Table showing Comparative Reports—concluded

Case No.	Sex	Miniature Film	Full-sized Film	
76	ABN	F	R. Infiltration upper and middle zones L. Pneumothorax	R. Same L. Pneumothorax with apical cavity
77	ABN	F	R. Lesion 5th interspace L. Pneumothorax	R. Same L. "
78	ABN	i	R. " " L. Doubtful 1st interspace	R. " " L. "
79	ABN	M	R. Normal L. Pneumothorax	R. " " L. "
80	ABN	F	R. Normal L. Pneumothorax	R. " " L. "
81	ABN	M	R. Apical pneumothorax L. Normal	R. " " L. "
82	ABN	M	R. Infiltration upper and middle zones L. Normal	R. Fibrosis and infiltration upper and middle zones L. Same
83	Y ABN	F	R. " " L. " "	R. " " L. Calcified scar at apex overlying rib
84	ABN	M	R. Rib resection L. Normal	R. Same L. "
85	ABN	M	R. " " L. Pneumothorax	R. " " L. "
86	ABN	M	R. Normal L. Pneumothorax	R. " " L. "
87	ABN	M	R. Normal L. Pneumothorax	R. " " L. "
88	ABN	M	R. " " L. Normal	R. " " L. "
89	ABN	M	R. Pneumothorax L. Normal	R. " " L. "
90	ABN	M	R. Infiltration upper and middle zones L. Pneumothorax	R. Infiltration upper and middle zones, with cavities below clavicle L. Same
91	ABN	M	R. Normal L. Pneumothorax	R. " " L. "
92	ABN	M	R. " " L. Normal	R. " " L. "
93	ABN	M	R. Doubtful 2nd interspace L. Pneumothorax	R. Lesion in 2nd interspace L. Same
94	O ABN	M	R. Apical scar, 2nd interspace doubtful L. Pneumothorax	R. Infiltration upper and middle zones L. Same
95	ABN	M	Bilateral pneumothorax	Same
96	ABN	M	R. Old pneumothorax L. Pneumothorax	R. Same L. "
97	ABN	M	R. Pneumothorax with fluid level L. Normal	R. " " L. "
98	ABN	M	Bilateral pneumothorax	Same
99	O ABN	F	R. Pneumothorax with fluid level L. Lesion in 2nd and 3rd interspaces	R. Same L. Lesion in 1st and 2nd interspaces
100	ABN	F	R. Normal L. Pneumothorax with fluid level	R. Same L. "
101	ABN	M	Bilateral pneumothorax	Same
102	ABN	M	R. Pneumothorax L. Normal	R. Same L. "
103	O ABN	M	R. Pneumothorax L. 2nd interspace doubtful	R. " " L. Apical scarring
104	O ABN	M	R. Pleural involvement middle zone, Lesion 3rd interspace L. Normal	R. Apical scarring, pleural involvement middle zone L. Same
105	ABN	M	R. Pneumothorax with fluid level L. Normal	R. " " L. "
106	ABN	M	Bilateral pneumothorax	Same
107	ABN	M	R. Doubtful " scar at apex	R. Lobe of azygos vein is present
108	O ABN	M	L. Infiltration in upper and middle zones R. Pneumothorax	L. Same R. " "
109	ABN	M	R. Normal L. Thoracoplasty	R. " " L. "
110	ABN	M	R. Pneumothorax L. Normal	R. " " L. "
111	ABN	M	R. Normal L. Pneumothorax	R. " " L. "
112	ABN	M	R. " " L. Normal	R. " " L. "
113	ABN	M	R. " " L. Pneumothorax	R. " " L. "
114	O ABN	M	R. Doubtful 2nd interspace L. Pneumothorax	R. Scarring in 1st and 2nd interspaces L. Same
115	O ABN	M	R. " " L. Calcification in hilum	R. " " L. Normal. Vascular shadows in hilum
116	Y ABN	M	R. Pneumothorax L. Normal	R. Same L. Scarring in 1st interspace
117	ABN	M	Bilateral pneumothorax	Same
118	Y ABN	M	R. Pneumothorax L. Normal	R. Same L. Scarring at apex and 1st interspace

It is emphasized that the miniature films are less easy to interpret and that the sharpness of detail was not at all comparable to that obtained by the condenser set using a rotating anode tube and an exposure of one-thirtieth of a second. The image was, in fact, reminiscent of that procurable in a chest radiograph of about twenty years ago. However, as can be seen, it sufficed in a large majority of

cases to give the necessary indication of the desirability of carrying out a further examination.

Protection.—It seems likely that it will be necessary to carry out tests with regard to the protection of the persons who are constantly working these machines, as the number of daily exposures may be greatly in excess of those made annually in x-ray departments.

Summary

Miniature radiography may be regarded as an additional means of bringing under investigation symptomless persons who may subsequently be found to have chest abnormalities. A comparison is made of a small number of miniature radiographs with the corresponding full-sized films.

Attention is drawn to the importance of developing miniature radiography at the present time. It is considered likely that after the war miniature radiography will play an important part in routine medical examination of the community.

Some of the difficulties that may be encountered are discussed.

I should like to thank Messrs. Stanley Cox and Co., Ltd., for the loan of their plant, and the medical committee of the Brompton Hospital for their permission to install it; also Dr. R. L. Rawlinson for his helpful co-operation.

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TUBERCULOSIS IN RECRUITS

BY

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The increase of tuberculosis among the civilian population of the countries of Europe and the high incidence of that disease in the Services during and after the last war have been well recognized. Tuberculosis in the Services cost the British Empire a very large sum of money in pensions and treatment allowances, but the amount of infection spread by tuberculous men passed as fit and by others with latent disease who developed active tuberculosis owing to the strain of military duties cannot be measured.

The Welsh National Memorial Association, which is responsible on behalf of the counties and county boroughs of Wales for the diagnosis and treatment of tuberculosis, offered early in the present war to examine and radiograph, free of charge, all men called up for military service in the counties of Anglesey and Carnarvon, which were chosen because they have a high incidence and a high death rate from the disease. The question was later taken up with the Ministry of Labour and National Service; but unfortunately, for various reasons, satisfactory arrangements could not be made in time to include the younger age groups—i.e., the under 30's—the important categories from the point of view of tuberculosis, and the project was therefore abandoned.

The committee, under the chairmanship of Lord Horder, which the Minister of Labour appointed to advise him on problems arising from the examination of recruits by civilian medical boards, reported that:

"They had in particular explored the possibility of examining the chests of all recruits radiologically. The only way in which this could be done would, they said, be by miniature radiography, but although the adoption of this

method was the ideal to be aimed at serious practical difficulties arose . . . and it was considered impracticable at the present time."—(*Lancet*, 1940, 1, 28.)

The Tuberculosis Regulations, 1940, were, however, a result of the Horder Committee's recommendations. As applied to Wales, these regulations make it obligatory on medical officers of health of all sanitary authorities to give particulars in respect of notified male cases of tuberculosis of certain ages, and on tuberculosis officers to give particulars of all treatment in such cases, to the Ministry of Labour and National Service.

General Notes on the Investigation

The activities of the Welsh National Memorial Association cover a population of 2½ millions. A uniform system of case-taking and record-keeping is in use at all the clinics of that association. The numerous opportunities enjoyed by the medical staff for a frequent interchange of views through attendance at various institutions and at medical staff meetings have enabled a fairly uniform standard of diagnosis to be attained. As the available figures were fairly large and the data upon which they were based reasonably comparable, it was decided to investigate the incidence of tuberculosis in recruits referred by medical boards since the passing of the Military Training Act in May, 1939, up to December 31, 1940—paying particular attention to the reasons for reference. Careful histories were taken of all men referred; they were clinically examined; full-size (15 by 12 inch) radiographs were taken in each case, and the sputum was examined whenever available.

Numbers Investigated

The total number of cases referred by medical boards during the period under consideration amounted to 3,049, of which 1,180 had been previously examined by the tuberculosis officers and 1,869 were seen for the first time when referred by the medical board. These two groups have been kept separate, and Table I gives particulars of the "old cases" according to their condition at the time of reference to the tuberculosis officers by the medical boards.

TABLE I.—Results of Investigation of Recruits previously known to the Tuberculosis Service

Age Groups	Found to be Tuberculous							Observation	Non-tuberculous	Total
	Active			Quiescent	Arrested	Recovered	Total			
	Pulmonary		Non-pulmonary							
	T.B.+	T.B.-								
18-20	1	—	2	1	—	6	10	1	21	32
20-25	32	30	7	60	38	70	237	5	249	491
25-30	41	23	8	44	44	93	253	1	150	404
30-35	31	8	6	33	18	60	156	2	95	253
Totals	105	61	23	138	100	229	656	9	515	1,180

It will be seen that of the 1,180 old cases 656 had at some time previously been found to be suffering from tuberculosis; in 166 pulmonary cases the lesion was still active (105 of these had a positive sputum). There were 23 non-pulmonary active cases. Of these 656 old cases 238 (36.3%) were found, when referred by the medical boards, to have improved sufficiently to be classified as "quiescent" or "arrested," and a further 229 (34.9%) were regarded as recovered—a total of 467, or 71.2%. 515 of the 1,180 were old patients who had previously been found non-tuberculous but were referred by the medical boards to the tuberculosis officers in most cases because they said they had attended a tuberculosis clinic at some time or other.

Reason for Reference

A main object of the investigation was to learn why the medical boards had referred the 1,869 new cases to the tuberculosis officers. For this purpose they have been classified in Table II under four main headings—namely:

1. Contact History:
 - (a) *Intimate*.—Household contact or prolonged contact to infection in the place of employment, etc.
 - (b) *Casual*.—Contact with cases of tuberculosis of a more temporary nature.
2. Significant Past Personal History:
 - (a) *Pleurisy*, spontaneous pneumothorax, and haemoptysis.
3. Present History:
 - (a) *Significant*.—Cough, especially of recent onset, sputum, haemoptysis of at least 1 drachm, pain in the chest, frequent colds, unwonted lassitude, progressive loss of weight, night sweats, etc.
 - (b) *Non-significant*.—Bronchitis and asthma of long duration (considered non-significant in age group under consideration), and a variety of other symptoms.
4. Physical Signs:
 - (a) *Abnormal signs in the chest and/or poor general condition, rapid pulse, etc.*

TABLE II.—Reason for Reference of Recruits not previously known to the Tuberculosis Service.

Reason	Age Group				Total
	18-20	20-25	25-30	30-35	
1. Contact history:					
(a) Intimate	20	176	130	172	498
(b) Casual	2	39	28	27	96
2. Significant past personal history	8	136	128	131	403
3. Present history:					
(a) Significant	7	129	89	76	302
(b) Non-significant	7	154	87	106	354
4. Physical signs	14	95	62	45	216
Totals	59	729	524	557	1,869

Of the total number of new cases, 498 (27%) were referred on account of intimate contact history; 96 (5%) on account of a casual contact history; 403 (21%) for their significant past personal history; 656 (35%) on their present history; and 216 (12%) because of physical signs.

Tables IIIa, IIIb, IIIc, and IIId show the results of examinations carried out by the tuberculosis officers under the four main categories of the reasons for reference.

Contact History

TABLE IIIa.—Results of Investigation of Recruits Referred on Account of Contact History

Age Groups	Tuberculous			Observation	Non-tuberculous	Total
	Pulmonary		Non-pulmonary			
	T.B. +	T.B. -				
18-20	—	—	—	—	22	22
20-25	1	9	—	2	203	215
25-30	1	11	—	3	143	158
30-35	3	8	—	4	184	199
Totals	5	28	—	9	552	594

No case of tuberculosis was found among the 96 men referred on account of a casual contact history. Of the 498 referred because of an intimate contact history, 33 (6.6%) were found to be suffering from pulmonary tuberculosis, and 9 others were considered to have signs and

symptoms suggestive enough of tuberculosis to warrant their being kept under further observation. In the 20-25 age group 10 cases out of a total of 215 referred (4.6%), in the 25-30 group 12 out of 158 (7.6%), and in the 30-35 group 11 out of 199 (5.5%) were found to be tuberculous.

Significant Past Personal History

TABLE IIIb.—Results of Investigation of Recruits Referred on Account of Significant Past Personal History

Age Groups	Tuberculous			Observation	Non-tuberculous	Total
	Pulmonary		Non-pulmonary			
	T.B. +	T.B. -				
18-20	—	—	—	—	8	8
20-25	2	5	—	2	127	136
25-30	3	5	1	4	115	128
30-35	1	5	—	2	123	131
Totals	6	15	1	8	373	403

Table IIIb shows the results of the examination of those men referred on account of a significant past personal history: out of a total of 403, 22 (5.4%) were found to be tuberculous and 8 others required further observation. In the 20-25 age groups 7 out of 136 (5.1%), in the 25-30 group 9 out of 128 (7.2%), and in the 30-35 group 6 out of 131 (4.6%) were tuberculous.

Present History

TABLE IIIc.—Results of Investigation of Recruits Referred on Account of Present History

Age Groups	Tuberculous			Observation	Non-tuberculous	Total
	Pulmonary		Non-pulmonary			
	T.B. +	T.B. -				
18-20	1	3	—	—	11	15
20-25	6	8	—	4	265	283
25-30	2	12	—	2	160	176
30-35	5	5	—	1	168	182
Totals	14	31	—	7	604	656

Table IIIc gives the results of the examination of recruits referred on account of "present history." Out of 656 men 45 (6.8%) were found to be suffering from pulmonary tuberculosis and 7 required further observation. In the 18-20 age group 15 cases only were referred, and of these 4 were tuberculous. The figures in this group are, of course, too small to be significant. In the 20-25 group 14 out of 283 (4.9%), in the 25-30 group 14 out of 176 (7.9%), and in the 30-35 group 13 out of 182 (7.1%) were tuberculous.

Physical Signs

TABLE IIId.—Results of Investigation of Recruits Referred on Account of Physical Signs

Age Groups	Tuberculous			Observation	Non-tuberculous	Total
	Pulmonary		Non-pulmonary			
	T.B. +	T.B. -				
18-20	—	1	—	—	13	14
20-25	—	1	3	—	91	95
25-30	3	1	—	3	55	62
30-35	1	2	—	3	39	45
Totals	4	5	3	6	198	216

Table IIId shows the results of the investigation of those recruits referred on account of physical signs. Out of 216 examined, 12 (5.5%) were found tuberculous, and 6 were kept under observation. The figures in the 18-20 group are again too small to be of any significance. In the 20-25 group 4 cases out of 95 (4.2%), in the 25-30 group 4 out of 62 (6.4%), and in the 30-35 group 3 out of 45 (6.7%) were tuberculous.

TABLE IV.—Total Recruits Referred who were not previously known to the Tuberculosis Service, and who were found to be suffering from Tuberculosis

Age Groups	Tuberculous			Total	Observation
	Pulmonary		Non-pulmonary		
	T.B. +	T.B. -			
18-20	1	4	—	5	—
20-25	9	23	3	35	8
25-30	9	29	1	39	12
30-35	10	23	—	33	10
Totals	29	79	4	112	30

Table IV summarizes in age groups the recruits not previously seen by the Association (of which the totals are given in Table II), found to be either suffering from tuberculosis or sufficiently under suspicion to need further observation. Only 59 men aged 18 to 20 were referred by the medical boards, and these were volunteers. Five of them were found to have pulmonary tuberculosis. In the 20-25 group 729 men were referred: 32 had pulmonary tuberculosis and 3 non-pulmonary tuberculosis—a total of 35 (4.8%). Out of 524 in the 25-30 group 38 had pulmonary tuberculosis and 1 non-pulmonary tuberculosis—a total of 39 (7.4%). In the 30-35 group 33 out of a total of 557 referred had pulmonary tuberculosis—a percentage of 5.9.

To sum up, 112 cases of tuberculosis were found among 1,869 recruits referred who were not previously known to the Tuberculosis Service—a percentage of 6; and 30 other cases were kept under observation.

In order to furnish some idea of the average number of cases found tuberculous among male patients referred to the Association through the usual channels in the course of a year in the same age groups, the figures for 1940 are given in Table V.

TABLE V.—Male Cases aged 18 to 35, other than Recruits, Referred to Tuberculosis Officers during 1940

Age Groups	Tuberculous				Observation	Non-tuberculous	Total
	Pulmonary		Non-pulmonary	Total			
	T.B. +	T.B. -					
18-20	39	46	17	102	24	264	390
20-25	102	102	25	229	41	583	853
25-30	67	59	22	148	22	536	706
30-35	83	75	13	171	23	583	777
Totals	291	282	77	650	110	1,966	2,726

It will be seen that out of a total of 2,726 cases 650 (23.8%) were tuberculous, and a further 110 were under observation. It should be borne in mind, of course, that all these patients had suffered from such a degree of ill-health that they had found it necessary to consult a doctor, and had been referred by him to the Memorial Association on account of signs or symptoms suggestive of tuberculosis.

Discussion

It may be pointed out that the diagnosis of pulmonary tuberculosis was arrived at by our medical officers only after a careful correlation of symptoms, physical signs, sputum examination, and radiological findings. Following the teaching of the Trudeau Sanatorium, special significance was attached to certain symptoms and signs—namely:

1. History of pleurisy with effusion.
2. History of frank haemoptysis of more than 1 drachm.
3. Persistent rales at one apex.
4. Radiological evidence of infiltration of the lung parenchyma.

No recruit was regarded as suffering from tuberculosis unless there was radiological evidence of infiltration in the lung parenchyma for which no other cause could be found. If the evidence pointed to the presence of a healed lesion, this was not included in the diagnosed group. In all cases diagnosed as tuberculous the lesion was considered to be "active," and in most of them institutional treatment was indicated. We found that medical boards varied considerably in their conception of the indications for reference. For example, several of them referred practically every man giving a history of contact with tuberculosis, while others appeared to attach less importance to this factor.

As already stated, 3,049 recruits were referred to the Memorial Association, but 1,180 of them were cases previously known; 656 of the latter had at some time or other been found to be suffering from tuberculosis, 9 were still under observation, and 515 were old non-tuberculous cases. Undoubtedly many old cases in which the diagnosis of tuberculosis was obvious were not referred by the medical boards. This group is of little importance so far as the present investigation is concerned.

Of the 1,869 new cases referred, the numbers in the three quinquennial groups 20-25, 25-30, and 30-35 are 729, 524, and 557, respectively; the numbers found to be tuberculous in each group are practically the same—namely, 35, 39, and 33. It is not suggested that these figures give any indication of the incidence rate of tuberculosis in these groups, or that the cases referred are in any respect a typical cross-section of the population. This group of new cases is to some degree selective, but, on the other hand, the patients composing it do not fall into the same category as the normal new cases referred to the Memorial Association. The large majority had not found it necessary to consult their own doctor on account of ill-health. On the other hand, the medical boards, upon examination, discovered some reason for referring them to the tuberculosis officer. They therefore fall into an intermediate group.

We wish to stress the point that the figures summarized below are not incidence rates of tuberculosis in the relevant age groups, but are percentages of cases found tuberculous among men referred to the Tuberculosis Service.

Summary of Percentages of Cases found Tuberculous

Age Groups	Contact History	Significant Past Personal History	Present History	Physical Signs	Total
20-25	4.6	5.1	4.9	4.2	4.8
25-30	7.6	7.2	7.9	6.4	7.4
30-35	5.5	4.6	7.1	6.7	5.9
Totals	5.6	5.4	6.8	5.5	6.0

There is only a slight variation in the percentage of cases found tuberculous under the main reference categories. The highest proportion of cases suffering from tuberculosis was found among those referred on account of "present

history." This might have been expected in view of the fact that these men actually complained of indifferent health at the time of examination by the medical boards, and the symptoms were sufficiently suggestive of tuberculosis to warrant their being referred to the tuberculosis officers.

The percentage of those found tuberculous referred on account of contact history fully justifies the importance of contact examination, at any rate of young adult males, especially as most of these cases had a multiple family history.

The medical boards appear quite rightly to have attached importance to a previous history of haemoptysis or pleurisy. We appreciate that, as stated by Gregory Kayne (1940), "little reliance can be placed on a man's statement that he has suffered from pleurisy unless he has been admitted to hospital"; but out of a total of 499 cases among the 3,049 referred who stated they had had a previous pleurisy 116 (23%) subsequently developed active pulmonary tuberculosis. Out of 156 who stated that they had had a frank haemoptysis of at least 1 drachm, 45 (28%) were found to have tuberculosis.

Most of those referred on account of physical signs made no complaint at all of ill-health, and the percentage of 5.5 found tuberculous proves that a physical examination of the patient may provide the first evidence of the existence of diagnosable disease.

Our results show that the standards adopted by medical boards for deciding upon the reference of cases to tuberculosis officers should not be too rigid.

In the following table the percentage found tuberculous among the "new" recruits referred is compared with the percentages of "ordinary" male new cases found tuberculous in the same age groups.

Age Groups	Recruits	New Cases Examined in 1940
20-25	4.8	26.8
25-30	7.4	20.9
30-35	5.9	22.0
Totals	6.0	23.8

The highest percentage of recruits found to be suffering from tuberculosis falls in the 25-30 age group, and the highest for the new cases in the 20-25 group. Of male new cases aged 18 to 35 examined by the Memorial Association during the year 1940 24% were tuberculous. This is four times the number observed among the new recruits; but, nevertheless, this figure of 6% for recruits is high, having regard to the fact that these men did not suffer from such a degree of ill-health as to make it necessary for them to consult their own doctors.

According to Dr. Robert E. Plunkett (1941), General Superintendent of Tuberculosis Hospitals of the New York State Department of Health, "19, or 1.4%, of the 1,401 men called under the Selective Service Act and given physical examination and chest x-ray during the week of November 25, 1940, were found to have tuberculosis." This group of 1,401 is not comparable to our group of recruits, as it was not in any way selected, all recruits in New York State being subjected to a radiological examination. It is, however, rather more comparable than the "ordinary male new cases" referred to the Memorial Association's staff in the course of work through the usual channels. Our figure of 6% found tuberculous is more than four times that given by Dr. Plunkett.

Several countries, including the Dominion of Canada and the Commonwealth of Australia, have adopted a scheme whereby all recruits are subjected to radiological examina-

tion, and we are of opinion that our figures are significant enough to justify the adoption of a similar scheme in this country.

Conclusions

Of 1,869 recruits referred to the Welsh National Memorial Association's tuberculosis officers by the medical boards and then seen for the first time, 112 (6%) were found to be suffering from active tuberculosis, as compared with 23.8% of male new cases in the same age group examined in 1940 in the ordinary course of work, and with 1.4% of the men called up and examined as a routine measure, and not because they were referred by medical boards, by Dr. Robert E. Plunkett.

Of the 112 recruits found tuberculous, 108 (or 5.7% of all those referred) had pulmonary tuberculosis, and 4 (0.3%) non-pulmonary tuberculosis.

An additional 30 cases (1.6%) required further observation.

The percentage figures of cases found tuberculous analysed under the four main headings set out in Table II show that the indications for the reference of cases by medical boards to tuberculosis officers should be comprehensive, and even then cases of active or latent tuberculosis may be missed. It is better that the total cases referred should be large, and the percentage found tuberculous low, than that only a few cases should be referred, with a high percentage found tuberculous.

The finding of a substantial number of tuberculous recruits in Wales strongly supports the view held by most tuberculosis workers that all recruits should be subjected to a radiological examination. It is regrettable that the Horder Committee has advised that this "was impracticable at the present time." The difficulties are appreciated, but with the modern developments of miniature radiological technique (Cranch, 1940) we feel it would have been a task not impossible of accomplishment, and at a reasonable cost.

It is unfortunate that the Public Health (Tuberculosis) Regulations, 1940, were not in force when the first age groups were called up, as these regulations apply only to men aged 33 and upwards and the "new 20's."

The percentage of cases (6.6) found tuberculous who were referred by medical boards to tuberculosis officers solely on account of an intimate contact history emphasizes the importance of the contact examination of young adults, and it would be well if all recruits with a family history of tuberculosis were referred to the Tuberculosis Service by the medical boards.

Our thanks are due to Prof. Picken, Mansel Talbot Professor of Preventive Medicine, University of Wales, for his very valuable advice and assistance. The tuberculosis officers of the Welsh National Memorial Association readily put all their records at our disposal and gave every help. To Dr. D. A. Powell, principal medical officer of the Memorial Association, we are particularly indebted for making this investigation possible and for his guidance throughout.

ADDENDUM

Since writing the above, an exhaustive report on pulmonary tuberculosis in recruits has been published by Major Douglas Galbraith (1941), Deputy Assistant Director-General of Medical Services, Australian Army Medical Corps, together with the report on the bacteriological examinations by Reginald Webster (1941), Honorary Major, Australian Army Medical Corps Reserve.

More than 100,000 recruits of the Australian Imperial Forces have been subjected to routine chest x-ray examination by the method of miniature radiography, and of that number 0.56% presented radiological evidence of active pulmonary tuberculosis; 1.04% gave radiological evidence of active or latent tuberculosis of the reinfection type; and 0.25% and 0.12% showed radiological evidence of non-tuberculous pulmonary pathology and of cardiac or vascular lesions, respectively.

The importance of radiological examination of all recruits is stressed by Major Galbraith, who gives three main reasons as follows:

"Disregarding the humanitarian aspect and examining the problem strictly from the Army standpoint, the most important factors which operate when a soldier develops active tuberculosis are: (1) the loss of his services and of the work hours spent in giving him his military training; (2) the danger of his infecting others in the close proximity entailed in hutments and tents; (3) the financial loss to the taxpayer represented by the cost of treatment and by pension."

His figures are, of course, not comparable with our figures any more than are those of Dr. Plunkett.

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TRICHLORETHYLENE AS AN INHALATION ANAESTHETIC

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Prefatory Note

Some months ago, in my capacity as honorary secretary of the Anaesthetics Committee, I received a letter from Mr. C. Chalmers of Muswell Hill asking for information about the anaesthetic properties of trichlorethylene. I had at the time no information on the subject, but, from the references that I could find (and these were very few, as I was working at a distance from all medical libraries) and from the very pregnant facts supplied by Mr. Chalmers himself, it seemed obvious that the anaesthetic properties of this drug merited an investigation by my committee. After some correspondence with my friend, and colleague on the committee, Mr. C. Langton Hewer, I was glad to know that he was in entire agreement with me and, further, was himself willing, even anxious, to undertake the investigation. Needless to say, it could not have been placed in more competent hands, and this paper, although only an interim report, certainly suggests that the research was completely justified.

My purpose in writing this prefatory note is not only to record the facts stated above but also to secure adequate recognition of the unusual part taken by my correspondent. Mr. Chalmers is not himself a medical man, though he appears to be a proficient chemist and to possess an uncommon knowledge of medical matters. At the time the investigation began we were all unaware that trichlorethylene was obtainable in this country in a form pure enough for inhalation, and in consequence Mr. Chalmers himself prepared and provided at his own cost the supplies of the drug that were first employed. It was only some time later, when this supply had been used up, and Mr. Chalmers, owing to war conditions, found himself unable