

The etiology of lipoma is very obscure. There are three possible etiological factors:

First.—The development by simple hyperplasia of distinctly independent or encapsulated fat masses from fat cells or small areas of adipose tissue.

Second.—The possibility of an embryologic origin of tissue favorably disposed to such fat development.

Third.—The most recent theory of cell-metamorphosis and cell-proliferation, as advanced by Gideon Wells and supported by Jonathan Wright.

Pathologically, no definite form of growth of lipomata in the larynx has been determined. Jones' case was a long, pendulous neoplasm, attached by a thin flat band. The cases of Golbek and Schroette were of the multiple variety. Farlow's was a polypoid lipoma.

Lipoma usually grows slowly, and may continue to develop for many years without impairing the general health, unless by its presence it interferes with the regular physiological functions of the body.

In Holt's case, the patient died suddenly from suffocation. McBride's cases were both of large size, as also was Koehler's.

One interesting fact is that cases of pure lipomata are usually attached by slender pedicles, while lipomata of a mixed type have a broader base of attachment.

Recurrences after removal are reported by Braus, McBride, Golbek and Hinkel. For each of these, however, the neoplasm was not completely extirpated. The original growth comes on slowly, the recurrence much more rapidly.

Twelve cases in all have been reported. Goldstein's making the thirteenth.

Author's Case.—Mrs. P. D. P., white, aged 33 years. Saw her first at the hospital. Patient lying on left side; extreme physical depression; skin moist and clammy; pulse thready, but regular; tongue flabby and coated; respiration shallow, irregular and marked with stridor, the chief difficulty being defective respiration. On examination, a pale, yellowish-pink mass was found to completely fill the glottis. It was convex and glistening. The history proved that the growth of the tumor had been gradual, extending back for years.

Endo-laryngeal operation was decided upon. After applying cocaine and adrenalin, the tumor was removed with a Krause snare. This was readily accomplished, and the bleeding was slight. But a similar growth was found to lie beneath the upper one. In attempting to remove it, a portion of the capsule of the tumor was engaged in the snare, and it was found to be impossible to cut through the pedicle with the wire, or to disengage the instrument. Hence, strong traction was made by the snare, drawing up the whole larynx, so that the parts could be observed directly. Then the pedicle was cut through with long, curved scissors.

The patient got immediate relief. There was no reaction. Hemorrhage was very slight, and she made an uneventful recovery.

On examination, each tumor was found to be independently encapsulated. One weighed 48 grains, the other 46 grains, and each had been attached by its own pedicle.

Three Cases of Thyroidectomy for Cancer of the Throat. STUART LOW. (*Journ. of Laryngology,* December, 1909.)

Case 1.—Patient, male, with loss of voice and difficulty of swallowing. Large, grey, mushroom-like mass covering over and projecting into larynx. Clinically and pathologically reported as a rapidly growing and virulent epithelioma. On May 10, 1909, under local anesthesia, a collar incision was made over the thyroid, the isthmus divided, the left lobe isolated, and all the vessels proceeding to and from it ligatured. Suddenly the larynx became obstructed, from the growth becoming fixed in the passage. Cyanosis developed, and as respiration ceased, tracheotomy was at once resorted to. This was followed by quick recovery; and as thorough removal of the thyroid would have greatly prolonged the operation, it was decided to tie the superior thyroid of the right lobe, and trust to this and efficient ligation of the left lobe to minimize the thyroid functions. The large wound was partially closed and firmly packed with gauze. The patient made an excellent and uninterrupted recovery. The left lobe of

the thyroid, all the vessels of which had been ligatured, sloughed and came away in the dressings.

Six months later the patient had gained 15 pounds in weight, he was swallowing better, and the growth in pharynx and larynx had diminished much in size. There had been no pain and his physical strength had increased.

Case 2.—Male, aged 58 years; had something on the neck of six weeks' duration. There was a large excavated ulcer on side of tongue the size of a shilling, the hardness and induration extending to the palate and sterno-mastoid at angle of the jaw. Clinically and pathologically, the disease was pronounced to be epithelioma. As it would be fatal to attempt eradication by operation, hemithyroidectomy was decided upon. This was done on June 3, 1909, the left half of the thyroid being entirely removed. The patient remained in the hospital one week after operation. There was no pain in the tongue or neck. The ulcer on side of tongue healed, the induration became less, and the glandular swelling softer. Shortly afterwards the man returned to his work as a painter.

A particularly interesting feature of this case was that the hard mass of glands on right side of neck softened, with increasing swelling. This was finally opened and found to contain a large quantity of glairy mucous, which, on pathological examination, proved to be mucin—the inference being that the removal of the thyroid had induced a mucin degeneration of the mass of cancerous glands.

Case 3.—A man, aged 65 years, had epithelioma of the soft palate and glands on both sides of the neck. On July 10, hemithyroidectomy was done under local anesthesia. Four months later he was still under observation. He had gained six pounds in weight. His general condition had improved, and the glands had become smaller and softer.

From the history of these three cases, the conclusion seemed obvious, that practical removal of the thyroid had an influence upon malignant growths located in their vicinity. It deterred the rate of growth of the primary tumors, affected favorably the secondary glands, and relieved the pain. Another notable feature was that in each of the instances recorded the pulse rate was diminished.

Esophageal Cases. H. P. MOSHER. (*Laryngoscope*, October 1909.)

In an article dealing with the history and treatment of a number of cases, the writer draws the following conclusions:

"Strictures of the esophagus are best diagnosed and best treated by means of the esophagoscope and instruments used through it. Nothing can be more satisfactory than the finding of a stricture by this means, and determining its location, nature and extent. Opening the stomach for the relief of non-malignant strictures ought to become a rare operation. Opening the esophagus from the side of the neck for the removal of smooth foreign bodies is already obsolete surgery. The ballooning of the esophagus promises to be a help in locating the lumen of tight strictures, and the direct method of carrying a gelatine capsule filled with thread through the stricture into the stomach is much better than feeding the thread to the patient. The perforated metal olive bougies of Mixter, which run down a thread as a guide, are of great service in pouch cases, and in cases of tortuous or tight strictures. The thread keeps the bougie from going wrong. After a while the small guide can be used without the thread, and the olives passed on the guide. The small metal guide often finds the way better than the larger elastic bougie. When the metal guide is in place, the larger olives can be run on it with the greatest confidence."

The second of the three cases that are reported in this paper forcibly demonstrates the great advantage that can be derived from the use of the esophagoscope.

The patient, a woman aged 30, had suffered from difficulty in swallowing for fifteen years. There was a doubtful history of having swallowed a fishbone during childhood. She had been treated by many physicians, had bougies passed during part of the time, and had also for a while been regularly fed by stomach tube. Her normal weight was 130 lbs. When referred to Dr. Mosher, she weighed only 75 lbs., and was reduced to skin and bone. There had never been any pain, only a sensation of fulness after eating, starting at the epigastrium and extending upwards as far as the larynx. There was no nausea, and the regurgitation was largely voluntary and brought on in order to secure relief.

To aid in diagnosis, bismuth was given to her, and a fluoroscopic examination made, after which an X-ray picture was taken. The conclusion drawn from these examinations was that there was a stricture at the cardiac end of the esophagus, with an elongated dilatation of the esophagus above it. Under ether, a large oval tube was easily passed into the esophagus, the lumen of which was found to be dilated all the way down, gradually increasing in size, reaching the maximum at the lower part behind the heart, the motions of which could be distinctly seen against the esophagus all the way down.

When the esophagus was ballooned the dilatation appeared as a large black cavern, which the light of the tube failed to illuminate. The opening into the stomach, however, was readily found. It lay to the extreme left of the bottom of the pouch and on a somewhat higher level. A good-sized bougie was passed into the stomach. This was followed by a mechanical dilator and the opening spread to 45 F., when resistance became marked. Dilatation was discontinued and a small metal bullet attached to a string was passed into the stomach, the upper end of the thread being fastened with adhesive plaster to the cheek. On succeeding days olives of progressive sizes were passed over the thread until the structure became permanently enlarged, the recovery of the patient in the end being quite satisfactory.

The Relative Value of Esophagoscopy and External Esophagotomy. E. J. Moore. (*Revue Hebd. de Laryngol. d'Piol., et de Rhinol.*, Sept., 1909.)

In spite of the immense value of esophagoscopy in locating and extracting foreign bodies, this writer affirms that cases occasionally occur in which the instrument is useless. A coin lodged just at the entrance of the esophagus of a young child may be missed altogether, while it can be easily and safely removed by the use of Keimissen's hook.

He relates another instance of an entirely different character. A child three and a half years old swallowed a toy anchor, which became impacted in the esophagus. The esophageal tube, used under chloroform, slipped time after time into the trachea, owing to violent spasms. The foreign body was located by a radiograph and finally removed by external esophagotomy.

OBSTETRICS AND GYNECOLOGY

Ruptured Ectopic Gestation Sac.

The question of when to operate in these cases has received fresh impetus from a series of opinions brought out by men well qualified to express them, which opinions are rather startling in their very radical differences. By one group it is held that they should be treated expectantly, in the belief that the natural protective forces of the body will eventually tend to control the hemorrhage. To support this view, Robb has conducted an elaborate series of experiments upon bitches, in which he succeeded in severing both the uterine and ovarian arteries without fatal results to the dogs. From his experiments Robb concludes that intra-abdominal hemorrhage such as is met with in women suffering from collapse after rupture of an ectopic gestation sac is not sufficient in itself to cause a fatal termination. Death, he thinks, is caused mainly by shock, which may be increased by various procedures. The hemorrhage *per se* is rarely if ever the sole cause of death.

In a discussion held in the American Gynecological Society in 1908 the difference in thought among the leading operators of the country was most marked and of the greatest interest. Upon the one hand, it was maintained that the great bulk of the subjects of ruptured ectopic gestation sac recovered from the effects of the hemorrhage, and, if they were treated expectantly, either the products of gestation were absorbed, with complete recovery of the patient, or a hematocele developed, which might later be removed when all evidences of acute anemia had ceased. The other side held strongly that hemorrhage in such cases was fatal in an alarmingly great proportion of the patients, and that it was one of the fundamentals of surgical technique, at once and under any conditions, to check active hemorrhage. As illustrative there were cited those distressing cases of post-operative hemorrhage in which, in the event of a ligature slipping from any one of the four primary arteries supplying the internal genitalia, fatal bleeding almost invariably resulted, unless a secondary operation with ligation of the bleeding vessel was carried out in time to prevent the exsanguination of the patient.

The correct view of this question, as is so generally the case, seems to lie in the middle ground between the two extremes. When the shock is profound and the patient is unconscious, bloodless, or even moribund, she should certainly not be sub-

jected to the additional strain of any operative procedure, but should be treated on the expectant plan. Such treatment, however, is not peculiar to ectopic gestation, but is axiomatic in surgery of any kind. It is never permissible to operate in the face of the certain death of the patient. Excluding, then, those cases in which surgical interference is not justified, whatever the diagnosis, there remains the great majority in which active hemorrhage is in progress. Here there can be no question that ordinary surgical principles must be applied and hemorrhage arrested at once by ligation of the bleeding vessel. It seems dangerous to spread abroad the belief that a woman with a ruptured ectopic gestation sac will recover if let alone. Such teaching must lead to many preventable fatalities, and should not be continued, whatever experiments may indicate. Ectopic gestation is a dangerous condition, one of high mortality and one which requires the immediate attention of a skilled and experienced gynecologist.—*N. Y. Med. Jour.*

Sterilization after Cesarean Section

In a discussion on the papers of Drs. Polak and Green, read before the American Gynecological Society, Dr. E. W. Cushing, of Boston, did not think Dr. Green, or even the Boston Lying-in Hospital, had a right to determine whether a woman should be sterilized or not. A woman's body belonged to herself. If she had been malformed by nature and could not be delivered of a child without repeated surgical operations which involved the risk of life, and she desired to avoid that subsequent risk by having a sterilizing operation done, she had a right to do so.

Dr. Henry D. Fry, of Washington, D.C., said it was his rule to explain the situation to the woman and her husband and allow them to decide whether or not she should be sterilized. He did not believe we could make a dividing line on account of the social position of the woman, and say we could sterilize those of the lower class and not those of high social position. If such a position were taken, women of humble position, who had given birth to children who had subsequently become great men, would be sterilized.

Prof. Hofmeier, of Würzburg, Germany, had performed sterilization not only with the consent of the woman and her husband, but at their urgent request. He did not think it was possible for women to abstain from sexual intercourse and subsequent pregnancy, as indicated by Dr. Green.

Dr. Charles Jewett, of Brooklyn, performed Cesarean section two months ago on a woman upon whom he did the same operation two years previously, and at the request of both the husband

and wife he felt justified in doing an operation of this character. He resected the tubes from the cornu of the uterus, then simply caught the ends of them down upon the suture line.

Dr. Herbert R. Spencer, of London, did not consider we were justified in saying, in the absence of pathological conditions such as fibroid tumors, cancer or infection, that a woman should not have any more children. From a purely ethical standpoint, he could not see any difference between consenting to operate on a woman and preventing her from having children by this sterilizing operation and committing an abortion because she asked it. The so-called sterilizing operation was not always reliable. A distinguished abdominal surgeon in England supposedly sterilized a woman, but subsequently, much to his annoyance and mortification, she again became pregnant, and he delivered her of a child. He delivered this woman for the seventh time after so-called sterilization.

Dr. J. Montgomery Baldy, of Philadelphia, said his sympathies went out largely to women. They had a right to say, and an exceedingly serious say, in regard to many of these operations. If a woman, guided by the conscientious judgment of the physician, decided to be sterilized, we had a right to sterilize her and prevent reproduction in the future in this individual case, but this did not mean that this operation should be done on every woman who requested it.

Dr. Gellhorn, of St. Louis, said he thought we should be a little more charitable, and not do unto others what we did not want done unto ourselves. He denied the right of any physician to sterilize any woman, and only for grave reasons should the operation be acceded to, and then it should only be done by consultation with one or more other physicians.

Dr. Willis E. Ford, of Utica, N.Y., expressed the hope that the Society would not go on record in favor of the sterilization of women, because if the members opened the door it might be opened still wider for other operations which ought not to be done.—*Amer. Jour. of Obstetrics.*

Cesarean Section in Placenta Previa

We extract the following from a report of a discussion at the last meeting of the American Gynecological Society, which appeared in the *American Journal of Obstetrics:*

Dr. George Tucker Harrison, of New York, said that while it was true that in the preponderating majority of cases of placenta previa occurring in practice, the obstetric resources at our command were amply sufficient, there still remained a class in which the performance of Cesarean section, whether *vaginal*

or *classical,* might well challenge serious consideration. The class of cases referred to were those in which dangerous hemorrhages occurred while, at the same time, the cervix was maintained in its entire length. The Cesarean section was especially indicated when the patient had reached full term, but her life was jeopardized by the hemorrhages. To show the changed attitude toward this question on the part of prominent obstetricians in recent years, he recalled well in 1902 a paper he had heard upon the indications for recourse to Cesarean section, by Dr. Kerr, of Glasgow, at the meeting of the British Medical Association, in which the author declared that those who found such an indication in placenta previa did so because they were ignorant of proper obstetric methods. Dr. Kerr, of Glasgow, in his recent admirable work on "Operative Midwifery," speaks as follows: "I have never performed Cesarean section for placenta previa, and it may be I never shall, but I am less antagonistic to it than I was." The cases he referred to were old primiparæ where the hemorrhage occurred at full time and before labor had started, and where, to judge by the condition of the parturient canal and the size of the child, delivery would be tedious and difficult. He had in mind only the classical abdominal Cesarean section. "Under no circumstances whatever," he remarks, " is it conceivable that vaginal Cesarean section is a suitable operation for placenta previa in the later months of pregnancy." This positive expression of opinion should not carry much weight, as it was based entirely upon *à priori* reasoning. On the other side, listen for a moment to an obstetrician of vast learning, of large experience and profound sagacity, Dr. Bumm, of Halle. Speaking of the vaginal Cesarean section, he observed: "I have performed this operation four times—this was several years ago—for severe hemorrhage in placenta previa. In each case the cervical canal was maintained in its entire length. In three cases there was a profuse loss of blood at the sixth or seventh month, and the fetus dead. In the fourth case the pregnancy had advanced into the ninth month and the child was living. This was extracted without harm and remained alive, its weight 2,950 grams. The bleeding from the incised edges could be controlled without difficulty; the bleeding also where the incision extended into the domain of the placenta was only moderate; a couple of spurting arteries were provisionally clamped; the suture sufficed for the complete stoppage of the bleeding. In the operation I have constantly had the feeling of full security against loss of blood, and believe that the vaginal hysterectomy in women, who already at the beginning of dilatation have lost much blood, may be effective in saving life. At all events, it is superior to the abdominal Cesarean

section in consideration of the smallness of the wound and to all dilatation procedures from the certainty of arrest of hemorrhage."

He expressed astonishment at the ease of the operation when he performed vaginal Cesarean section for placenta previa.

Considering all the advantages appertaining to the operation, he held firmly to the conviction that under the circumstances mentioned, when the Cesarean section was indicated, the operation of choice should be the vaginal Cesarean section. The classical Cesarean section should be reserved for the cases in which the vaginal was excluded, as, for example, contracted pelvis.

Dr. Charles Jewett, of Brooklyn, said: "If the well-established rule is to be maintained, which respects first the interests of the mother, delivery by abdominal section can very seldom be justified in placenta previa. Its indications must be restricted almost wholly to the complications.

"Vaginal Cesarean section, the cause of which has been espoused especially by certain German writers, has no greater claim to consideration than the suprasymphyseal operation. While it may offer perhaps quite as good a prognosis for the mother, the chances for the child are not so good owing to the somewhat greater fetal risks in extraction through the natural passages.

"Not only do we find little rational basis for Cesarean section in placenta previa, but its claims receive scant support from experience. In two thousand and ten cases of placenta previa the maternal mortality under obstetric methods of delivery was 221 (10.9 per cent.), the fetal 1,159 (57.3 per cent.). Seven hundred and twenty-six of these cases, reported by Füth, were collected from the practice of midwives and general practitioners. Many were subjected to prolonged tamponade and were exhausted by needless hemorrhage. Exclusive of Füth's cases, the maternal mortality was 6 + per cent. and the fetal 61.8 per cent.

"Comparing these results with those of ninety-five abdominal Cesarean operations collected from seven publications, all but one of the last year, we find in the latter a mortality of 11.5 per cent. for the mothers and 34 per cent. for the children. Sellheim in one vaginal Cesarean section saved both mother and child.

"In twelve uterovaginal sections reported by Bumm the maternal deaths were 8.3 per cent., and the fetal 83.3 per cent.

"Hammerschlag refers to twenty-six vaginal Cesarean sec-

tions at the Königsburg Clinic, with a fetal death rate of 55 per cent. How many mothers were lost he fails to say.

"The abdominal sections were performed by operators of exceptional skill. Yet the maternal mortality was nearly doubled and the fetal was not correspondingly diminished. The few vaginal operations make a better showing for the mothers than the abdominal, but the percentage of fetal deaths is no less than under obstetric methods.

"If conclusions may be formulated on so small a number of cases the Cesareanists have not yet established their cause."

Editorials.

CANADIAN MEDICAL ASSOCIATION

We understand that arrangements are nearly completed for the next meeting of the Canadian Medical Association, which will be held in Toronto, June 1, 2, 3, 4. It has been decided that the meeting will last four days instead of three, as in former years.

The various local committees in Toronto have been working faithfully for several months, and as a result of their work there is now no doubt that an exceedingly attractive programme will be forthcoming.

The meeting will be held in the buildings of the University of Toronto, through the kindness and courtesy of President Falconer and the Superintendent of Buildings and Grounds, Mr. Colin Graham Campbell. The General Sessions, and probably the meetings of the Surgical Section, will be held in the Convocation Hall. The Sections in Medicine and Obstetrics will probably hold their meetings in the large Examination Hall attached to Convocation Hall. Meetings in other Sections will be held in the Physics Building, which is situated south of Convocation Hall. We understand that there will be an unusually large attendance from our great Western district.

ATHLETIC DEATH

In an interesting article which appeared recently in the Toronto *Mail and Empire,* the following question is asked: "Can athletes regain their lost form? Can bone, tissue and heart that have suffered what is called 'athletic death' be resurrected?"

Most physicians who have taken an interest in this matter believe that an athlete reaches his best condition after much hard and steady work, and after he has reached this highest pitch of perfection he can remain in such condition for only a limited time, a number of months, or in some cases a number of years.

It is thought by many that if, after reaching this highest point of good condition, he quits training for even a year he can never "come back." The decay thus intimated is not attributed to age, although, of course, age must bring its inevitable results in the course of time.

Several instances are given of athletes who, although young men, failed to "come back" after comparatively short periods of rest. For instance, a few years ago Amos Rusie, of Indianapolis, was the greatest baseball pitcher in the world; his speed was terrific and his curves were wonderful. On account of a disagreement with his club he stopped playing for one year; then his troubles were settled and he was put in "the box" again. He did not, however, last out the season, and, instead of being the best pitcher in the world, he soon fell down to about forty-first place. B. J. Wefers, a famous American runner, was for a certain time the champion. He retired for a time, but after a couple of seasons attempted to claim his former exploits. TenEyck, the famous oarsman, after a comparatively short rest, failed to regain his former speed. Some people are considering these facts in connection with the proposed prize fight between Jeffries and Johnson: Will the older athlete be able to "come back" again?

THE PHYSICIAN AND THE NURSE

Among our exchanges there is none more interesting than the *Canadian Nurse,* which is published in Toronto under the editorship of Dr. Helen MacMurchy. We read with a certain amount of regret a letter in the January issue written by a nurse. Although we may not admire the style or tone of the writer or of Miss B. Mordant-Wilson, from one of whose articles the writer has given a long quotation, we must acknowledge that certain statements are worth considering. The following is one of the statements: "Nurses are often on duty 24 hours a day and seven days a week."

It is remarkable that some fairly decent people think that nurses should be on duty 24 hours a day. We fancy the writer in the *Canadian Nurse* knows how to take care of herself, but we

have seen many a good, conscientious nurse practically *done to death* by unreasonable people. Does the average medical practitioner do his duty to his faithful nurse? Does he properly appreciate the value of her assistance to him? Does he take the trouble to ascertain the amount of work she does and the time she spends in looking after the patient?

We hold a fixed opinion that it is the duty of the physician to know so far as possible what his nurse is doing. It is surprising what a nurse will frequently endure while caring for her patient. The physicians should see to it that the strain in such cases will not be unreasonably prolonged. The nurse should have some time for rest and sleep, and she should go out into the open air at least once a day. We do not propose to lay down a set of rules for the doctor. When, however, he has as his assistant a good nurse (one of the noblest specimens of God's creation) he should show her some kindly consideration.

TORONTO GENERAL HOSPITAL

A deputation from the Hospital Board, consisting of Mr. J. W. Flavelle, President Falconer, Dr. Byron E. Walker, Mr. P. C. Larkin, Mr. W. E. Rundle, Prof. A. B. MacCallum, Dr. J. N. E. Brown and Mr. Cawthra Mulock, appeared before the City Board of Control, February 14th, and asked that body to sanction a further contribution of $200,000 towards the funds of the Toronto General Hospital. Mr. Flavelle, who acted as spokesman, said that it was the desire of the Hospital Board to establish a really first-class hospital in Toronto. The Government, University, and many private citizens had been most generous with their contributions. They now asked that Toronto should supplement these contributions by another grant of $200,000, and in return the city would get one of the best-equipped hospitals in the world. There would be 449 beds in the public wards for the sick poor; there would also be an out-patients' department, well equipped and able to deal with more than 400 patients daily; also a modern ambulance service, so complete that in the event of a big accident occurring nurses

and doctors would be rushed to the scene to render first aid. The University authorities would equip and maintain laboratories in connection with the hospital.

Controller Spence said there was not a city on the continent which carried on its charitable work so economically as Toronto. The poor sent to the hospitals cost about 70 cents per head per day, and at the Isolation Hospital the cost was 90 cents per head per day, exclusive of any reckoning of the cost of construction and maintenance. Unless the city intended to start a public hospital and maintain an expensive staff they could not do better than donate the sum asked for. It would be money well spent, and would be of inestimable value to the sick poor. The Council gave two readings of a by-law authorizing the issue of debentures to raise the money, and at an early date the ratepayers will be asked to confirm the decision of the Council.

A SCHOOL CENSUS FOR NEW YORK

A most important step, with a direct bearing upon school hygiene and, therefore, preventive medicine, has just been taken by the City of New York. It has been realized there, and it is hard to see why it was not realized everywhere long ago, that if we are to have our children educated we had better know first of all who and where the children are.

The Truancy Act and the Compulsory Education Act are largely inoperative because we have not this information. The Mayor, the Police Commissioner and the City Superintendent of Schools have been made the Permanent Census Board for the Schools, and one of Dr. Maxwell's assistants, Mr. Geo. H. Chatfield, has been appointed permanent secretary of the Board. The city police make the returns and a system of cards has been devised, at once complete and simple, for the purpose of recording the answers systematically. The results of this census will be awaited with great interest, and the example of New York will, we hope, be followed in Canada.

THE WATER SUPPLY OF TORONTO

One of the most important factors in the daily life of a large centre is its water supply—the most potent factor as a disease-breeder, if it is not pure. The source of supply is always to be considered as of first importance. If it is impossible to obtain an absolutely pure supply, or one that is only impure at times, then filtration enters largely into the case, and becomes an absolute necessity. The value and ease of filtration are in the inverse ratio to the quality of the water, taking into consideration the different forms of contamination that water is subject to.

The city of Toronto has at its doors an unlimited supply of the purest water that can be found, but the position from which the supply is gathered has always been a source of frequent, if not constant, danger, both from storms and contra-currents. The intake pipe is laid southerly from the island into the lake for a distance of about three-quarters of a mile, the extreme end or inlet portion being turned upward. The lake bottom here dips rather rapidly and somewhat unevenly. This pipe, to be kept straight, had to be propped up on cribbing to maintain this straightness, and the sands then washed around the pipe until it is now lying on an even bed, heaped over with sand. It is easy to see that this sand is likely to be very much contaminated. The serious difficulty has now arisen that this sand is heaped up to such an extent that it is actually threatening to practically cover over the intake opening.

The department has applied for an appropriation to extend this intake opening some feet nearer the surface. The impurity of the water is greater nearer the surface, and consequently the extending upward of this pipe is placing it in a more contaminated source of supply. The water-works department may have fully realized the present situation, but the citizens have no evidence of it. It is no credit to a department to hunt for a remedy after a serious break-down has occurred, and that break-down has occurred in the water-works system to-day.

We have contended for years that the only true and business-like way of securing a permanent pure water supply for Toronto is to extend the intake pipe into the lake for a consider-

able distance, maybe as far as a mile, making the source of supply probably close on to two miles into the lake.

The writer has been assured by the department that this is impossible from an engineering point of view, on account of the very sudden dip a short distance south of the extreme end of the present pipe; but on asking for soundings and actual depths, matters which are of the utmost importance, he is told that there does not exist such a chart. We were told that such a chart was thought to have been made many years ago, but it could not be found in the department. It was not found, and we were not shown, nor in any way helped by the department clearly to see the matter, but were dismissed with the statement that it was absolutely impracticable. If the pipe cannot be extended without a great cost, surely a tunnel can be made into the lake, and the source of supply guaranteed forever. What Toronto must do is to move the intake pipe farther into the lake beyond the possibility of contamination such as exists to-day. The whole system will break down, and that at the most important part, if we do not do something at once.

THE CANADIAN HOSPITAL ASSOCIATION

The Fourth Annual Meeting of the Canadian Hospital Association will be held in Montreal on Easter Monday and the following Tuesday, March 28th and 29th.

Mr. H. E. Webster, Superintendent of the Royal Victoria Hospital, Montreal, is President.

Dr. Christian Holmes, of Cincinnati, and other eminent hospital workers will be present.

One feature of the meeting will be a visit to the various Montreal hospitals, with demonstrations on some special features of their work.

All hospital superintendents and hospital trustees are eligible for active membership, and anyone else particularly interested in hospital work is eligible for associate membership.

For further information in regard to the meeting application may be made to the Secretary, Dr. Brown, Toronto General Hospital.

Copies of last year's proceedings can be had from him on application.

THE TORONTO GENERAL HOSPITAL EX-HOUSE STAFF BANQUET

The Ex-House Officers of the Toronto General Hospital, of which there are now nearly three hundred, will hold their annual banquet at the King Edward Hotel on Easter Monday evening. Dr. Roland Hill, of St. Louis, will deliver the scientific address, following which the usual toasts will be drunk.

It is expected that the first presentation of the Gold-Headed Cane will take place. This has been awarded to Dr. Thos. Cullen, of Baltimore, who was considered to have made the best contribution of any ex-house officer to medical literature last year.

A strange story comes from Hungary. Dr. Joseph Fekete, of Rosinjo, Hungary, is charged with murder. He admits having given poison to a patient at the latter's request. The victim had endured appalling suffering for ten years, and his malady being without remedy the doctor administered poison with the full consent of the family, who were assembled at the bedside. A nursemaid had been listening at the door, and on her evidence the doctor was charged with a capital offence.

The Executive Committee of the Manitoba Medical Association has fixed May 26-27 as the dates for their next meeting. The Committee, in making a choice of dates, very kindly took into consideration the dates of the Toronto meeting.

It is expected that many from Manitoba will attend the Winnipeg meeting and then come to Toronto to attend the Dominion meeting. Some of these, together with several others from the Central and Eastern Provinces, will go to St. Louis to attend the meeting of the American Medical Association, which will be held June 7-10.

Personals.

Hon. Dr. Pyne, Minister of Education, had an attack of acute rheumatism, from which he was confined to his house for a good part of February.

Dr. J. Harvey Todd, radiographer, Toronto General Hospital, wishes to announce to the profession that he is now in a position to undertake radiography and radiotherapy at his office, 165 College Street.

Dr. Thos. Cullen, Associate Professor of Gynecology at Johns Hopkins Hospital, Baltimore, has been awarded a gold-headed cane, donated by Mr. P. C. Larkin, Vice-President of the General Hospital Board, for the best contribution to medical literature last year by an ex-house surgeon of that hospital. The subject of Dr. Cullen's article was "Adenomyoma." The cane is being made in England and will be patterned after the celebrated gold-headed cane of medical history, which is now in the possession of the Royal College of Physicians, of London, Eng. Dr. Cullen was a member of the General Hospital house staff in 1890-1.

Byron E. Walker, LL.D., has been appointed Chairman of the Board of Governors of the University of Toronto in the place of John Hoskin, K.C., LL.D., who has resigned his position on account of ill-health. Dr. Hoskin has been connected with the University since 1892, when he was made a member of the Senate.

The students of the Third Year of the Medical Faculty of the University of Toronto held a banquet at McConkey's Tuesday, February 8th. The officers were: President, F. R. Scott; F. S. Burke, L. P. Jones, R. W. Young, W. R. Calm, W. E. Caven and W. C. Campbell.

The Graduating Class of Medicine, Toronto University, held a banquet at the St Charles, February 15th. The officers were: Hon. President, Dr. J. F. W. Ross; President, H. H. Murray, B.A.; Vice-President, R. A. Jamieson; Secretary, J. G. Alexander; Treasurer, F. Manley; and the other members of the Committee, R. T. Lane, F. W. Loring, F. E. Pitman and G. Hanna.

Wanted.—Medical assistant in city practice. Apply *Practitioner.*

Obituary.

JOHN MILL PIPER

Dr. J. M. Piper, of 544 Palmerston Boulevard, Toronto, died at his residence on February 7th. He received his education in the Toronto School of Medicine and graduated M.D. from Victoria College in 1880. After practising many years in London, Ont., he moved to Toronto.

RECTAL AND VAGINAL USE OF FIBROLYSIN

Mendel (*Muench. med. Woch.*) states that fibrolysin can only be given into the veins, subcutaneous tissue, or muscles. H. Althoff has, however, obtained a decidedly beneficial action by rectal administration. The patient suffered from arthritis deformans of the right hip. A vial of fibrolysin solution was injected into the rectum, and in two to three minutes after the patient noticed the characteristic taste of garlic. At night there was a sligh chill, followed by fever, headache, and nausea. Two weeks later a second injection was given, followed by the same reaction. Six weeks later there was decided improvement, so that the rectal use of fibrolysin was continued (one vial every week, diluted in 40 cc. of water). At present the patient has only slight pain and can walk for hours.

In a second case there was a fixed retroflexion of the womb after a difficult confinement. Two or three times weekly vaginal tampons were inserted, saturated with the following solution: Ichthyol, 5 gm.; glycerin, ad 50 gm.—plus the contents of two vials of fibrolysin. After six weeks the uterus was perfectly movable. It is difficult to decide here whether the ichthyol or the fibrolysin produced the desired result.—*Charlotte Medical Journal.*

Book Reviews.

The whole series of Oxford medical publications are so favorably known that they require little notice at our hands. The Canada Law Book Publishing Co., Toronto St., Toronto, are offering the remainder of their stock at 40% discount, thus giving every medical man an excellent opportunity of supplying his library at specially cheap rates. We are reviewing a few of the most important volumes in this number.

THE OPERATIONS OF GENERAL PRACTICE. By Edred M. Corner. Oxford Medical Publications. The Canada Law Book Publishing Co., Toronto.

This is a very useful book for everyone, for it deals with the simple, everyday affairs of a general practitioner's life. It is perhaps the best of the series.

A MANUAL OF VENEREAL DISEASES. By Officers of the Royal Army Medical Corps. Oxford Medical Publications. The Canada Law Book Publishing Co.

Although this book was published three years ago, there is nothing else so helpful that has come to our notice. Every question which could possibly arise is answered by men who are experts both by virtue of their training and their wide experience.

PRACTICAL ANESTHETICS. By H. Edmund G. Boyle. Oxford Medical Publications. The Canadian Law Book Publishing Co.

An interesting and useful book which covers the ground fully without being tedious.

MEDICAL LECTURES AND CLINICAL APHORISMS. By Samuel Jones Gee. Oxford Medical Publications. The Canada Law Book Publishing Co.

Samuel Gee has an international reputation as a physician and a writer, and these lectures are the cream of his work. They should be read by everyone interested in any branch of medicine.

THE TREATMENT OF DISEASE IN CHILDREN. By G. A. Sutherland. The Oxford Medical Publications. The Canada Law Book Publishing Co.

This is an epitome of a larger work by the same author, confined, however, entirely to children. Very concise and practical, the reader will find the work an excellent companion and helpmate.

SURGICAL EMERGENCIES. By Percy Sargent, M.A. Oxford Medical Publications. The Canada Law Book Publishing Co.

This deals with the treatment of those accidents which are constantly happening in every practice, such as burns, fractures, strangulated hernia, etc. It is very full and most interesting.

CANCER OF THE WOMB. By Frederick John McCann. Oxford Medical Publications. The Canada Law Book Publishing Co.

This is the most comprehensive work on the subject that has been published in England, which, of course, says a great deal. At the reduced price everyone can afford to have it.

FUNCTIONAL NERVOUS DISORDERS IN CHILDHOOD. By LEONARD G. GUTHRIE, M.A., M.D., F.R.C.P. Senior Physician to Paddington Green Children's Hospital; Physician to the Hospital for Epilepsy and Paralysis, Maida Vale. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E.C. 1907. Toronto: Canada Law Book Publishing Co.

The object of this book is to emphasize the truism that the neurotic child is the father of the neurasthenic adult. Many nervous and other ailments are the outcome of the neurotic or emotional temperament, and all are aggravated thereby. This early recognition of these simple facts by medical men may help to lessen neurasthenia in the rising generation.

The contents of this volume consist chiefly of lectures delivered at various times before the provincial branches of the British Medical Association, and the Post-Graduate College of London. Parts of the section on "Night terrors" are taken from an article on that subject in Allbutt's "System of Medicine."

THE SKIN AFFECTIONS OF CHILDHOOD. With special reference to those of more common occurrence, and their diagnosis and treatment. By H. G. ADAMSON, M.D. (Lond.), M.R.C.P. Physician for Diseases of the Skin, Paddington Green Children's Hospital; Physician in Charge of the Skin Department; (formerly Physician) North-Eastern Hospital for Children; Assistant in the Skin Department, Westminster Hospital. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E.C. 1907. Toronto: Canada Law Book Publishing Co.

This manual of 284 pages is intended solely as a practical guide in the clinical study and treatment of skin affections in children. It will be found useful to students of medicine and practitioners in their daily work. It is well illustrated. The book is based largely upon the author's personal experience.

HEART DISEASE AND THORACIC ANEURISM. By F. J. POYNTON, M.D., F.R.C.P., London. Assistant Physician to University College Hospital, and Physician to Out-Patients, the Hospital for Sick Children, Great Ormond Street, London; late Medical Tutor and Medical Registrar to St. Mary's Hospital. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E.C. 1907. Toronto: Canada Law Book Publishing Co.

This book describes in outline the more important forms of heart disease, together with the chief methods that are employed in their clinical investigation and treatment. A series of prescriptions are also given. The Schott resistance movements are described, and there is also mention made of the artificial Nauheim baths, both weak and strong, the latter effervescing. This is an excellent work, written in clear and concise form.

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures and especially prepared original articles on treatment, medicine, surgery, neurology, pediatrics, obstetrics, gynecology, orthopedics, pathology, dermatology, ophthalmology, otology, rhinology, laryngology, hygiene and other topics of interest to students and practitioners, by leading members of the medical profession throughout the world. Edited by W. T. Longcope, M.D., Philadelphia. Vol. IV. Nineteenth series. 1909. Philadelphia and London: J. B. Lippincott Company.

Always instructive and interesting, the last number of the *Clinics* for the year 1909 is perhaps the best. It contains a number of excellent articles on all manner of subjects, and will suit the taste of every general practitioner, as well as those of our profession who are confined to the specialties. A number of rare cases are recorded, such as epiploitis following the operation for hernia, post-mortem priapism (3 cases), and a solid teratoma of the mediastinum. Besides these, there are many essays on subjects of everyday importance, such as typhoid in children, and indications for operation on the prostate.

W. B. Saunders Company, the medical publishers of Philadelphia and London, have just issued a new edition—the thirteenth—of their handsome Illustrated Catalogue. It contains some twenty new books and new editions, and, besides numerous black-and-white illustrations, there are two color cuts of special value. We strongly advise every physician to obtain a copy—sent for the asking. It will prove a ready guide to good medical books—books that we all need in our daily work.

Correspondence

REFORMING POLICE COURT INEBRIATES

The Editor of THE CANADIAN PRACTITIONER:

DEAR SIR,—The Society for the Reformation of Inebriates aims at two things:

1st. For some years, in a quiet way, it has been trying to reclaim the unfortunates charged in the Police Court with drunkenness. Daily at the City Hall the Society has in attendance a physician and two other officers, who go among these prisoners and try to reach those ready to be aided by the Society.

The drink habit is accompanied by a diseased nervous system, and what many of these people need is medical treatment. The physician in attendance gives this to those found willing to accept it, and in some cases the Society bears the expense of keeping in hospital, for a time, inebriates who must receive such treatment if they are to have any chance in life. The results from such methods have been most encouraging.

2nd. The second great aim of the Society is to reform completely the present mode of dealing with inebriates committed to jail. Toronto needs badly what a good many cities both in Great Britain and the United States now have—a farm outside the city, to which inebriates charged with drunkenness can be sent to be kept at wholesome labor, if possible out of doors, for a time long enough—a good many months in some cases, no doubt—to permit their whole system to get into healthy condition. To send such persons repeatedly for short terms to jail is to give them no real chance. They should be treated as diseased persons and kept long enough to become healthy in mind and body.

It is obvious that the Society has an extensive work on hand. It has further aims, among others the securing of a hospital where inebriety may be treated under favorable conditions—existing hospitals make but slight provision for such a class of patients. But the two aims outlined above are the chief ones before the Society for the moment.

To carry on its work, it requires funds, and your readers are urged to aid efforts that, if pressed forward will bring new hope and self-respect to many lives. Any sums will be welcomed. If only one dollar can be sent, it will be gladly received. It is hoped

that some donors able to do so will aid this hard-pressed work generously.

Contributions may be sent to the Treasurer, Hon. S. C. Biggs, Confederation Life Building; the Secretary, Dr. A. M. Rosebrugh, Relief Office, City Hall, or to my address, 467 Jarvis St.

Yours truly,

GEORGE M. WRONG,
President.

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Selected Articles.

RADIUM IN THE TREATMENT OF MALIGNANT GROWTHS.

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The introduction of certain special methods of using radium has provided us with a very powerful agent for the removal of neoplasms—one which will act when other means are of no avail. It is no universal panacea and will not cure every type of malignant disease, but as cases can be cured by it which are inaccessible to any other method—even surgery—it is bound in future to take a very prominent place in the treatment of this terrible complaint. It will not displace surgery in the treatment of many growths, though it will in some, but it will often be employed in conjunction with an operation in order to destroy neoplastic cells which may have escaped the attention of the operator. In fact, I hope some day to show that every operation for cancer should have prophylactic radium treatment as a routine measure. It is as ridiculous to expect to cure every case as it is to suppose that an operation will never be followed by recurrence, but I am confident that we shall later on be able to cure 80 or 90 per cent. of certain types of growth. There is a tendency among some people to condemn the treatment on account of some particular case in which it has failed—possibly a case quite unsuitable. This is most unreasonable, but happens to every new treatment. If, out of a number of cases which were inoperable, one could cure only 1 per cent., I say one would be justified—nay, more, compelled to use it in every such case, providing it did no harm. But I claim that it will cure a far larger percentage than that, and, further, where it does not cure, that it will often relieve. It must, however, on no account be used indiscriminately, as some growths are not improved, at any rate by the quantities of radium we can use at present, and it is even possible that in some we may do harm.

Action.

Radium rays exert a selective action on the cells of some tumors, and it is found that this selective action is greatly increased by using lead filters at least 0.5 mm. thick. I believe

that by the use of screens 2 or 3 mm. thick, with the consequent longer exposure which is possible, we can cure growths that cannot be cured when thinner screens are used. By selective action I mean that the tumor cells are destroyed, while the cells of the normal tissue remain uninjured, and the whole treatment hinges on this. Different growths vary in the extent of this selective action, but in some it is indeed enormous, and I have seen growths shrink away, parts of which must have received one-twentieth or less of the amount received by the skin or mucous membrane beneath which they lay, and which itself was unharmed.

There is another factor influencing the selective action, and that is the intensity of the radiation which with the same filter can only be increased by using more radium, so that when one has only a limited amount there will be a certain filter which will give the optimum effect, and probably this will vary in thickness for different tumors. Increase in the amount of radium, on the other hand, will increase the efficiency of the action on every tumor, and will bring within one's power those growths which have proved refractory to smaller quantities. This has been definitely proved by Dominici in a tumor which resisted the action of 2 eg. for a long exposure, but yielded when treated with 5 eg. for a considerably shorter period. Another factor is that of distance. The further off the radium is, the less will be the difference between the dose received by the surface and the deep parts of the growth, but then, even though one might prolong the time of the dose considerably, the intensity of radiation might be diminished beyond the point at which it would affect the growth at all. The action of these so-called ultra-penetrating rays is much more selective than that of X-rays, and this considerably enhances their scope. The possibility of introducing tubes containing radium into cavities and into the tissues still further increases their utility. Though the filtered radiations are a depressant of the activity of the cells of almost all malignant growths, there is probably a point, before or long be[illegible] the full dose has been given, when the action, if stopped, would be a stimulant to their activity, as with most other cell depressants. I have mentioned that in some cases one-twentieth of the full dose will be sufficient to cause regression, but there are other growths which are only affected by half the full dose. It is in these latter where the stimulating effect is to be feared if an insufficient dose is given.

The histological changes one sees from very penetrating rays are firstly an invasion of the growth by leucocytes without any cell change that cannot normally occur but with an accentuation

of these changes. In a later stage a large number of the cells have disappeared, and their fibrous stroma is left, and finally only fibrous tissue remains. The changes, when only 0.5 mm. of silver is used, include degeneration of the cells as well, especially in the superficial parts, and a great proliferation of the endothelium of the blood-vessels. There seems also to be a new formation of fibrous tissue. In some cases the improvement is apparent after forty-eight hours, especially in the relief of pain, but more usually not much alteration in the size of the growth is seen for two or three weeks, and this goes on for six or more weeks altogether.

General Considerations.

It is just as important to treat the outlying glands, whether they are obviously involved or not, as it is to do radical operations in surgery. Filtration is essential to secure the selective action. The thicker and denser the filter the more selective the action. A large quantity of radium will cure a tumor which a small quantity will not. A sufficient dose must be given to all parts of the tumor and glands. The cardinal principles then are:—

(1) Treat the outlying glands and the whole tumor.
(2) Filter the rays.
(3) Use plenty of radium.
(4) Give large doses.

The next question which arises is that of the supremacy of the one-dose method and the frequency of its repetition. Some claim that by dividing up the dose the action on the skin is lessened. But, surely, it is only reasonable to suppose that the action on the tumor is also decreased. Then, apart from the inconvenience to the patient and the operator, it is very difficult to gauge the dose by this method. I find that my dose can safely be repeated in six weeks, but probably experience will teach that this repetition can be made even before the latent reaction from the first dose appears, and I hope some day to increase the efficiency by making the second application in three weeks. At present I go cautiously.

Class of Case.

Now it is most important to remember that the selective action of the filtered rays varies enormously in different growths; that even two growths of the same kind may behave differently in different patients, and that a similar type of growth in different situations will not react in the same way. To give an instance: an epithelioma of the tongue is usually unsuitable for treatment; an epithelioma of the floor of the mouth will occasionally respond to

large doses, while an epithelioma of the lip will often react to ordinary doses. The behavior of a growth seems, to a certain extent, to depend on its histological structure, and we may be able to make more of this presently when we have more experience and data to go upon. The size and situation of the growth is of much less importance than this, but under certain circumstances may render it unsuitable for treatment by making it inaccessible. It stands to reason, however, that, in a suitable case, the earlier in the course of the disease it is treated the better, and this is the basis of treatment to prevent recurrence.

Epithelioma.

Taking, first of all, rodent ulcer, the cure of this, when it can be reached at all, is as certain as anything in medicine, and anyone can improve his statistics by including this class of case.

With regard to squamous epithelioma, that occurring on the vulva is, in my experience, quite unsuitable for treatment; in fact, I am not certain that the growth is not sometimes accelerated.

Epithelioma of the tongue is only curable in a very early stage, when it ought to be operated on, and as soon as it has begun to infiltrate the muscles it is useless to treat it by radium. This fact is interesting because, though in the early stages it will almost invariably be wiser to adopt surgical measures, it shows the possibility of dealing with early stages of growths which are later refractory, and so with remnants left by the surgeon, by prophylactic applications, and also the possibility of radium supplanting surgery in the early stages of some forms of the disease.

Epitheliomata of the floor of the mouth will sometimes respond to large doses. Here, again, I could never recommend the treatment of an operable case, and I expect we shall get better results from an alliance of the radiumologist with the surgeon in both operable and inoperable cases. This disease is treated both from inside the mouth and outside, under the jaw.

Epitheliomata of the lips, buccal mucous membrane, palate, pharynx, and nose are suitable for radium treatment. In these cases the tube is held against the growth by various devices, a piece of stiff flexible copper wire being very useful. In the case of pharyngeal growths low down, an œsophagoscope tube is employed. The desirability of treating operable growths must be decided on the merits of each case, and the rate of growth and histological structure will have a great influence on the decision. At any rate, disfiguring radical operations may be avoided by suitable radium treatment. Do not forget to treat the glands, even if not enlarged, in these cases.

Epithelioma of the larynx ought to be treated by the filtered radiations in every case. In the intrinsic form the delay of a month or six weeks, which is needed to see if there is improvement, will do no harm, as the disease spreads very slowly, while, in the extrinsic form, anything ought to be tried to avoid the operation of laryngectomy, which leaves the patient considerably crippled. This disease is treated from outside, and, except in very stout patients, one can get within a few millimetres of the growth. Until recently I have only had one case of this disease—a patient in whom a tracheotomy had been performed about a year before, and in whom the growth was so large that it was pressing on the esophagus, so that he could only take food through a nasal tube. Within forty-eight hours he was able to swallow. He died of toxemia a month after, but the power of swallowing remained until the end.

Epithelioma of the skin is suitable for treatment, even if rapidly growing. If ulcerated, one can give very large doses to the ulcerated portion without fear of damage: for instance, using my apparatus with 1 mm. of lead, ½ mm. of silver, and 2 mm. of indiarubber, I should not hesitate to give a dose of forty-eight hours to an ulcerated epithelioma, though the dose to a healthy skin is only thirteen to fifteen hours.

Carcinoma.

To deal with the most common form—carcinoma of the breast—an inoperable case of this is often suitable for treatment. I have seen disappearance and diminution of nodules of this nature, and have seen a case where pain from pressure on the nerves supplying the arm was completely relieved after forty-eight hours from the first treatment. Owing to the frequency of mediastinal involvement, it is necessary to obtain instantaneous radiograms to show the extent of this. If one decides to treat such a case with radium, esophageal applications are made (using 1 mm. of lead at least), the tube which the patient is made to swallow being got into position by paying out a silk thread to which it is attached, while she is examined with the X-rays until the active part of the tube, the lower end, comes into the centre of the mediastinal mass. If there are only discrete glands which cannot be seen on the screen, the distance is determined on the skiagram in relation to the aortic arch, and the radium then passed to the correct distance. The very slow growing mammary carcinomata may sometimes be treated by the radiations without operation. Yet they will not always respond, and occasionally the rapidly-growing ones will. I cannot yet understand the reason of this. After every operation for carcinoma of the

breast, several radium tubes, each containing 5 eg., and encased in 1 or 2 mm. of lead, should be left in the wound in various parts, to remove any cells the surgeon has left, and the mediastinum should be treated from the esophagus, whether obviously involved or not.

Carcinoma of the esophagus is a disease in which this is the only method which holds out any hope. It practically always relieves, and we hope in time to cure some of the cases. They are often very advanced when we first see them. I have worked at this question with Dr. William Hill, and the only early case we have had is very much improved. The applications are usually internal, but when the growth is just below the cricoid cartilage, applications outside the neck can be made as well. We have seen great relief from only external applications in one case, but he, unfortunately, had extensive disease below the strictured part. An X-ray examination must always be made in these cases, and it greatly helps one in the application.

Carcinoma of the rectum has shown itself particularly responsive to treatment in most of my cases. If possible, the tube is placed in the stricture and left there for considerably more than an ordinary dose; but if this cannot be done, it is applied to the surface of the growth or inserted into its substance.

In one case of carcinoma of the prostate which I have had, the result was extraordinary, the whole tumor having completely disappeared.

Carcinoma of the stomach and intestines would probably react, but I have no experience of them. The latter will generally be better treated by operation.

Carcinoma of the cervix reacts only with difficulty. Dominici has employed it first of all to render operable a growth which was originally inoperable, and then, after removal of the growth, to apply it to the scar, and he seems to have had successful results from this. Personally, I should be inclined to leave a tube *in situ* at the time of the operation, and give one or two further prophylactic doses subsequently.

Carcinoma of the body of the uterus ought to be most favorable, but I have had no case until a few days ago.

Carcinoma of the penis, again, has been very successfully treated in Paris, but I have had no case of it.

Sarcoma.

Of this disease I have little experience. Successes have been obtained by other observers, but many forms must be unsuitable, on account of the rapid metastases. In one case I treated there was no improvement. Some of my successful cases of