

# The Significance of Haemoptysis

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LET us begin with a definition. By Haemoptysis we mean the expectoration of an appreciable amount, usually a half dram or more, of pure blood unmixed with sputum. Lesser amounts which may be brought up mixed with mucus or purulent sputum are called 'blood streaked sputum'.

The statement should be emphasized that both these symptoms—haemoptysis and streaking—deserve the most careful follow-up investigation that the patient can be given. Too often the expectoration of blood is dismissed as coming from the nose or the back of the throat without a careful general examination of the patient or even a search for a possible bleeding point in the condemned breathing passages.

A haemoptysis may be confused with haematemesis, but can often be distinguished by the fact that in haemoptysis the blood is coughed up; it may be frothy due to mixture with air on its way up the bronchi and trachea, and the patient often experiences a peculiar bubbling sensation in the side of the chest from which the haemorrhage is coming. During a haematemesis, the blood is vomited; it may be mixed with food particles and there may be gastric discomfort or a history of definite gastric symptoms.

There are many obscure causes of haemoptysis such as the blood dyscrasias, echinococcus, vicarious menstruation, the self-evident trauma, or the more common cardiovascular diseases, especially mitral stenosis, but the present discussion will be confined to the common conditions that involve the lung itself.

J. M., a man of 31 years, was admitted to the Nova Scotia Sanatorium with a history of loss of weight and strength, cough, and an ounce of sputum daily. This was blood streaked on occasions. Careful investigation of the sputum did not reveal any evidence of tubercle bacilli, but fairly numerous spirochaetes were noted. Lipiodol investigation had not revealed any evidence of bronchiectasis. He was placed on a course of intravenous arsenic, and left the Sanatorium against advice after four injections. Six months later he was readmitted with a history of a definite haemoptysis amounting to 3 ounces and repeated smaller bleedings. Once again numerous spirochaetes were demonstrated in the sputum. This, presumably, was a case of spirochaetal bronchitis.

Mrs. H. S., age 31, is a similar case. She came to the Sanatorium complaining only of pain, which suggested a dry pleurisy, in the left side of her chest. The x-ray revealed scattered infiltrations throughout both lungs. Repeated sputum tests failed to disclose any tubercle bacilli and the tuberculin test was negative, (both strengths of P. P. D.) and, therefore, tuberculosis was eliminated as a possibility. Numerous spirochaetes were demonstrated in the sputum. Arsenic therapy was initiated, but again the patient refused to remain at the Sanatorium for treatment, feeling that she was not sufficiently sick to require it and being so greatly relieved to know that she did not have tuberculosis. About 1½ years later, however, she returned for examination as an out-patient.

She now had lost considerable weight, had a moderate amount of cough and sputum, and was having repeated, fairly severe haemoptyses. The x-ray showed typical, scattered areas of patchy pneumonitis. In this case, the haemoptyses were attributed to the presence of a spirochaetal pneumonitis, which probably started as a spirochaetal bronchitis.

Mrs. T. P., age 30, a case with a different etiological background, was admitted to the Sanatorium with a history of loss of strength, cough, four ounces of sputum daily, and an haemoptysis amounting to a half ounce some months previously. Sputum examinations were negative for tubercle bacilli, but the x-ray revealed a bilateral, predominantly basal, bronchopneumonic lesion. Investigation of the bronchial tree by means of the opaque oil, lipiodol, revealed a definite bilateral bronchiectasis as the cause of the haemoptysis.

Again, J. C., a male, age 53, was admitted with a history of cough, four drams of sputum daily, and a six-ounce haemoptysis two weeks previously. Although ordinary stereoscopic-film examination did not reveal any definite evidence of disease of the chest, investigation by means of lipiodol revealed a definite bilateral basal bronchiectasis.

This condition leads to severe haemoptyses in a large percentage of cases. If one were to take 100 cases of bronchiectasis and a similar number of tuberculosis, the number with pulmonary bleedings would be much higher in the bronchiectasis group. On the other hand, as tuberculosis is much the commoner of the two conditions, our haemoptysis patient is more apt to have tuberculosis. If this condition can be ruled out, one must search assiduously for another cause; for where there is smoke, there is fire—where there is haemorrhage, there is a reason.

Another illustrative case is Mrs. C. B., age 18, who was admitted to the Sanatorium with a history of loss of weight, strength and appetite, cough, two ounces of expectoration daily, night-sweats, dry pleurisy on the left side a year previously, fever to 99°—later rising to 103°—and numerous haemoptyses at intervals during the previous year. Repeated sputum examinations were negative for tubercle bacilli. In this case, it was well demonstrated by means of the x-ray that the haemoptyses, and other symptoms, were due to the presence of lung abscess.

Still another case, O. K., age 54, male, gave a history of persistent cough and blood-streaked sputum which did not clear up following an attack of influenza. The x-ray showed an infiltration involving the upper third of the left lung, most marked in the inner zone. Examination of the bronchial tree by means of opaque oil revealed partial obstruction of the left main stem bronchus. The pathologist's report from the bronchoscopic biopsy confirmed the clinical diagnosis of squamous cell carcinoma. The patient lived about two years after this diagnosis. Unfortunately, the condition was inoperable due to the presence of metastases. In this case, there was no true haemoptysis, but there was considerable blood-streaked sputum which was of the peculiar watery consistency, rather typical of bronchogenic carcinoma.

The most common cause of haemoptysis is pulmonary tuberculosis. In a large New York Tuberculosis Service,\* out of a total of 5,000 patients, there was a record of frank haemoptysis in 1,405 cases, or in 27 per cent. A *fatal* haemoptysis, on the other hand, is an uncommon occurrence. During a period of three

\*Reisner, D.: Changes in Pulmonary Tuberculosis Following Haemoptysis, Amer. Rev. Tuberc., 1936, XXXIV, 749.

years (1934-1936) 1,662 patients were treated at the Nova Scotia Sanatorium. In this group there occurred only six fatal haemoptyses. In each case the disease was far advanced and cavity formation was present.

It is remarkable the amount of blood that can be lost at times without fatal results. One Christmas week, a fine old colored lady, who had been a patient at the Nova Scotia Sanatorium for more than a year, began to haemorrhage profusely. Her one expressed desire was, "Oh, Doctor, if I can only live 'til Christmas!" And she did. In fact, she lived to see the next Christmas. But once more, a week before the holiday, she began to haemorrhage. This time she lost, by actual measurement, 106 ounces of blood in 48 hours. Again she begged: "Oh, Doctor, if I can only last 'til Christmas", and once more her wish was granted. She did not pass to her reward until the following February, when she quietly slept away.

A haemoptysis occurs only when the disease has eroded into a vein, artery, or capillary. This may occur in minimal tuberculous disease, but more often in the advanced stages. Also, the disease may weaken the wall of a blood vessel leading to the formation of an aneurysm of Rasmussen, the rupture of which often leads to fatal bleeding.

What are the common dangers accompanying haemoptysis? In addition to the possibility of suffocation or exsanguination, which occur only very occasionally, there is the very real danger of spread of the tuberculous process to healthy parts of the lungs. This spread is caused by the *tubercle bacilli* which are carried along with the blood that is not completely expectorated, and so reaches previously uninfected portions of the lung. The blood may form a partial clot and so block a bronchus, causing atelectasis of the associated lobe or lobule or even an entire lung. This does not occur often. The more common procedure is for the blood to be scattered, or seeded, throughout a lung or portion of lung, leading to the establishment of small foci of tuberculous disease. These may continue as new areas of active disease or they may undergo resolution leaving small areas of fibrosis, or occasionally they may disappear completely.

As an example, W. H., age 25, male, began to haemorrhage from the lungs on June 16. During the next four days, the total blood loss was about 36 ounces. On June 29, an x-ray was taken and revealed a haemorrhagic spread throughout the lower portion of the left lung. The next x-ray taken two months later, showed marked clearing of this lesion, which was still seen as a scattered nodular infiltration. This case carried a favourable prognosis.

Not so fortunate was H. M., a male, age 27, who was readmitted to the Sanatorium on November 1, 1940, without any history of a previous haemoptysis. Three weeks later he had his first bleeding of approximately two ounces. This was followed by a number of others, which eventually led to his death from advancing areas of tuberculous disease such as were shown clearly in his x-ray of February 11, 1941. This man was running a fever when he was readmitted to the institution. A haemoptysis carries with it a much poorer prognosis if the tuberculous disease is advanced or if it is active as indicated by the presence of fever and increased pulse rate.

On the other hand, a number of cases may have very severe, repeated haemoptyses without any x-ray evidence of the same and without any apparent bad effect upon recovery.

A few words regarding treatment would seem to be in order. Each floor in the Sanatorium has its own haemorrhage basket. This contains two emesis

basins, a rubber sheet, box of celluwipes, towels, and a vial of heroin gr. 1/12. When a haemorrhage bell rings, the nurse takes the basket on her way to the patient. The bed is cranked up so that the patient is in a semi-sitting position and inclined toward the side from which he is bleeding, if this is known. Many patients can tell you from which side the blood is coming. The patient is given a tablet of heroin by mouth to quiet coughing. This cannot be repeated without a doctor's order. The nurse's duty, also, is to reassure and calm the patient as excitement leads to increased blood pressure and further bleeding. Ice is given to suck, but the patient is cautioned not to swallow the ice-water, as this frequently leads to vomiting. He is spared every effort. The nurse holds the emesis basin for him and wipes his lips with paper handkerchiefs, which are discarded into a paper bag attached to the head of the bed for this purpose.

The physician, when he arrives, may see that the patient is unduly restless and so will prescribe morphine sulphate gr. 1/6 subcutaneously. Large doses are not indicated, as they may depress the cough reflex to a degree where the expectoration of blood is not effective in removing it from the lungs and so lead to spread of disease. A number of substances are in use to aid coagulation of the blood, but no one substance has been found to be universally effective. The most commonly used are: calcium gluconate, 10 cc. intravenously, and Neohaemoplastin (Park Davis & Company) intramuscularly in 2 to 5 cc. doses repeated as indicated; another useful substance is Coagulen, a Ciba product.

All cases of haemoptysis are placed on haemorrhage diet, which consists of cold milk and lime water for the first 24 hours, or as long as the haemorrhage continues, cold non-stimulating liquids for the next 24 hours, soft diet for the next 24 hours, and finally a gradual return to house diet.

In every case, the physician should auscultate the chest gently without asking the patient to cough. The presence of coarse, bubbling rales will usually indicate the site of the bleeding. If the disease is essentially unilateral or if the bleeding itself endangers life, artificial pneumothorax may be used to control haemorrhage and be continued as treatment for the tuberculosis. In a number of cases, it is impossible to initiate pneumothorax due to the presence of adhesions. Under these circumstances, a phrenic nerve paralysis may control the bleeding. In some chronic bleeders, even a thoracoplasty may be required.

In conclusion, it should be emphasized that a frank haemoptysis or blood-streaked sputum is a red danger signal. Such a case deserves one's earnest consideration and most thorough investigation. It may be the sign of advanced disease, but very often it is the *first* sign of an insidious condition which will recover if treatment is prescribed. Failure to investigate the cause, may permit time for the early case to become an advanced and hopeless one.

# Tuberculosis Survey Using the Tuberculin Patch Test

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THIS is to present the results of a Tuberculosis Survey carried out in the \*Fundy Division during the first half of 1941. Various groups of individuals were examined, as follows:

- (a) The high school students of seven towns in this Division.
- (b) Students at the Nova Scotia Agricultural College, in Truro.
- (c) Students at the Provincial Normal School, also in Truro.
- (d) A group of Indian children at the Indian Residential School, Shubenacadie.
- (e) And a number of school teachers who taught in those schools referred to in (a).

The method of conducting the survey was to X-ray all those individuals who showed a positive tuberculin reaction. The Tuberculin Test used was the Vollmer Patch Test, applied to the skin over the sternum, after the skin had been first cleansed with acetone. The Patch Test was removed at the usual time, 48 hours after its application, and the reading of the resulting reaction was made in another 48 hours. The results obtained in each of the aforementioned groups are summarized in the accompanying tables and the following paragraphs.

*High School Students*—See Tables I and II.

The High School students tested (917) made up 95% of the total enrollment of high school students (966) in seven towns throughout the Division. These seven towns include six of the eight incorporated towns in this Division. The seventh group of students are from Lawrencetown, an incorporated village. The population of the towns in which the high school students were tested is as follows: one town, Truro, has a population of between 5,000 and 10,000; the remaining towns have populations under 5,000. Lawrencetown has a population of under 1,000.

Those 917 students tested were made up of 40% males and 60% females with an average age of 15.7 and 15.8 years respectively; 69 (18.4%) of the males showed a positive tuberculin reaction, while 77 (14.1%) of the females showed a positive reaction. Taking the whole group, 146 or 15.9% showed a positive tuberculin reaction.

Taking the different schools tested, individually, we find some very interesting results with the percentage of positive tuberculin reactions as follows: 24.2%, 19.5%, 12.6%, 10.1%, 7.8%, 6.5% and 2.3%.

In each school it was found that the percentage of positive male reactors was significantly higher than those in the female group. The ages of each group of students varied from 14 to 20 years with the majority from 15 to 18

\*Colchester, Hants, Kings and Annapolis Counties and the Municipality of Digby.

TABLE I

Summary showing Number and Percentage of Positive Tuberculin Reactions as to Sex in Seven Towns of Fundy Division. Also showing Total Students Tested as Compared to those Enrolled in each Town High School; and the Average Age of those Tested Divided as to Sex

Name of Town	Number of Students				Average Age of Group in Years			Positive Tuberculin Reactions				
	No. Enrolled	Number Tested			Males	Females	Total	Males		Females		Total
		Total	Males	Females				No.	%	No.	%	
Truro.....	404	394	158	236	15.5	15.7	15.6	45	28.4	51	21.6	24.2
Windsor.....	174	166	65	101	16.3	16.3	16.3	7	10.7	6	5.9	7.8
Wolfville.....	79	79	36	43	15.3	16.5	15.9	4	11.0	6	13.9	12.6
Middleton.....	103	86	43	43	15.8	15.9	15.9	1	2.3	1	2.3	2.3
Lawrencetown.....	52	46	21	25	15.5	15.7	15.6	2	9.5	1	4.0	6.5
Bridgetown.....	70	69	23	46	15.6	16.0	15.9	4	17.4	3	6.5	10.1
Annapolis Royal.....	84	77	28	49	16.0	15.6	15.8	6	21.4	9	18.4	19.5
Totals.....	966	917	374	543	15.7	15.8	15.8	69	18.4	77	14.1	15.9

TABLE II  
Showing Diagnoses of X-ray Plates Taken on Those High School Students  
Who Showed a Positive Tuberculin Test

Diagnosis	Number	Per Cent
Not Tuberculous.....	94	64.3%
Primary Tuberculosis (apparently cured).....	45	30.8%
Pulmonary Tuberculosis (active Reinfection).....	1	.7%
Other Pulmonary Conditions.....	4	2.7%
X-rays not taken (illness).....	2	1.3%
Totals.....	146	100.0%

years inclusive. The female group showed a slightly higher average age in the case of each school, with one exception.

Of the 146 students found with a positive tuberculin reaction, 144 were X-rayed (Table II). The two students who were not X-rayed were prevented by illness from being done. Of the 144 students, 94 or 64.3% showed no evidence of any tuberculous disease, 45 or 30.8% showed evidence of having healed primary tuberculous infection, one student was found to have moderately advanced, open pulmonary tuberculosis, and four students were found with pulmonary conditions, probably not tuberculous. Summing up, we found 50 students or 34.2% of those with a positive tuberculin reaction which needed either treatment or follow-up observations.

The case of active tuberculosis which was found has brought an interesting, but tragic, series of events to light. This case, a boy of 19 years, was visited by the Public Health Nurse, once the diagnosis was made, to obtain specimens of sputum. She was told that the patient had no sputum, that he only "cleared his throat in the morning and then spat out a small amount of phlegm". This "phlegm" showed itself to be positive for tubercle bacilli. At this same visit, the nurse also obtained three specimens of sputum from the father who said he had suffered from "Bronchitis" for years. The father spat up a small amount of sputum only occasionally. This sputum was also positive for tubercle bacilli. Our regular tuberculosis clinic was held in this town shortly afterwards and the whole family was brought in for examination. These are the results:

- (a) The father, aged 56, had pulmonary tuberculosis, far advanced, active, open.
- (b) The mother, aged 55, showed suspicious parenchymal changes on X-ray which were not definitely tuberculous.
- (c) A married daughter, aged 30, with tuberculin reaction positive, had a negative X-ray. This daughter had one child, aged 3, whose tuberculin reaction was positive; X-ray negative.
- (d) Another married daughter, aged 24, with tuberculin reaction positive, showed on X-ray suspected minimal tuberculosis. This daughter had one child, aged 2, with tuberculin reaction positive, who on X-ray was negative.

- (e) A son, aged 12, with tuberculin reaction positive, but X-ray negative.
- (f) A daughter, aged 11, with tuberculin reaction positive, X-ray negative.
- (g) A son, aged 25, with tuberculin reaction positive, X-ray negative.

From this you can see the value of such a survey. The case was found in the high school and then on further investigation the probable source was found in the boy's father. Going through the rest of the family we found his mother and one sister suspected cases of tuberculosis and we found remaining members of the family, four in number, had been infected with the tubercle bacillus. Also two grandchildren, aged 2 and 3 years, were found with positive tuberculin reactions.

#### Other Groups Tested—(See Tables III and IV)

I. *The Nova Scotia Agricultural College*—All students, totalling 56, were tuberculin tested with the Patch Test. This group was largely a male group, only 3 of the students being female. 22 or 31% of the males showed positive reactions, while 2 of the 3 females had a positive reaction. This group of students are drawn from all over the Maritime Provinces and Newfoundland, but are predominantly from Nova Scotia. They vary in ages from 17 to 30 years with an average age of 20 years.

On X-raying this group of 22 students we found one student, a male, with active, open moderately advanced, pulmonary tuberculosis. 17 students (70%), including the two females, showed no X-ray evidence of pulmonary tuberculosis. The remaining 6 students (25%) showed evidence of healed primary tuberculosis.

II. *The Provincial Normal College*—This group of 286 students who were all tuberculin tested were predominantly female; 261 were females (91.3%) and 25 (8.7%) were males. 68 of the females (26%) and 7 of the males (28%) showed a positive tuberculin reaction.

The age of these students is greater than that of the high school students and less than that of the Agricultural College students. The Normal School students vary in ages from 18 to 27 years and show average ages of 19.3 years for females and 18.6 years for males.

On X-raying these 75 students, 60 (80%) were found to have no X-ray evidence of pulmonary tuberculosis; 15 (20%) showed evidence of having apparently cured primary tuberculous lesions. There were no cases of reinfection type of pulmonary tuberculosis.

III. *Indian Residential School*—These Indian children are gathered in from all over the Maritime Provinces and stay at the school for 10 months of the year, returning to their homes during the summer vacation. They numbered 158 at the time of the survey, of which 82 were males and 76 females.

They vary in age from 6 years to 16 years with the males having an average age of 10.5 years and the females 11.2 years.

Of the female group of 76 students, 50 or 65.7% showed a positive tuberculin reaction, while of the 82 males 37 or 45% had a positive reaction. It is interesting to note this difference in the groups. This Indian children group was the only tested in the survey where the female rate of positive tuberculin reactions exceeded that of the male group.

On X-raying these Indian students we found that of the 87 who had positive tuberculin reactions 42 students (48%) had no X-ray evidence of tuberculosis; one student had active primary tuberculosis; two had quiescent



TABLE III

Showing Results of Tuberculin-Testing Various Groups showing Number and Percentage of Positive Tuberculin Tests  
Average Age of each Group Divided as to Sex.

Group Tuberculin Tested	Number Tested	Number of Each Sex Tested		Average Age of Group in Years		Positive Tuberculin Tests			
		Males	Females	Males	Females	Males		Females	
						No.	%	No.	%
N. S. Agricultural College . . . . .	56	53	3	....	....	22	31%	2	3.6%
Provincial Normal College . . . . .	286	25	261	18.6	19.3	7	28%	68	26..%
Indian Children (Residential School) . . . . .	158	82	76	10.5	11.2	37	45%	50	65.7%
School Teachers . . . . .	119	27	92	20	to 50	13	50%	34	37.0%
Totals . . . . .	619	187	192	—	—	79	....	154	.....

TABLE IV

Showing Diagnoses of X-ray Plates taken on those who showed Positive Tuberculin Reactions as shown in Table III.

Diagnosis	*I		II		III		IV		
	No.	%	No.	%	No.	%	No.	%	
Not Tuberculous.....	17	70.0	60	80.0	42	48.0	36	77.0	
Primary Tuberculosis.....	Active.....	..	..	..	1	..	..	..	
	Quiescent.....	..	..	..	2	..	..	..	
Pulmonary T.B. Reinfection Type...	Apparently Cured...	6	25.0	15	20.0	41	47.0	10	21.0
	Active.....	1	..	..	..	1	..	..	..
	Non-Active.....	..	..	..	..	..	1	2	
Totals.....	24	..	75	..	87	..	47	..	

\*I. N. S. Agricultural College.

II. Provincial Normal College.

III. Indian Residential School.

IV. School Teachers.

primary tuberculosis; one had active pulmonary tuberculosis, reinfection type; and 41 or 47% had X-ray evidence of healed primary tuberculosis.

It can be seen that these Indian children show a much higher incidence of tuberculous infection than the white population in an older age group, namely, the previously summarized high school group.

IV. *School Teachers*—119 school teachers who taught in the seven towns where surveys were carried out were examined. These 119 teachers comprise 95% of the teachers in these seven towns, and include also a group of teachers from surrounding districts. The teachers tested were predominantly female and varied in age mainly from 20 to 50 years of age. Of the 119, 27 were male and 92 were female. 13 or 50% of the males showed a positive tuberculin reaction, while 34 of the females or 37% showed a positive reaction.

On X-raying the 47 positive reactors, 36 (77%) were found to have no evidence of pulmonary tuberculosis; 10 or 21% showed evidence of having apparently cured primary tuberculosis; and 1 teacher (2%) showed an apparently cured reinfection type of pulmonary tuberculosis.

### Discussion

As a means of case-finding it has been shown that the Tuberculin Patch Test of Vollmer is an efficient means of screening groups of individuals for an X-ray survey. It has been shown in fairly numerous published surveys that this tuberculin test misses no significant pulmonary tuberculosis, with the exception of moribund patients and those recovering from certain acute communicable diseases. As compared to the Mantoux test (intradermal test) the figures quoted in surveys show that the Patch Test is as efficient as first strength Purified Protein Derivative (P.P.D.) which is used in the Mantoux test. It is also more efficient than 1/100 mgm. of old tuberculin used also in the Mantoux test.

The Patch test is easy to apply, requires no sterile technique, causes no pain, and gives no general reactions. No needle is used and this is an advantage in testing children. The tests keep at ordinary temperature and do not require the care in preparation and storage as does P.P.D.

This Patch Test is an agent that is admirably adapted to use by the practising physician and with its use these physicians could do a great deal in advancing our fight against tuberculosis. We, ourselves, intend to carry out as a regular part of our anti-tuberculosis program, the testing of certain groups of individuals such as were tested in the survey given in this paper.

First and foremost in importance to our program of tuberculosis case-finding comes the examination of contacts of cases of tuberculosis. Next in importance in finding new cases of tuberculosis comes examination of certain industrial groups of individuals, college groups, nurses and high school students. The examination of these special groups of individuals besides being a method of finding new cases of tuberculosis, can be used as a means of educating these groups to our most pressing public health problem in Nova Scotia to-day, namely, tuberculosis.

The groups of students examined in the preceding survey showed a very marked interest and co-operation in its conduct. The parents of the high school students, particularly, made almost a demand that we continue this work among their children. They expressed themselves generally as being

"very grateful to know that nothing was wrong with their children". They made requests that the surveys be carried out on their younger children but it was explained that this younger age-group of children was an unprofitable field in which to conduct such surveys, and that we had very limited time available. During the survey of each of the groups tested the students were addressed in groups and the Tuberculin Test explained. Large numbers of questions were answered by individuals and every opportunity was taken to tell again the fundamental fact in the epidemiology of tuberculosis, "No person ever develops tuberculosis, except he first receive the tubercle bacillus from an open case of tuberculosis".

Discussion

As a means of controlling the spread of tuberculosis it has been shown that the Tuberculin Patch Test of Yulitzer is an efficient means of early detection of tuberculous infection for an X-ray survey. It has been shown in fully equipped pathological surveys that this tuberculin test takes on significant tuberculous tuberculous with the exception of mottled patches and those remaining from certain remote communicable diseases. As compared to the Mantoux test (intracutaneous test) the Yulitzer test is more efficient than the Patch Test in its effort as first the Mantoux Tuberculin Test (M.T.T.) which is used in the Mantoux test. It is also more efficient than 1,000 units of old tuberculin used also in the Mantoux test.

The Patch Test is easy to apply, requires no special technique, causes no pain and gives no general reactions. No special diet is needed and this is an advantage in testing children. The test has an ordinary temperature and does not require the care of preparation and storage as does the M.T.T.

This Patch Test is an agent that is admirably adapted to use by the general physician and with its use the physician could do a great deal in advance of our fight against tuberculosis. We ourselves intend to carry out as a routine part of our anti-tuberculous program the testing of certain groups of individuals as were tested in the survey given in this paper.

First and foremost it is important to our program of tuberculosis control to find out the location of contacts of cases of tuberculosis. Next in importance in finding new cases of tuberculosis comes examination of certain industrial groups of individuals, college groups, nurses and high school students. The examination of these special groups of individuals besides being a method of finding new cases of tuberculosis, can be used as a means of educating these groups to our most pressing public health problem in Nova Scotia today, namely, tuberculosis.

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# \*Some Interesting Facts From Our Diphtheria Epidemic

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EARLY in September 1940 some cases of diphtheria were admitted to the City Infectious Diseases Hospital, which on even the first preliminary clinical examination showed that we were dealing with a strain not seen in this area for some years.

Clinically the cases were, on the whole, much more toxic and severe than I had ever seen, and in conversation with older practitioners they could not recall when they had seen so many cases of this severe type. The patients frequently showed a marked oedema of the whole pharynx and swelling of the superficial glands of the neck, giving a bull neck appearance. The membranes were very extensive and frequently covered not only the tonsils, but came forward over the anterior pillars, backwards over the posterior pharyngeal wall, and upwards over the uvula which often was so oedematous as to almost block the entrance to the pharynx. This membrane, in some cases, spread forward over a considerable are of the roof of the mouth; it was heavy, thick and typical greyish color and could not be removed without causing bleeding, and depending upon the length of the illness, it was darker and in some instances, where several days had elapsed, it was almost black. Frequently, these patients also had trouble in breathing through the nose and on examination here more membrane could be found.

Frequent attacks of epistaxis, as well as bleeding from raw areas of the throat where membrane had been coughed away, was commonly found. Laboratory examination and culture of swabs, showed a definite gravis strain of diphtheria.

We have had diphtheria in endemic form in Halifax and as recently as July 1940 had an outbreak of mitis diphtheria in one of the summer camps for underprivileged children. This outbreak I was able to check and control very quickly, and immunized all the children in camp and all others who subsequently went to camp. In this group of 200 or more children so protected, none developed diphtheria during the epidemic months of the winter; whereas, other members of their families, brothers and sisters not protected, did develop clinical cases.

On my appointment to a full-time position with the City on October 1st, 1940, I was confronted immediately with this epidemic and had 57 cases of diphtheria admitted during that first month. Immediately I began an intensive program of immunization, especially directed towards the school and pre-school children. We ran clinics three days a week and had attendances at these

clinics up to 1800 on a single day. It was during this busy month that I lost a personal friend and colleague, the late Dr. Allan MacLean, who was so interested in all Public Health activities and was connected with the Department of Preventive Medicine at Dalhousie. His loss, just at this time, was a double blow, as his help was sorely needed and his advice and counsel as a trained Public Health man was greatly valued. He had operated clinics for immunization at the University Health Centre for many years and his work was valuable and prevented a more serious outbreak.

No city organization was set up for Preventive Medicine and I had to organize, with the help of Dr. H. G. Grant, the staff at the Dalhousie Clinic, and was also greatly assisted by voluntary help given by the Junior League, Daughters of the Empire, and many nurses, whose husbands were in the Forces and offered gratuitously their services. Dr. J. J. MacRitchie and Dr. G. G. Simms, as well as nurses from the Provincial Health Department, also assisted at these clinics. In all, some 14,378 people passed through the clinic and of these 10,198 finished their immunization or were found with primary negative Schick. One of our biggest problems was to get people back to the clinic at the proper time, and even with considerable daily newspaper advertising and numerous news notes we found the following percentages:

TABLE I  
Delinquency at different stages of immunization

	Male	Female	Total
Schicks not read.....	5.4	6.2	5.8
First Toxoid only.....	8.8	9.7	9.3
Second Toxoid only.....	7.7	8.0	7.9
Third Toxoid only.....	29.6	29.4	29.5
Percentage still positive after re-Schick....	.7	1.7	1.2

5.8 per cent of total tested did not return to have this Schick test read. 9.3 per cent that were given the first Toxoid did not return for their second dose; and 7.9 per cent of those given the second dose failed to return for their third; while 29.5 per cent supposedly completely immunized failed to return for re-Schicking. I might point out here that in the number who have completed the program we have found that only 1.2 per cent showed a positive re-Schick after a full three dose series was given. Thus, 98.8 per cent of those who completed the program we believe, or as far as we can tell, are immune to the disease.

During the winter volunteer nurses, as well as one full time Public Health nurse, supplied by Dr. Grant at the clinic, attempted to follow up and get these delinquents in for completion of their tests. These figures I have just quoted are the results after this follow-up was made showing that a greater use of field nurses is necessary in order to obtain optimum results.

#### The effect of the Toxoid—

We had 66 cases admitted to hospital with diphtheria who had some degree of immunity either measured by Schick test or by having received one or more doses of Toxoid or Antitoxin. Of these 66, some 46 had not received the required amount for complete immunization or sufficient time had not elapsed following the third dose to develop full immunity.

Only 15 cases of diphtheria developed in individuals who were supposedly immune on basis of previous negative Schick. Of these, 9 cases developed in

less than three months from the time the test was carried out, while the remaining six had been negative a year or more previously. Five cases had previously had Antitoxin inside a period of two months.

The clinical cases developing in those with only partial immunity were less severe and toxic and none of them developed any complications.

At the present time I believe that 90 per cent of our School children are immunized, and in the hospital since March it was rare to see a child of school age as a patient. Most of our patients during this latter period were adults or pre-school children, and this picture has continued right through to the date of this paper. The whole idea that diphtheria is a disease of early childhood, in my opinion, must be discarded as I will now attempt to show you.

Table II shows cases of diphtheria and percentage distribution by age groups.

TABLE II  
Table of percentage age distribution

Ages	Civilian	Forces	Percentage of Civilian	Percentage of Total
0-14.....	274	...	46.5	30.8
15-29.....	232	303	39.5	69.2
30 +.....	82	...}	14.	
Total.....	588	303	100.0	100.0

From these you can see that 274 or 46.6 per cent of the civilian cases were under 15 years of age. When one adds to the civilian total the number of cases in the Forces, who were all 18 years of age or more, a total of 891 cases then we find that the percentage under 15 years of age is 30.8 per cent.

In most of the older books on Public Health, and in fact on General Medicine, one finds that only from 20 to 25 per cent of the cases occur in this older age group.

How then can we explain such a high number in the older population? I grant that the population of the city in this age group has increased by reason of the influx from the country areas due to war conditions, but in turn to some extent our male population has decreased slightly due to the men being in the Forces. These facts alone possibly do not prove that diphtheria morbidity is changing, but are definite indications which must be further studied.

In comparing the incidence rate in this epidemic with the incidence rate in other centres and with the rate over the past few years here in Halifax, one finds a definite trend in this epidemic of diphtheria towards the higher age group.

Schick tests also, in my opinion, bear out to some extent this fact. Diphtheria susceptibility measured by the Schick test was found in adult groups in different sections of both Halifax and the province to run as high as 80 per cent Schick test positive, or in other words there was little difference between the susceptibility rate amongst children and adults. Without a sufficient time to make a complete study of this, I do not wish to do anything more than hypothesis. I believe that immunization, general public health measures, better living conditions, have brought about a reduction in the last few years of the number of cases as well as the number of carriers. This, in turn, has meant that fewer people have had contact with cases and carriers and

A number of cases were found where the throat was only red. The patient was hoarse and had already coughed up, or subsequently did, a large piece of membrane from the larynx. One of these patients seen by a local physician saved the long string of membrane and asked if it were a piece of tapeworm, which it resembled very closely in color and appearance, and which on Laboratory examination showed direct smears and cultures of K.L.B. In all, it was necessary to do four tracheotomies and three of these cases recovered. The fourth was only in hospital a couple of hours and died on the table while having the operation performed. One other case died fifteen minutes after admission which might have been saved if seen earlier. Still another case in which tracheotomy was considered and, in consultation with other practitioners, it was decided to wait and use only Antitoxin and a croup tent, and this child very suddenly developed marked dyspnoea and died in a few minutes before aid could be summoned and after only two hours from the time of our consultation. The big lesson to be learned here is that in any case where the breathing is labored at all, then the earlier tracheotomy is done, the better the end result.

**ANTITOXIN**—The routine of the hospital was that children on admission were given 20,000 units if membrane was present on one tonsil, and 40,000 units if present on both. Frequently the dose was increased later. The largest dose given to any child was 120,000 units. In adults the routine was 40,000 units if membrane on one tonsil; 60,000 units if on both, and 80,000 units if the membrane was on the soft palate. Additional doses were given if necessary depending on the condition of the patient. The largest dose given to an adult was 180,000 units. All of this was administered intramuscularly.

We had four cases who were subject to acute attacks of asthma and on skin tests showed no reaction to horse serum. These were treated very conservatively, and we began with  $\frac{1}{2}$  c.c. of Antitoxin and doubled this dose at half hour intervals until the required amount was given. All cases were discharged from hospital after two negative nose and throat cultures were obtained, taken 24 hours apart.

I believe that the best results came when we gave the Antitoxin in a fairly large dose to begin with and divided subsequent doses over the next day or two, as some cases developed a secondary membrane where the antitoxin was administered all in one dose. The most common complication I found was pharyngeal paralysis with the common regurgitation of fluids through the nostrils. I would say that perhaps 5 per cent of our cases showed this distressing complication. We had six cases where we found a much larger and more general paralysis, some following their discharge from hospital. Of these, three cases died. The first a child of six. Here the paralysis was like that of Landry's, gradually progressive from the limbs, until the child had respiratory failure and was kept alive in an iron lung for forty odd hours before finally dying of myocardia failure.

The second, a man well in his 50's, who came back to hospital two months after his discharge and lived for eight weeks after readmission to hospital with the same progressive paralysis. Massive doses of vitamins were used, but to no avail and finally he died very suddenly of acute myocardia failure from the toxemia of diphtheria.

The third, a child of 8 years of age, returned to the Dalhousie Public Health Clinic, some nine weeks after discharge from hospital, with marked



thus have not developed a natural immunity. Therefore, to-day the whole population shows a higher rate of susceptible people in the older age group where previously natural immunity was found. Again a few adults who may have been immune some years ago may have lost that immunity because again of the lack of contact doses which tend to keep the antibody production rate high enough in their own systems. These arguments are to me logical and I pass them on for your thought and consideration.

It was because of this high rate of susceptibility in the older age group that the Provincial Department of Health urged through the Department of Pensions and National Health that the Forces in the epidemic area be immunized, but it was not until late in March that any work was begun amongst them and we will have to wait until next winter before any value can be appraised on that campaign.

The largest number of cases developed during November when 126 were reported in the city; December—69; January—88; February, March, April and May—average of 61; or a total for the eleven month period July 1, 1940, to June 1, 1941, 588 cases in the civilian population, and in addition to this there were 303 in the Forces. The civilian population being five times that of the Forces, thus one may see that on a population basis, the incidence rate in the Forces was much higher than it was in the civilian population. This to me is another argument that diphtheria must be regarded to-day as a disease of all ages and not only childhood.

Besides these actual cases, some 200 cases of carriers were detected and treated either in their home or hospital. The carrier rate in the civilian population, including the schools, in February was found to be about 10 per cent. In a recent check-up of school children only done in June this rate has now dropped to less than 4 per cent.

TABLE III

Percentage of cases Female in each age group—Civilian cases

Ages	Male	Female	Total	Percentage Female
0-14.....	135	139	274	50.7
15-29.....	80	152	232	65.5
30 .....	36	46	82	56.1

In regards to sex, it is found that in the age group 0 to 14 years of age 135 male and 139 female cases, or an equal distribution; whereas, from 15 to 29 years of age, exclusive of the Forces, we had 80 male and 152 female cases, and in the age group over 30 years, the distribution was again roughly even. This middle group with 152 female cases showed a large number of wives of members of the Forces, girls in domestic service, and waitresses in restaurants, whose contact with the Force was easy to trace.

When one finds almost double the number of cases in one sex in a civilian epidemic that is normally equally divided in both sexes, some reason must be forthcoming. The incidence rate as stated before amongst the Forces was high and it was this age group of females 15 to 29 years whose contact was more intimate with the Forces than the younger and older age groups.

paralysis and was sent to the Children's Hospital immediately and lived only three hours after admission there, dying of a toxic myocarditis.

The three cases which are still living have shown some slight improvement, but one of these, a man well in his 30's, is a complete invalid, cannot walk nor feed himself, has double vision from a squint which so far has not yielded to correction by glasses.

Heart complications were found in a number. In fact, all of the deaths 22 in number, I believe were due to definite myocardia failure. Occasionally these cases developed a marked Brachycardia and in one case the pulse rate dropped to 20. In others a marked irregularity in both rate and volume of the pulse was found along with lowered blood pressure, some with a systolic pressure below 100.

Aminophylline and coramine were used in treatment of these cases. The former, as a heart stimulant, definitely increases the rate, and the well known coramine, subcutaneously or orally, aided a soft and irregular pulse.

Some of these cases required prolonged bed rest and one case was in hospital for over 70 days and is still confined to her home even after three months, and this is a young girl in her early twenties who was previously an active athletic type.

Serum reactions were rare and our routine of giving Adrenalin along with the Antitoxin may have had some bearing on this. We did not have a single immediate reaction and what reactions were found were mostly of an urticaria, some with fever coming from the 8th to the 12th day. Calomine lotion and soda applications were of some value in relieving the itchiness.

The average stay in hospital was about two weeks. However, some cases continued as carriers. Here it was found necessary to do a tonsillectomy in order to get a clean throat. Some ten of these were done. In others Argyrol 20 per cent drops in the nostrils, and throat painted with 50 per cent tincture of Metaphen and Glycerine was used twice daily, but not giving a treatment at least twelve hours before taking a swab for examination.

Twenty-two deaths occurred and these were principally found in the youngest age groups—8 in the group 0 to 4 and 7 in the group 5 to 9, and 7 over ten years of age. It is, therefore, seen that our highest mortality occurs in children, but the highest morbidity is in the older groups.

In conclusion I would stress that toxoiding will control diphtheria, but the adults as well as children must be protected especially when in an epidemic.

I regret that time does not permit me to comment on our experience with scarlet fever where we had some 576 cases; or for cerebro spinal meningitis where some 97 cases developed during the same 11 months. There were many interesting points in regard to both diagnosis and treatment which I hope I may be able to review for publication at some future date.

# Pulmonary Embolism and Coronary Thrombosis

## REPORT OF A CASE

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Pulmonary embolism may simulate heart disease or coronary thrombosis. Its differential diagnosis by means of clinical examination alone is often very difficult. In those cases in which pulmonary embolism occurs as a complication of a pre-existing form of heart disease, it may be still more difficult to give the true interpretation of the happening.

A case of particular interest with regard to this point shall illustrate this. Case No. 2599—Halifax Infirmary.

This 56 old gentleman entered the hospital June 5th for herniaectomy. He presented at that time the following history:

*Family History:* Parents reached a high age, one brother died of cerebral hemorrhage, another with some complication of asthma (age 44). One sister is alive and well.

*Personal History:* The patient had measles, mumps and whooping cough. No history of diphtheria, etc. 1916 peritonitis; 1917 appendectomy; and ulcer operation; 1923 operation for hydrocele; 1938 operated for an abscess on roof of mouth. The patient had further nose, ribs, right arm, and right leg broken.

*Present Illness:* Two weeks ago he noticed a lump in the right inguinal region, consulted Dr. Graham who advised a herniotomy.

Physical examination on admission revealed the following data: The patient is 56 years of age, white, tall, well nourished. There was nothing of note in the entire examination, including the cardiovascular system. The heart was normal in size and position, the sounds were regular and normal, the blood pressure 130:90. The abdomen was negative except for a swelling just lateral to the pubic tubercle on the right side. It is soft on palpation and pulsates when the patient coughs. There is only slight inconstant pain associated with the swelling.

*Working Diagnosis:* Direct Inguinal Hernia; The operation was performed under spinal anaesthetic on June 7th. The operation was successful. Three days later he developed irritating cough with haemorrhagic sputum; fever and dulness at the right lower side of the chest was found to be present. Dagenan was given. On June 12th, he complained of a sharp pain in the right anterior chest. The patient recovered very soon and was due to leave the hospital in a few days.

On June 19th, he suddenly felt like having been struck in the chest. This was associated with a sensation of "choking" and loss of consciousness. He became breathless and sweated profusely. The patient looked cyanotic; his skin was cold and moist, of grayish colour, the pulse small and rapid, the blood pressure was 140:86. The heart appeared enlarged on both sides; the sounds were distant, no gallop rhythm was heard; in the chest, at the lower right side, a considerable dulness with numerous moist rales, was present. The abdomen was negative.

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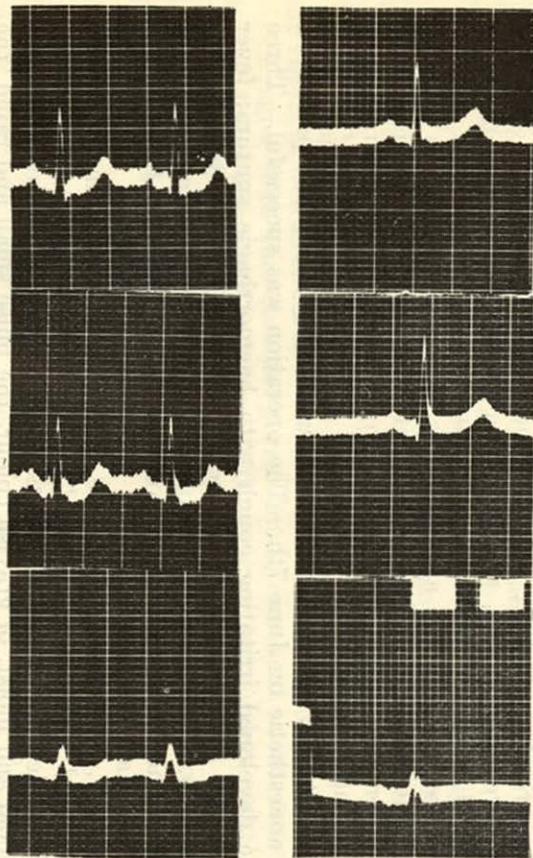
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I

II

III



a

A

c

Serial electrocardiograms from a case of pulmonary embolism. a: 3 hours after; c: 5 days later.

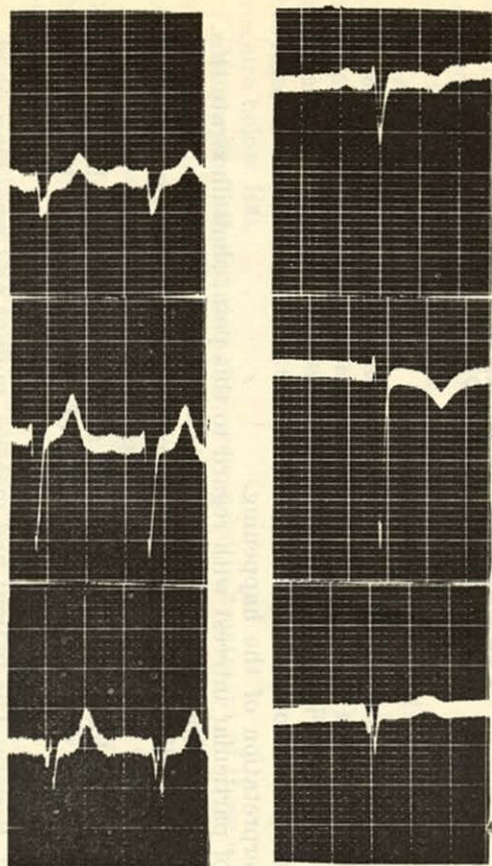
A.—Limb leads, showing changes of S-T.

B.—Chest leads, showing inversion of T in CR<sub>1</sub>, CF<sub>3</sub>, F and a Q in IVF.

CR<sub>1</sub>

CF<sub>3</sub>

IVF



a

B

c

Electrocardiographic examination, three hours after the onset gave the following pattern: (see fig. a).

Sinus rhythm with a ventricular rate of 100 a minute. The ventricle complex is upward directed in all leads, is not enlarged (0.08'') and is somewhat notched at the lower limb of RS in lead 2 and in lead 3 which is notched in both limbs and in which a small Q-wave appears after four or five beats, evidently of respiratory type. The conduction time is not enlarged, the P-waves are positive. The S-T space is depressed in lead 1 and 2, the T-waves positive in lead 1 and 2, biphasic in lead 3. Of the chest-leads CR<sub>1</sub> and CF<sub>3</sub> show a downward directed initial deflection and a positive T; S-T is on the isoelectric line.

CF<sub>3</sub> is like CR<sub>3</sub>, IVF shows a definite Q-wave and positive T. *Conclusion from the electrocardiogram:* Symptoms of acute myocardial ischemia, suspect of infarction of the anterior wall of the left ventricle, of old date.

The next day the leucocyte count was 18700, the temperature rose to 103, the pulse rate was sometimes 130, regular; the blood pressure dropped to 102:68. The heart sounds were distant but no murmurs and no gallop rhythm were heard.

The temperature subsided in the next two days, the patient improved considerably, the blood pressure remained at 106:68, while the heart rate became slow and reached even 56 a minute. A second electrocardiogram was taken on June 24th, five days after the onset, with the following findings: (see fig. b).

The ventricular rate is 60, regular. The ventricle complex is not enlarged, but notched in lead 2 and split in lead 3. The S-T space is not depressed and rather somewhat up in lead 2, slightly concave. Positive T-waves in all leads.

The chest leads are very significant. CR<sub>1</sub> and CF<sub>3</sub> show a very deep T (inverted) while the lead IVF has remained unchanged.

*Conclusion:* The inverted T-wave in the chest leads, and the return to normal-like aspect of the limb-leads suggest that pulmonary embolism had occurred. The presence of the Q in IVF is very suspicious of an old infarction of the anterior wall.

Following this electrocardiographic examination a detailed history was taken with questions directed to investigate occurrence of a major coronary involvement. This revealed that some six years ago he suffered an attack of "indigestion", that is described as following: While in theatre he was taken suddenly by severe pain at the epigastrium with nausea, so much so that he had to leave and call his doctor. This sensation of distress lasted for almost two hours. Next day he felt better. He states further that in the last four years, he often felt a heavy sensation of pressure over the precordium lasting a very short time and obliging him to stop or to interrupt any activity. Especially while climbing a hill or in conferences, he noted this sensation. Three months ago, while in conference, he had a particularly severe sensation of squeezing distress and was obliged to stop, remaining in the position that he had assumed before seized by the pain.

The patient is leaving the hospital and will resume his activities in the next weeks.

#### *Discussion of the Case and General Considerations*

In the interpretation of the case, two possibilities have to be taken into consideration. Either pulmonary embolism had occurred or the symptoms

were caused by acute coronary thrombosis (a typical form of acute coronary thrombosis).

From a clinical viewpoint, we may say, that most of the symptoms encountered with acute coronary thrombosis may be present in cases of pulmonary embolism. Unexplained fever, tachycardia, fall of blood pressure, symptoms of shock with general prostration, dyspnoea, leucocytosis, and even lung-rales are signs common to both.

The electrocardiogram in cases of pulmonary embolism shows characteristic changes, which have been described by Barnes. They consist in tendency towards right axis deviation, constant S in lead 1, Q in lead 3 with inverted T. In the chest-leads the appearance of an inverted T in CR<sub>1</sub>, CR<sub>3</sub> and IVF is often encountered and of great importance in the differential diagnosis with infarction of the posterior wall of the left ventricle. Here the limb lead changes in lead 3 may simulate posterior myocardial infarction, but the presence of a negative T in one of the chest leads may help exclude infarction. But it has to be born in mind that the electrocardiographic changes do not appear before two or more hours after the onset; likewise infarction of the lung need not occur in the first hours after the attack. The importance of chest lead electrocardiograms in cases of pulmonary embolism has been recently stressed by P. Wood. The author points out that in cases in which the developing changes were not seen, the regressive changes will be of great value. He also found that the maximum change will be evident in the "right pectoral" lead, which is similar to CR<sub>1</sub> of our derivation. In this lead the changes are also of longest duration.

These changes will be present in those cases in which right ventricular stress has resulted from pulmonary embolism. But even in those cases in which small emboli occur, typical electrocardiographic pattern may be observed. The appearance of these are then explained to be caused by reflex coronary vasoconstriction.<sup>2</sup>

In our case, the differential diagnosis assumes a different aspect. The first electrocardiogram, three hours after the onset of faintness and breathlessness showed signs that indicated acute myocardial ischemia as resulting from the changes of the limbleads, and infarction of the anterior wall of the heart from IVF. The following electrocardiogram could exclude acute coronary thrombosis, secure the diagnosis of pulmonary embolism and, together with the history, explain the changes in IVF as due to an old attack of coronary thrombosis (abdominal form of acute myocardial infarction).

This also explains why the limb lead electrocardiogram is not typical of pulmonary embolism, because of interference of the electrical changes with those of the old infarction. In this case, like many others, pulmonary embolism is but a complication of a non manifest heart disease, which should be searched for where no direct clue is available.

The importance of a differential diagnosis from a practical and prognostical viewpoint stands out clearly.

#### LITERATURE:

1. Wood P. *Brit. Heart J.*: 3 21 1941.
2. Scherf D. and Schönbrunner *Klin. Wchschr*: 16 340 1937.

DR. S. T. LAUFER, DR. J. V. GRAHAM

# Canada Year Book

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THE publication of the 1941 edition of the *Canada Year Book*, published by authorization of the Hon. James A. MacKinnon, Minister of Trade and Commerce, is announced by the Dominion Bureau of Statistics. The *Canada Year Book* is the official statistical annual of the country and contains a thoroughly up-to-date account of the natural resources of the Dominion and their development, the history of the country, its institutions, its demography, the different branches of production, trade, transportation, finance, education, etc.—in brief, a comprehensive study within the limits of a single volume of the social and economic condition of the Dominion. This new edition has been thoroughly revised throughout and includes in all its chapters the latest information available up to the date of going to press.

The 1941 *Canada Year Book* extends to over 1,000 pages, dealing with all phases of the national life and more especially with those susceptible of statistical measurement. A statistical summary of the progress of Canada is included in the introductory matter. This gives a picture in figures of the remarkable progress that the country has made since the first census of the Dominion was taken in 1871, seventy years ago.

*Special Articles*—The special articles that are shown in this edition of the *Year Book* have been selected to illustrate the effects of the War on the Canadian economy and to show such changes and developments as have taken place to date. There are eight such special articles as follows:

The National Registration 1940, at pages 70-71; Some Effects of the War on Canadian Agriculture, at pages 138-144; the Effects of Government War-Time Expenditures on the Construction Industry, at pages 366-368; Pre-war Civil Aviation and the Defence Program, at pages 608-612; the War-Time Functions of a Central Bank, pages 802-804; War-Time Control under the Foreign Exchange Control Board, pages 833-835; Recent Advances in the Field of Education in Canada, pages 876-883; and a special war chronology that appears as Appendix I to the volume.

*Other New Features*—Attention is called to some of the more important features of the present volume.

Chapter I has been cut down in respect to standard information where reference could be made to the same material in earlier editions; space has been also saved in Chapter III by omitting the standard chronology for the period prior to Confederation and in Chapters XVI and XVIII on External Trade and Transportation, respectively. Chapter XVII dealing with the subject of Internal Trade has been reorganized; Section 6 is a transfer of material dealing with the Co-operative Movement in Canada that formerly appeared in the Labour Chapter, since it is felt to be more directly connected with the subject of Internal Trade and Merchandising. Commercial Failures is in the same category and this subject now appears as Part III of the Internal Trade Chapter.

The reorganization of the Labour and Wages Chapter, begun last year, has been carried a stage further. New matter on Unemployment Insurance lays the foundation for what is destined to be a very important part of this Chapter as time goes on. The Unemployment Insurance Act became effective



on July 1st, 1941, and, therefore, statistics regarding its administration will not appear before 1942 at the earliest, but the Amendment of the B.N.A. Act under which the Dominion was given exclusive jurisdiction in this field and the principal conditions, rates, contributions, etc., that have been decided on are summarized at pages 675-677.

Chapter XXI on Public Finance is introduced by comparative statistics of finance of all governments—Dominion, provincial and municipal—of Canada. These statistics are the results of special studies that have been made of this subject by research organizations set up for the Royal Commission on Dominion-Provincial Relations and for the Dominion-Provincial Conference. It is expected that this series will be continued and strengthened in later editions. In addition, the treatment of Income Tax is considerably extended; this tax is of increasing importance in wartime and there is a greater public demand for particulars regarding its application. Another feature in the present edition is the introduction of tables showing the application of gasoline tax and of succession duties from the date of their inception. Since the Dominion Government has now entered these fields the tables provide a background for the latest study of these sources of revenue on a national basis.

In the present edition, a complete list of articles and of historical or descriptive text that has not been subject to wide change and is therefore not repeated, is given following the Table of Contents. This list links the 1941 *Year Book* with its predecessors and indicates the extent to which the *Year Book* must now be regarded as a series of publications rather than as a single volume.

Persons requiring the *Year Book* may obtain it from the King's Printer, Ottawa, as long as the supply lasts, at the price of \$1.50 per copy; this covers merely the cost of paper, printing and binding. By a special concession, a limited number of paper-bound copies have been set aside for ministers of religion, *bona fide* students and school teachers, who may obtain such copies at the nominal price of 50 cents each but application for these special copies should be directed to the Dominion Statistician, Dominion Bureau of Statistics, Ottawa.

# Society Meetings

## COLCHESTER-EAST HANTS

ON September 24th the Annual Meeting of the Colchester-East Hants Medical Society was held at the Scotia Hotel, Truro, where a dinner and the business section was carried through, followed by a professional session at No. 7 General Hospital, Debert.

The following officers were elected for the coming year:

President—Dr. H. B. Havey, Stewiacke.

Vice-President—Dr. D. L. MacKinnon, Truro.

Secretary-Treasurer—Dr. D. S. McCurdy, Truro.

Executive—The above and Dr. F. D. Charman and Dr. R. G. Wright.

Representatives on Executive of Medical Society of Nova Scotia—  
Dr. D. F. McInnis, Shubenacadie and Dr. W. J. MacDonald, Truro.

Reports were read and the general business of the Society discussed.

A special resolution was unanimously passed whereby the Colchester-East Hants expressed a wish that the C.M.A. would consider and put into effect a pension scheme for retired doctors. In general this would mean that physicians wishing to retire at 65 years of age, or earlier if physically unfit, would be eligible for a pension. The resolution is being forwarded to the Nova Scotia Division of the C.M.A. for further consideration.

The following names of practitioners in Truro, who have passed away recently, were read:

Dr. H. V. Kent, Dr. W. R. Dunbar, Dr. F. F. Eaton, Dr. C. C. Archibald.

Following this session of the meeting the Society members drove to Debert, where they were most heartily welcomed by Col. Wood, O.C. of Debert Military Hospital, and Lt.-Col. G. R. Burns A-O.C. of No. 7 General Hospital, and members of the hospital staff.

Major Miller acted as chairman and the following program was discussed.

Major T. M. Sieniewicz reviewed their experience with pneumonia. All cases were X-rayed and he stressed the point of taking a lateral X-ray as well as an anter-o-posterio as some fluid pockets were thus more definitely located. Fifteen per cent of the pneumonia cases had some fluid but there were not any complications of empyaemia. All cases received Dagenan, Sulphathiazole, or Prontolin, which drugs were stopped if the urinary output fell below 1000 c.c. in 24 hours. The oxygen tent was also found useful in severe cases.

Major Campbell presented a case of backward dislocation of a lumbar vertebra without symptoms. He also presented a case of fractured pelvis and lacerated urethra. Lt.-Col. G. R. Burns outlined three or four cases of mononucleosis. Microscopic slides of this condition were shown by Major Shaw, the Hospital Pathologist.

Capt. Muir and Capt. Bird discussed and showed X-ray films of three cases of duodenal ileus.

Following these clinical reports, the Society members were guests in the Officers' Mess, where a social hour was spent and lunch served.

### PICTOU COUNTY MEDICAL SOCIETY

The annual meeting of the Pictou County Medical Society was held in the nurses residence of the Aberdeen Hospital, New Glasgow, October 3rd.

The following officers were elected:

President—Dr. V. H. T. Parker, Stellarton.

Vice-President—Dr. J. S. Murray, River John.

Secretary-Treasurer—Dr. C. B. Crummey, Trenton.

Representatives on the Executive of the Medical Society of Nova Scotia—Dr. Clarence Miller, New Glasgow, Dr. G. A. Dunn, Pictou.

Dr. Crummey succeeds the late Dr. John Bell, who officiated in that capacity for the past forty-five years.

A resolution expressing the regret of the Society in the death of Dr. Bell and appreciation of his lengthy and valued services through the years, was passed and requested sent to Mrs. Bell by the new secretary.

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### HALIFAX MEDICAL SOCIETY

Dr. J. G. B. Lynch, President of the Medical Society of Nova Scotia was the guest speaker at a dinner by the Halifax Medical Society held in the Nova Scotian Hotel, October 15th. His subject was the "Problems of Social Medicine Confronting the Profession." The meeting opened the annual sessions. Dr. J. V. Graham, President of the Halifax Medical Society, presided.

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### MANY DOCTORS IN THE MORSE FAMILY

Lawrencetown, July 28—The people of Lawrencetown and community are much pleased to know that Dr. Frand W. Morse, youngest son of Dr. L. R. Morse, has returned to Lawrencetown to associate himself with his father in his medical practice. Dr. Frank graduated from Dalhousie Medical School in 1938, and since graduation has been a member of the staff of the Montreal General Hospital. Dr. Frank is the seventh member of this family to receive a Medical Degree, and is the fourth member of the family to practise medicine in Lawrencetown, immediately succeeding his brother, Dr. Lewis R. Morse, who has practised with his father for the past two years, and having only recently left for Montreal to further specialize in Urology. It is worthy of note that in the year 1860 this community was being served by Dr. Leander Rupert Morse father of the present Dr. L. R. Morse, and that since 1860 the community has been continuously served by a doctor who was a member of this family. Other members of the family who have established for themselves a high name in the medical field are: Dr. W. Reginald, who died in 1939, and for many years a Medical Missionary in China; Dr. Ellen M., at present practising in Detroit, and Dr. Garnet, now practising in Vancouver.—*Bridgetown Monitor*.

## Personal Interest Notes

Dr. and Mrs. F. E. Rice of Sandy Cove, recently returned from a month's vacation trip through New England.

The marriage was solemnized on October 4th at Kentville of Nora, youngest daughter of Mr. Samuel English McManus of Lismore, Pictou County, and Dr. George Graham Simms of Pictou, only son of Mrs. George Simms, Halifax, and the late Lieutenant-Colonel G. Simms, well known military officer, who was stationed in Halifax with the Canadian Army Service Corps for many years. Dr. Wilfred Dyer of Halifax was best man, Miss Sarah Geraldine Simms the bridesmaid, and Dr. E. L. Eagles of Windsor and Dr. E. M. Found of the staff of the Nova Scotia Sanatorium were ushers. Dr. Simms graduated from Dalhousie Medical School in 1938.

Dr. M. E. McGarry of Margaree Forks received cuts about the head and body bruises when his automobile plunged over a steep embankment on the Pleasant Bay highway the latter part of September. Dr. McGarry and three companions were en route to a meeting in Pleasant Bay.

Dr. and Mrs. M. G. Tompkins of Dominion were pleasantly surprised on September 29th on the occasion of the twenty-fifth anniversary of their marriage, when a coach drove up, with a coachman and footman in correct costume on the box. Seated within the coach were the best man and bridesmaid at the Tompkins marriage twenty-five years ago. Dr. and Mrs. Tompkins were driven to St. Charles Convent where a pleasant evening was spent and where they received gifts of silver.

Dr. and Mrs. J. R. McCleave of Digby were on a motor trip around the Cabot Trail the latter part of September.

Dr. E. D. Dickie of Digby recently relieved the doctor on Grand Manan Island for a few weeks.

Dr. George Archibald, Dal. '98, of Kamloops, B. C., visited his brother J. B. Archibald and Mrs. Archibald of Middle Musquodoboit during September.

Eleven graduate nurses of Yarmouth Hospital received their diplomas at colourful graduation exercises staged in Zion Baptist Church on October 3rd. During the exercises Dr. L. M. Morton sang two songs and Dr. C. K. Fuller appeared as acting mayor. Dr. G. V. Burton gave the doctor's address. Following the graduation exercises the new graduates were entertained at a dance given in their honour at Milo Aquatic club house.

Nine graduate nurses of the Grace Maternity Hospital received their diplomas at the exercises held September 29th in St. Andrew's Church Hall, Halifax. The medical superintendent of the hospital, Dr. P. A. Macdonald, led the graduates in the taking of the Florence Nightingale Pledge. The graduation address was delivered by Dr. H. B. Atlee.

Dr. Thomas A. Lebbetter of Yarmouth spent the most of the month of October in the United States attending the Post-Graduate Session of the New York Academy of Medicine on Cardio-vascular Diseases.

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