

A STUDY OF TUBERCULOSIS AS MET WITH  
IN CHILDHOOD AND ADOLESCENCE  
IN SCOTLAND AND IN MANGHURIA

by

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MY INTEREST IN THE SUBJECT OF TUBERCULOSIS  
AND OPPORTUNITIES FOR STUDYING IT.

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The subject of Tuberculosis has a special interest for me, since after graduating I spent upwards of six years in general Hospital practice in Manchuria where this disease is extremely prevalent. It is difficult to form any accurate estimate of the high incidence of Tuberculosis in a country like Manchuria where no Official Returns are available. According to my own Statistics which I prepared in the various Hospitals of which I had charge, and which I classified according to

1. Medical cases,
2. Surgical "
3. Surgical operations, major and minor,

I found that at least eighty per cent of the In-patients were suffering from some form of tuberculous infection. In most cases these patients had passed beyond the early stage, and many of them were advanced when they came under my observation.

In the course of my professional work in many different parts of the country - from the far Northern town/



town of Hulan on the borders of Mongolia, to the southern limit of the Liao Tung Peninsula, I had occasion to treat exceptionally large numbers of tuberculous patients, and had unusual opportunities of observing the disease in all its many forms and at all its stages. In some towns such as Ashiho in the North, and Kaiyuan in the South, towns having each a population of more than 12,000 inhabitants, I occupied the unique position of being the only 'foreign' medical practitioner available for the needs of the entire community.

On my return to Scotland I acted as Resident House Surgeon in the Royal Hospital for Sick Children, Edinburgh, under Mr A. Philp Mitchell whose research work on the subject of Bovine Tuberculosis is well known. During my Residency many Children passed through the Wards, and on an average fifty per cent of these were suffering from some form of Surgical Tuberculosis.

In 1917 I received the appointment of Assistant Medical Officer of Health, Paisley, an appointment which included that of Assistant Tuberculosis Officer, and in 1918 was appointed Medical Officer for the Maternity and Child Welfare work of the Burgh, a post which I now hold. These appointments have enabled me to carry out further investigations in the subject of Tuberculosis.

SCOPE AND GENERAL OUTLINE OF THE THESIS.

In dealing with the subject of Tuberculosis in early life, I have selected three clinical forms of the disease, viz. Pulmonary Tuberculosis, Cervical Adenitis, and Abdominal Tuberculosis, all of which are met with in childhood and adolescence, and I propose to draw some comparisons between their occurrence as I have observed it in Scotland and in Manchuria. The point of special interest in these comparisons is that in Scotland Bovine Tuberculosis is an important factor in the causation of much of the Tuberculosis met with in children, whereas in Manchuria the possibility of Bovine infection may be entirely excluded, as cow's milk is not used as an article of food by either children or adults. In this way I hope, while corroborating existing theories, to throw new light on ideas regarding the factors contributing to the causation and spread of Tuberculosis among children and young people in Scotland.

In Part I, I have dealt with the forms of the disease in question from the standpoint of their occurrence in Scotland, and have discussed the following:-

1. Mortality Rate, with Tables from the Registrar-General's Returns.

2. Heredity and its bearing on the subject of Tuberculosis, with results of investigations.
3. Importance of early diagnosis of Pulmonary Tuberculosis in children.
4. Bovine Tuberculosis and its relation to Tuberculosis in children, with results of investigations. Important relationship of clinical data and milk supply.

In Part II, I have introduced the subject of Tuberculosis in Manchuria by giving a general outline of the Manners and Customs of the people as having an important bearing on the question of Incidence and Mortality. Thereafter I have taken seriatim the three selected clinical forms of Tuberculosis, and have discussed each one from the point of view of Age Incidence, Predisposing Causes, Prognosis and Treatment.

The final Summary embodies the salient points of the Thesis, more particularly those relating to Bovine Infection during the milk-drinking period of life, while the Conclusions are directed towards more efficient supervision and control of the milk supply, together with a recommendation for compulsory sterilisation of cow's milk ere it be used for the purposes of infant feeding.



I N T R O D U C T I O N .

Many writers share the view that Tuberculosis, like Measles, is pre-eminently a disease of children, a disease producing fatal results in the early years of childhood, or else an increased resistance to infection in later years of life.

It is well known that infants and young children are normally very susceptible to tuberculous infection. Von Behring<sup>1</sup> draws attention to the fact that at birth the incomplete development of the gastro-intestinal mucosa accounts for much infantile infection by means of food, while the delicate epithelial covering and easily permeable lymph spaces present but a slight barrier to infection during early childhood.

Tuberculosis in children presents certain peculiarities. The lymph glands, which are well developed in early childhood, mechanically arrest the bacilli and thus form what one might term "the first line of defence". In infancy such arrest is but temporary, the infection soon spreading to vital organs, e.g. lungs, peritoneum, meninges, etc. In later years of childhood, however, the lymphatic glands retain the infection and thus form clinically the primary focus from which the disease is unlikely to/

to spread to other structures. There are thus two well marked stages of the disease in childhood, viz., a first stage in glands, manifest or occult, and a second stage when the disease has overstepped these boundaries and appears in other parts.

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BOVINE TUBERCULOSIS AND ITS RELATION TO  
TUBERCULOSIS IN CHILDREN.

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The relation of Bovine Tuberculosis to the health of man has lately been the subject of much discussion, and it has been proved conclusively by many investigators that the bovine type of bacillus is frequently found in the tuberculous lesions of children. Some authorities, e.g. Nathan Raw, hold that a mild affection such as that obtained from a well diluted bovine source is probably of considerable protective value during the first two decades of life. Something may be said for this view, but in the light of recent researches by Fraser<sup>2</sup>, Mitchell<sup>3</sup>, C.Y. Wang<sup>4</sup>, regarding the incidence of bovine tuberculosis in young children, I am inclined to look upon it with disfavour for the following reasons:-

1. It is doubtful if in Scotland it would be possible to obtain a well diluted bovine source. Mitchell<sup>5</sup> found that out of 201 samples of mixed milk collected in Edinburgh, no less than 20% were infected with living tubercle bacilli, and Miller<sup>6</sup> found tubercle bacilli present in 13 out of 101 samples.



Sir Robert Jones<sup>7</sup> in his recent Cameron Lecture, states that even at a minimum computation, one specimen of mixed milk in every ten contains living tubercle bacilli. Stenhouse Williams<sup>8</sup> also points out that almost 30% of the cattle in this country are affected with Tuberculosis, but of the total cattle only 2% will be in such an advanced stage of disease as to come under the Tuberculosis Order.

2. The bovine bacillus is closely allied to the human type of bacillus, and the antibodies are the same for both.
3. In abdominal tuberculosis, which is a disease peculiar to Children, and which in the majority of instances is caused by the bovine bacillus, the mortality is very high. The disease very often becomes a generalised Tuberculosis, the primary infection affording no protection to the child.
4. In cervical adenitis, which in a large percentage of cases is traceable to a tonsillar bovine infection, the disease appears to be localised, and probably does afford some protection in later years. At the same time a secondary infection may take place during the first decade of life. (Vide Case 10 - Page 48).

On the other hand it must be admitted that Tuberculosis is very prevalent in some countries where cow's milk is very rarely used. For example, in China - which includes Manchuria - there is an appallingly high annual mortality from this disease, although in my experience the milk of bovines does not enter into the dietary of either children or adults.

In Japan Kitasato<sup>9</sup> asserts that the rate of mortality from Tuberculosis is the same among children as among adults although the disease does not occur in the cattle.

Röhrdam<sup>10</sup> also states that a high incidence is met with in Greenland where cattle are not found at all. Nansen<sup>11</sup> in his book on Eskimo Life, referring to the prevalence of Tuberculosis among the Eskimos says.- "It is especially the Greenlanders' scourge which makes ever wider ravages. There can be few places in the world where so large a proportion is attacked by it."

The question of tuberculous infection in early life and its relation to bovine tuberculosis is one regarding which there is room for wide diversity of opinion. I propose therefore firstly to give results of investigations regarding the transmissibility of/  
of/

of tuberculosis through the agency of unsterilized cow's milk, and secondly to show that in the absence of a bovine source of infection, other factors and conditions are responsible for, and explain the high incidence of the disease.

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MORBIDITY AND MORTALITY.

A careful study of the Vital Statistics of Tuberculosis in Scotland, and a comparison of the following Tables taken from the Returns of the Registrar-General during the past five years shows that the greatest number of deaths from Tuberculosis occurs in early childhood. Children under five years of age have a higher mortality from this disease than at any subsequent five year age period, and there is a rapid diminution in mortality as the child grows older. As one would expect, however, phthisis pulmonalis is an exception to this rule. The mortality rate from this form of tuberculosis is low in early childhood and gradually attains its maximum from the fifteenth year onwards. The age period of ten to fifteen is generally regarded as a critical one, as the boy or girl is then approaching puberty when an unusual strain is thrown upon the young growing organism. In many cases an infection contracted during infancy or childhood remains latent during school life and springs into activity at or about the age of fifteen. It is a significant fact that between the ages of ten and fifteen, in each Table, phthisis/

phthisis pulmonalis accounts for almost half of the total fatal cases of Tuberculosis. High though this figure undoubtedly is, it is probably underestimated, for it is well known that many general practitioners have to consult family feeling in the matter of certifying phthisis pulmonalis as a cause of death.

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Death Rate of Tuberculosis per 100,000 Population in each age group in Scotland 1915-1919.

All Ages	Age in years											
	Age in years											
	0-1	1-5	5-10	10-15	15-25	25-35	35-45	45-55	55-65	65-75	75-	
1915	111	38	36	32	39	131	177	179	158	140	73	39
Phthisis	21	27	103	29	13	7	2	2	1	2	...	...
Tuberculous Meningitis	15	102	62	17	14	9	7	4	5	4	1	3
Abdominal Tuberculosis	17	64	33	14	16	16	13	14	12	14	11	12
Other Tuberculous Disease	17	64	33	14	16	16	13	14	12	14	11	12
1916	106	20	34	22	39	134	164	166	156	125	75	38
Phthisis	19	153	102	39	14	6	2	1	1	0	1	1
Tuberculous Meningitis	10	88	64	22	17	10	6	7	7	3	2	3
Abdominal Tuberculosis	17	46	29	17	13	20	16	13	12	16	15	10
Other Tuberculous Disease	17	46	29	17	13	20	16	13	12	16	15	10
1917	104	24	35	17	41	137	157	169	157	130	64	30
Phthisis	18	148	91	23	15	7	4	2	1	1	...	...
Tuberculous Meningitis	16	74	67	19	16	11	5	8	7	5	3	3
Abdominal Tuberculosis	19	41	31	14	17	19	16	17	14	23	16	15
Other Tuberculous Disease	19	41	31	14	17	19	16	17	14	23	16	15
1918	107	21	25	21	47	136	159	165	163	129	62	23
Phthisis	17	111	93	26	12	7	2	3	2	1	...	...
Tuberculous Meningitis	15	71	58	17	14	11	7	8	5	4	4	1
Abdominal Tuberculosis	19	29	22	20	20	22	15	11	16	15	23	11
Other Tuberculous Disease	19	29	22	20	20	22	15	11	16	15	23	11
1919	88	17	17	16	33	112	136	137	132	104	62	21
Phthisis	13	106	64	21	12	6	2	1	1	0	...	...
Tuberculous Meningitis	12	53	41	17	13	7	6	4	6	3	4	4
Abdominal Tuberculosis	17	37	21	13	17	18	13	15	15	18	20	16
Other Tuberculous Disease	17	37	21	13	17	18	13	15	15	18	20	16



PULMONARY TUBERCULOSIS  
IN INFANCY AND CHILDHOOD.



I N T R O D U C T I O N .

The recognition of early Tuberculosis in infancy or childhood is often extremely difficult. The point of importance in diagnosis is to ascertain whether the first line of defence is efficient. Is the disease active or latent? Is it manifest or occult?

The most common areas for tuberculous involvement in the child are undoubtedly the lymphatic glands. These become infected at early periods of attack, and although the actual point of entry of the bacillus cannot readily be determined, yet the first indications are almost always observed in lymphatic tissues. In the lymphatic glands of the child, the bacillus has for development a virgin soil not yet protected by previous infection. In children, tuberculosis of the lungs or other parts of the body, appears to be nearly always secondary to disease of, or infection through the lymphatic glands.

It is generally admitted that in man the specific bacillus obtains entrance to the body only after birth. Prenatal infection has been shown by experiment and post mortem to be a rare occurrence. Cornet examined 579 children who died within three months of birth, and only two of these gave any evidence of Tuberculosis.

Baumgarten/

Baumgarten on the other hand advanced a theory that the virus is directly transmitted, but remains latent and does not develop until some time after birth. The majority of investigators, however, at the present time believe that intra-uterine infection in tuberculosis is extremely rare, and that practically all cases are due to post-natal infection.

It may be useful first of all to examine the theories that have been put forward regarding the question of Heredity and its bearing on the subject of Tuberculosis.

Professor Arthur Thomson<sup>12</sup> in his study of Heredity says -

"Besides the transmission of a constitutional vulnerability, besides the rare occurrence of antenatal infection, besides the likelihood of household infection, besides the persistence of conditions of life which favour the disease, are there any other factors? There are probably two others. On the one hand, a seriously tubercular mother may be unable to nourish her offspring before and after birth, and the ill-nourished offspring becomes the more readily the prey of disease. On the other hand it seems likely that the bodily disturbances induced by tubercular disease in the parents may prejudicially affect the vigour of the germ-cells themselves, and thus lead to the production of inferior offspring."

Whitla<sup>13</sup> has suggested that the disease may re-/



resemble a family disease and not an hereditary one in so far that both parents may survive their entire offspring and die at extreme old age, the predisposition being transmitted, as in the case of bleeders, by one or other, or both of them.

In order to test these theories I have made a special study of twelve different families residing in the Burgh of Paisley, clinical data regarding whom I append herewith. In each case one parent was at one time under my care in the Municipal Sanatorium suffering from active pulmonary tuberculosis. In ten of the families in question I have been able to elicit a direct history of one or more of the children becoming affected with some form of the disease.

Notes on investigations in twelve different families  
regarding the question of Heredity.

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<u>Initial.</u>	<u>Mother.</u>	<u>Father.</u>	<u>Children.</u>
1. B.	Died in Sanatorium.	Alive and well.	Eldest daughter died from Pulmonary Tuberculosis on reaching 12 years. Two remaining children healthy.
2. B.	Alive and well	Suffers from active pulmonary Tuberculosis. Sputum positive.	Two sons suffer from pulmonary Tuberculosis. One child aet. 2 yrs. 10 mos. has multiple Tuberculosis.
3. McB.	Alive and well.	Died in Sanatorium.	Eldest daughter died at age of 14 from pulmonary Tuberculosis. Two remaining children healthy.
4. McE.	Alive and well.	Died in Sanatorium.	One child has tuberculous cervical adenitis. Another child has been in Sanatorium for pre-tuberculous treatment. Three remaining children healthy.
5. McM.	Alive and well.	Died in Sanatorium.	One child aet. 7 yrs. suffers from Tuberculous Keratitis. Three remaining children healthy.
6. C.	Suffers from Pulmonary Tuberculosis. Sputum positive.	Alive and well.	Four children alive and well.
7. T.	Alive and well.	Suffers from Pulmonary Tuberculosis	Two children have died recently from Tuberculous Meningitis.
8. McF.	Alive and well.	Suffers from Pulmonary Tuberculosis. Sputum positive.	One child died recently from Tuberculous Meningitis.

<u>Initial.</u>	<u>Mother.</u>	<u>Father.</u>	<u>Children.</u>
9. K.	Alive and well.	Died in Sanatorium.	Eldest child aet. 5 yrs. has tuberculous cervical adenitis. Two remaining children healthy.
10. R.	Suffers from Pulmonary Tuberculosis. Sputum positive.	Alive and well.	Three children alive and well.
11. W.	Suffers from Pulmonary Tuberculosis.	Alive and well.	Only child suffers from tuberculous cervical adenitis.
12. A.	Suffers from Pulmonary Tuberculosis. Sputum positive.	Alive and well.	One child developed Tuberculous dactylitis and subsequently died from Tuberculous Meningitis. Two other children alive and well.

The conclusions to be drawn from the foregoing investigations are:-

1. That children born of tuberculous parents, in addition to being constantly exposed to infection, are predisposed to the disease.
2. That family history is an important consideration in one's search for active tuberculins.



By way of analogy one might turn to the question of heredity and its bearing on cases of mental deficiency.

Some years ago Clifford Allbutt<sup>14</sup> and others always regarded feeble-mindedness as hereditary, and Ashby in 1908, speaking of all grades of mental defect found in early life said.- "In at least 75% of the Children with Amentia that I have examined, there was a strong probability that the Amentia was hereditary and primary."

Although it is generally admitted at the present day that heredity plays some part in certain cases of mental deficiency, yet the modern theory limits these cases to not more than from ten to twenty per cent.

Some writers draw attention to the connection which appears to exist between Amentia and Tuberculosis. Ireland,<sup>15</sup> for example, in his classical work on the "Mental Affections of Children" states that perhaps two-thirds or even more of all idiots are of the scrofulous constitution."

It is significant that a family history of Tuberculosis is very marked in Amentia, and it is also well known that many mental defectives ultimately succumb/

succumb to Tuberculosis. At the same time it must be borne in mind that in Amentia certain conditions such as shallow breathing, render the individual liable to Tuberculosis. Also that a person suffering from Amentia is prone to many intercurrent diseases and not to Tuberculosis per se.

Lapage<sup>16</sup> takes rather a different view of the question. He considers that a family tendency to Tuberculosis may act as a primary factor in giving rise to a neuropathic diathesis, and so favouring the production of feeble-minded offspring. Or it may act as a secondary and additional toxic factor in the presence of other debilitating taints.

The conclusion to be drawn from the foregoing statements is.-

That heredity may be responsible for the imperfect or arrested development of the human body in which the respiratory as well as the mental organs may be implicated.

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METHODS OF DIAGNOSIS  
OF PULMONARY TUBERCULOSIS  
IN CHILDREN.

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METHODS OF DIAGNOSIS.

While there are many methods of diagnosis, e.g.,

- a. Subcutaneous injection of Old Tuberculin,
- b. Cutaneous Tests: Von Pirquet, Moro.
- c. Complement Fixation Test,
- d. Opsonic Index,
- e. Sputum examination,
- f. Radiographic examination,

enlightenment must be sought by a judicious review of all the evidence available rather than by reliance on special procedures.

Sputum examination is all important though not always practicable owing to the difficulty of obtaining a specimen of the expectoration. Children do not expectorate to any great extent, and young infants cough up the bronchial secretion into the pharynx and swallow it. Holt<sup>17</sup> has shown how we may overcome this difficulty in most cases by securing on gauze any material coughed up when the pharynx is irritated so as to excite cough. Needless to say, the discovery of the tubercle bacillus in the discharges clinches the diagnosis of a definite lesion. A single negative result is of no value, and no number of negative results can exclude the presence of tuberculosis, but the/

the discovery that some other micro-organism is constantly present may afford valuable clinical indications. It must also be borne in mind that in the sputum of children, the bacilli are rarely found. This is due to the fact that the lung lesions in children become "open" only in the later stages of the disease. In addition another difficulty presents itself in that a mixed infection is much more common in children than in adults. The frequent occurrence of pneumonia, measles and other catarrhal conditions preceding tuberculosis bears this out.

#### Radiographic Examination.

This method in the hands of an expert is of undoubted value, though like many of the precise methods of diagnosis, a positive result differs from a negative one in degree only.

As a first essential one must be thoroughly familiar with the appearance of a radiograph of the normal chest. For instance one must recognise a delicate arborisation passing from the hilus to the periphery. One must also recognise shadows of branches of vessels and bronchi, especially marked from hilus to apex and to base. Only when this appearance becomes nodular and thickened can any abnormality /

abnormality be said to exist. Calcified tissue gives a dark lumpy shadow, and fibrous tissue tends to run in lines. In this way the activity of the disease may be gauged.

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REGIONAL DIAGNOSIS.

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REGIONAL DIAGNOSIS.

In dealing with pulmonary tuberculosis in childhood, I wish to emphasize again that it is an affection of the glands which must be looked for. In early life the tubercles show a special attraction for lymphatic structures, especially glands, and in particular the bronchial glands. Therefore when we speak of pulmonary tuberculosis in the school child, we are most often referring to the signs and symptoms of glandular enlargement within the chest wall.

There are three chief groups of lymphatic glands which may become infected in pulmonary tuberculosis.

1. The tracheo-bronchial group, situated at the bifurcation of the trachea.

2. The bronchial group surrounding the main bronchi.

3. The pulmonary group situated at the root of each lung, and extending for some little distance into the lung substance.

Some observers hold the view that the bacillus reaches these glands by the lymph channels from the air-passages or air cells; while Calmette<sup>18</sup> and others have shown that the alimentary canal may prove a direct path to infection. Whether these glands are primarily/

primarily affected, or to what degree their affection is secondary to pulmonary lesions or to infection by means of the alimentary tract, it is not possible to determine.

Chronic pulmonary tuberculosis is not a common disease in the child, particularly in the earlier years of school life. The reason for this, as I have already pointed out, is that in infancy and early childhood the bacilli are only temporarily arrested in the lymphatic structures. Once the infection has spread beyond the first line of defence, the secondary changes which occur in the surrounding tissues tend towards the spread of morbid processes rather than towards their arrest. In the child therefore we get acute inflammatory changes, with rapid issue, rather than a slow forming fibrosis which is more often seen in the adult. Hence the importance of early diagnosis and its relation to prognosis.

There are certain conditions met with in children which may cause error in diagnosis if sufficient regard be not paid to them.

- (1) Physiological differences, especially found in children, occurring in the lung apices.
- (2) Mechanical changes in the lung apices. These are due to exclusion of air from pressure of enlarged bronchial glands, and are often confounded/



confounded with changes due to true tuberculous infiltration of lung tissue.

- (3) Persistent pulmonary catarrhal conditions other than tuberculous. These may simulate phthisis very closely.

The physiological differences referred to under (1) seem to be recognized in the writings of some authorities on Tuberculosis. Riviere<sup>19</sup> points out that where the diagnosis of phthisis is wrongly made, it is nearly always at the right apex. This he ascribes to the more striking conduction, in children, of tubercular sounds from the bronchi to the surface, particularly on the right side; and of abnormal sounds, e.g. râles, from one part of the chest to the other. He points out also that on percussion the right apex gives a higher note unless the very lightest percussion is used.

On the same subject Bandelier and Roepke<sup>20</sup> remark that the expiration over the right apex may be louder, sharper and more prolonged, especially posteriorly, without the lung being affected. This is due to the larger size and more direct course of the right upper bronchus.

The/

The signs of tuberculosis of the tracheo-bronchial group of glands referred to on Page 29 are undoubtedly most often found on the right side, and although most marked in the interscapular region, the impairment of resonance due to the obstruction of air entry usually extends to the apex. That this is an important distinction from the impairment due to tuberculous infiltration of the lung tissue may be seen by the difference in the course run by the disease. The one is a local tuberculosis, the other an autotoxic disease of serious import.

The class of cases mentioned under (3) are usually the sequelae of some acute lung condition. It is common enough in children to find persistent catarrhal conditions after pneumonia, but when this has been an apical pneumonia followed by fibrotic changes, some difficulty in diagnosis is experienced particularly where the history is not very definite. Such cases, however, may I think be distinguished by the course they run.

It is interesting to note in this connection that Kroenig<sup>21</sup> has described a collapse and induration of the right lung apex in cases of chronic obstruction to the nasal passages, a condition which gives the physical signs of a right sided Tuberculosis, but physiologically has no connection with that disease.

A catarrhal condition of the apices may also be caused by oral sepsis.

The point to be considered, therefore is, what are the early signs of Tuberculosis of the intra-thoracic glands?

#### THE PHYSICAL SIGNS.

- (1) On Inspection the child may appear to be pale and obviously ill, but these signs may be entirely wanting. Some writers, e.g., John Thomson,<sup>22</sup> draw attention to the presence of small dilated veins over the upper part of the chest in front. This in my opinion is not a constant sign, and I have observed it in conditions where there was no reason to suspect involvement of the bronchial glands. There is no close anatomical relation between the veins of the chest wall and the circulation of the lungs, but the question of dilated veins in this situation is to me an interesting one. In my routine examination of Children both at the Tuberculosis Dispensary and at the Municipal Child Welfare Clinics I have paid particular attention to this matter, and have made notes on thirty-three Children who exhibited this abnormality. I append a brief summary of results which go to support the conclusion/



conclusion that where this dilatation is found there is generally a cough present. In addition some abnormal pulmonary conditions may often be detected. I am of opinion therefore that the presence of dilated veins over the upper part of the chest in children should not be entirely disregarded, but should rather be looked upon with a certain amount of suspicion.

Summary of examination of 33 Children who showed dilatation of the veins over the upper part of the Chest.

Present Condition of patient.		Previous Health.	Auscultatory Signs.
Cough	21 cases.	Pneumonia - 5 cases.	Rhonchi and Rales present in 23 Cases.
Cough & Sputum.	7 "	Measles - 5 cases.	Abnormal Breath Sounds present in 3 Cases.
No Cough	5 "	Bronchitis 4 cases.	D'Espine's Sign present in 3 Cases.
		Pleurisy - 1 case.	Negative - 4 Cases.
		Whooping Cough - 2 cases.	

(2) Palpation/

- (2) Palpation does not afford much help except that in rare cases some glandular thickening may be observed on palpating deeply in the episternal notch.
- (3) Percussion is all important in revealing the early signs of tuberculous involvement. By percussion not only does one learn to appreciate airlessness in the subjacent part, but also a certain rigidity of the supervening muscular layers, reflexly produced. For this purpose a recumbent position is to be recommended in examining the front of the chest. For the posterior aspect, the patient should be seated, the arms folded across the chest, the back bent, while the head is dropped forward and supported. In this way, I believe, the best results can be obtained.

The greater frequency of enlargement of the bronchial group of glands at the bifurcation of the trachea, and particularly those of the right side, accounts for most of the signs that are met with.

Some observers lay great stress on the deficiency of note on percussion found in certain topographical areas. Lees<sup>23</sup> in particular relies on small dull areas to be detected at the inner/

inner and outer aspects of the first and second intercostal spaces in front, and the inner part of the supra-scapular space behind. In my opinion the dullness over the inner spaces is commonly met with, and may be caused by the position of the underlying great vessels. I consider therefore that any areas of dullness found over the outer spaces are of more value from a diagnostic point of view.

A careful percussion of Koenig's band of resonance, giving particular attention to the region above the inner end of the clavicle, is a good routine method for arriving at the condition of the apices.

- (4) Auscultation may afford valuable evidence as to the presence of glandular involvement. In some cases bronchovesicular or even bronchial breathing may be heard at one apex, and this is suggestive, especially if associated with dullness in the situations already mentioned. One must always bear in mind, however, that a certain degree of harsh breathing at the right apex is common in children.

A most valuable sign of auscultation, if it can be established, is a deficiency of breath sounds/



sounds over one lobe, particularly if this be the right upper lobe. In this connection it is as well to examine the child in various positions since the movements of the diaphragm are often functionally irregular in children.

Another useful sign is that known as D'Espine's sign. If a stethoscope be placed over the spine of the seventh cervical vertebra, in the normal child the breath sounds and the vocal resonance are found to be loudly transmitted, and with a characteristic tracheal timbre. In bronchial gland affections this timbre may be heard over the upper thoracic vertebrae, and even as low as the fourth or fifth thoracic spine. The best results will be obtained if the words are whispered. It must be remembered that as the child grows older, the bifurcation of the trachea comes to occupy a relatively lower position in the thorax. In a child of eight, therefore, the increased vocal resonance, to be abnormal, must be heard below the first dorsal spine, and in a child of twelve, below the second or third dorsal spine. When the test is negative, it should be borne in mind that the diseased glands may be situated in front of the trachea and not between it and the spinal column.

The/

The symptoms produced by tuberculous deposits in the bronchial glands may be entirely wanting. On the other hand there is often the history of an irritating cough, paroxysmal in character, together with night sweats, loss of appetite and progressive emaciation.

The question next arises - what are the signs of involvement of lung tissue itself? They are persistent catarrhal signs. Definite crepitations may be heard over the affected area, and the signs are the more significant if they are located at the apex. They are more easily heard posteriorly, and may often be elicited on deep inspiration after the patient has coughed. If the disease be apical, percussion produces a much more marked dullness than the deficiency of note due to glandular disease. Koenig's band of resonance too may be definitely curtailed laterally, in addition to the uniform deficiency referred to before. Expectoration may be looked for, and its examination may reveal the presence of the tubercle bacillus. Generally malnutrition becomes a more marked feature, but this is by no means constant. I have had patients, children, with well marked signs of phthisis in whom the diagnosis had been confirmed by examination of the sputum, who nevertheless were well nourished, and excepting occasional evening rises of temperature, seemed to suffer little inconvenience. It is here that the X-Rays may prove of real value in/

in the hands of an expert. A delicate network may begin to darken the picture at the apex of the lung. Darkening due to muscular and other tissues must, of course, be allowed for. The strands, previously mentioned as running from hilus to apex, become thickened. The earliest apical changes generally occur round the innermost of these which pass to the posterior part of the apex. But what is of the greatest importance is to bear in mind that disease at the apex is frequently secondary to disease at a deeper focus, such a focus being usually at or near the root of the lung. This discovery would support the opinion of Romet that phthisis is a re-infection from within.

With regard to constitutional manifestations, sudden and erratic rises of Temperature are of great importance. The nature of these attacks is undoubtedly similar to that of a tuberculin reaction, but it is more definite in that activity of the disease is indicated. Irregularity and elevation of the temperature is often one of the earliest and most suggestive indications of a developing tuberculosis in children.

Wasting, anaemia, loss of appetite and lassitude in a child previously healthy are symptoms so well recognized that future comment is superfluous.

Night/



Night sweating is common in children in conditions other than tuberculosis, so too much reliance cannot be placed on it. Although it is undoubtedly a symptom of the disease, it has not the importance in the child that it has in the adult.

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TUBERCULOUS DISEASE OF THE CERVICAL GLANDS  
IN SCOTLAND.

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TUBERCULOUS DISEASE OF THE CERVICAL GLANDS.

This form of Tuberculosis is very commonly met with in Scotland among children of all ages. Infants under twelve months are frequently affected, and I have observed that a very high incidence occurs during the age period of one to three years, a period during which the child is nourished principally on cow's milk. The average nursing mother in this country weans her baby between the ninth and the twelfth months, after which cow's milk naturally forms the main item of the child's diet. In view of the very important part which the bovine bacillus has been found to play in the production of Tuberculosis in young children in Scotland, one must regard cow's milk as a likely source of infection when considering this variety of the disease in particular.

The most common situation in which such tuberculous glands are found is in the upper part of the anterior triangle. This is no doubt explained by the fact that the glands in that region receive their lymph supply from the faucial tonsils and from the naso-pharynx. A. Philp Mitchell<sup>24</sup> has shown that in many instances the faucial tonsils are found to exhibit microscopic evidence of having been involved in/  
in/



in the tuberculous process. In the group of cases he examined he found that in no less than 38% the disease had first involved the tonsils.

In the routine examination of children I have observed that in conjunction with a tuberculous condition of the glands in the upper part of the neck, the tonsils very frequently are found to be enlarged and congested.

I investigated a series of thirty-six consecutive cases of Tuberculous cervical glands occurring in young children residing in the Burgh of Paisley, and attending my Child Welfare Clinics, clinical data regarding which I append herewith. Of these cases, 30.5% occurred in infants under one year; 47.2% in children between one and three years, while the remainder, viz. 22.2% occurred in children between the ages of three and five. In each case I enquired particularly into the mode of feeding of the child since birth in order to obtain satisfactory evidence of the probability of transmission of the disease through the agency of cow's milk.

In the First Group (See Table I) I found that all the infants (with the exception of four) had been since birth, either wholly or partly, nourished on unsterilized cow's milk alone or in conjunction with some Patent Infants' Food. Among the four infants who were entirely breast fed there was in two of them/

them a definite family history of Tuberculosis. In the one case the father, who was personally known to me, died recently from Phthisis Pulmonalis. In the other case the mother suffered in youth from Tuberculous cervical adenitis, and she now exhibits scars from old sinuses.

In the Second Group (See Table II) among whom the incidence is the highest, I found in each case after the child had reached the age of nine months, whether weaned or not, that the invariable custom had been to supplement the diet with unsterilized cow's milk. In five cases in this Group there was a definite history of Tuberculosis in the family.

In the Third Group of Children, viz. those between the ages of three and five years (See Table III) where in most cases the duration of illness was longer than that in the other two groups, I again found that unsterilized cow's milk had entered largely into the diet of the child after the ninth month. In two cases in this group I obtained a history of Tuberculosis in the family.

Photos of Cases 10 and 11 in Group II are appended herewith.

Clinical data regarding Cases of Tuberculous cervical glands  
in Children.

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TABLE I.

Infants under one Year.

<u>Initial.</u>	<u>Age.</u>	<u>Duration of Illness.</u>	<u>Feeding since birth.</u>	<u>History of Tuber- culosis in family.</u>
1. M.K.	9 mos.	4 months.	Patent Food com- bined with un- sterilized cow's milk.	
2. E.McE.	9 "	4 "	Breast Fed.	Father died from Pulmonary Tuber- culosis 3 mos. ago.
3. A.B.	9 "	2 "	Breast Fed.	
4. A.C.	8 "	3 "	Unsterilized Cow's Milk.	
5. A.H.	8 "	5 weeks	Breast fed three mos. Patent Food combined with unsterilized cow's milk 5 months.	
6. E.E.	3 "	4 "	Partly Breast fed and partly Bottle fed on Unsterilized Cow's milk.	
7. S.H.	11 "	3 "	Breast fed entirely.	
8. E.P.	4 "	4 "	Breast fed.	Mother had Tuber- culous Cervical Adenitis, also old scars in Neck.
9. C.T.	8 "	4 months	Partly Breast fed and partly Bottle fed on Unsterilized Cow's milk.	
10. A.M.	6 "	3 weeks	Partly Breast fed and partly Bottle fed on Unsterilized Cow's milk.	
11. E.P.	8 "	4 "	Unsterilized Cow's Milk.	



TABLE II.

Children between one and three years of age.

<u>Initials.</u>	<u>Age.</u>	<u>Duration of Illness.</u>	<u>Previous Health.</u>	<u>Milk Supply.</u>	<u>Family History of Tuberculosis.</u>
1. I.I.	2 $\frac{4}{12}$	3 months	Whooping Cough.	Dried Milk 9 months. Unsterilized Cow's Milk.	
2. I.N.	2 $\frac{2}{12}$	18 "	Pneumonia	Tinned Milk, also Unsteril- ized Cow's Milk.	Mother & Maternal Aunt have Tuberculous Cervical Adenitis. Mother exhibits scars in Neck.
3. J.McI.	1 $\frac{2}{12}$	1 "		Breast fed 3 months.	
4. J.C.	1 $\frac{6}{12}$	1 "		Breast fed 3 months.	
5. W.B.	2 yrs.	1 year		Breast fed 12 months.	
6. M.H.	2 $\frac{2}{12}$	5 weeks		Breast fed 12 months.	
7. I.M.	3 yrs.	2 years	Measles	Breast fed 9 months.	
8. P.G.	1 $\frac{2}{12}$	1 "		Unsterilized Cow's Milk.	Mother died from Pulmon- ary Tuberculosis after child's birth.
9. G.B.	1 year	3 months		Breast fed 9 months	Maternal Uncle & Aunt died from Phthisis Pulmonalis, Child's Sister has Tuberculous Cervical Glands. Is in Special Classes School. One brother has Spinal Caries and is in Special Classes School.
10. W.M.	3 yrs.	1 year		Breast fed 12 months.	Mother had Fistula in Ano before birth of child.

<u>Initials.</u>	<u>Age.</u>	<u>Duration of Illness.</u>	<u>Previous Health.</u>	<u>Milk Supply.</u>	<u>Family History of Tuberculosis.</u>
11. S.G.	3 yrs.	5 weeks	Whooping Cough.	Breast fed 9 months	
12. C.R.	1 $\frac{8}{12}$	3 months		Breast fed 6 months.	
13. H.C.	2 yrs.	3 weeks		Breast fed 10 months.	
14. D.W.	1 $\frac{4}{12}$	5 weeks	Measles	Unsterilized Cow's Milk.	Mother had Pulmonary Tuberculosis prior to her marriage.
15. M.M.	1 year	3 months		Partly breast fed & partly hand fed on Unsterilized Cow's Milk.	
16. A.A.	1 $\frac{7}{12}$	2 months		Breast fed 4 months.	
17. J.McN.	1 $\frac{7}{12}$	3 weeks		Breast fed 3 months. Patent food & Unsterilized Cow's Milk 9 months.	

1.



2.

TABLE II.

W.M. Case No.10. Photo No.1 shows condition of neck at first visit. Swelling barely perceptible. Photo No.2 shows swelling 4 weeks later. An interesting point about this case is that the child has developed Hip Joint Disease within last few weeks. Condition of Hip Joint has been verified by X-Ray examination.

3.



4.

TABLE II.

S.G. Case No.11. Photo No.3 shows condition of neck at first visit. Mother had used Tincture of Iodine externally. Photo No.4 shows condition after treatment by local Doctor.



TABLE III.

Children between three and five years of Age.

<u>Initials.</u>	<u>Age.</u>	<u>Duration of Illness.</u>	<u>Previous Health.</u>	<u>Milk Supply.</u>	<u>Family History of Tuberculosis.</u>
1. W.K.	4 yrs.	1 year		Breast fed 9 months.	
2. E.B.	4 $\frac{6}{12}$	2 years	Measles & Whooping Cough.	Breast fed 11 months.	
3. A.M.	4 $\frac{7}{12}$	3 months		Breast fed 10 months.	
4. A.E.	4 $\frac{6}{12}$	4 months	Glands followed Scarlet Fever.	Breast fed 9 months.	Sister died at age of 7 years. Cause:- Hip Joint Disease.
5. A.T.	4 yrs.	2 years	Measles & Whooping Cough.	Breast fed 10 months.	
6. J.D.	4 yrs.	4 months		Unsterilized Cow's Milk entirely.	
7. P.G.	4 yrs.	6 months	Bronchitis	Breast fed 11 months.	
8. C.K.	4 $\frac{8}{12}$	3 months	Measles. Whooping Cough.	Breast fed 9 months.	Father died from Pulmonary Tuber- culosis in Sanatorium 5 months ago.

The conclusions to be drawn from the foregoing investigations may be stated as follows:-

1. Infants who are nourished in whole or in part on unsterilized cow's milk are open to infection from bovine tuberculosis.
  2. The evidence that the disease has been contracted is manifested by a tuberculous enlargement of the cervical glands.
  3. Children between the ages of one and five years, into whose dietary unsterilized milk enters, are prone to develop a tuberculous affection of the cervical glands.
  4. In young children who develop a Tuberculous cervical adenitis, the question of heredity among other factors must be taken into account.
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DIFFERENTIAL DIAGNOSIS.

The diagnosis of tuberculous disease of glands from other glandular lesions may sometimes present difficulty.

In the case of a simple enlargement due to pyogenic organisms, the process is more acute and the source of infection usually obvious, while subsidence or suppuration soon takes place.

Enlargement of glands due to Syphilis, though an uncommon condition, is occasionally met with in children, and may closely simulate tuberculous cervical adenitis.

In Hodgkin's Disease there is usually a more widespread enlargement of the lymphatic glands in various parts of the body. In addition the glands have certain characteristics which help to differentiate them from the tuberculous variety. They often reach a large size, remain freely movable, and do not as a rule break down. The disease is accompanied by progressive cachexia and irregular rises of Temperature, while invariably there is also present enlargement of the liver and spleen. One must always bear in mind the possibility that Tuberculosis and Hodgkin's Disease may co-exist.

A/





A lympho-sarcoma in the early stages may resemble a tuberculous affection of the cervical glands. The rapid growth of the former, however, and the marked constitutional symptoms which accompany it soon clear up all doubt regarding the diagnosis.

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ABDOMINAL TUBERCULOSIS IN SCOTLAND.

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ABDOMINAL TUBERCULOSIS.INTRODUCTION.

The term "Abdominal Tuberculosis" is generally held to embrace three different manifestations of Tuberculosis found within the abdominal cavity, viz. "Tabes Mesenterica", Tuberculous Peritonitis, and Tuberculous Disease of the intestines.

Until recent years tuberculous disease of the mesenteric glands as a complaint by itself was regarded as exceedingly common among infants and young children, and under the name of Tabes Mesenterica, was held to be the cause of many of the wasting disorders of childhood. Later investigations have shown that unless complicated with disease of the other abdominal organs, tabes mesenterica is extremely rare. When it does occur it is no doubt frequently primary, as infection may take place without any involvement of the intestinal mucosa. If inflammatory thickening surrounds the affected glands, they may be palpated through the abdominal wall. The commonest situation is on the left side of the vertebral column about the level of the umbilicus. Another situation in which these glands are frequently found is in the right iliac fossa where they may complicate or be mistaken for Appendicitis.



Tuberculosis of the Peritoneum is rarely if ever primary, and infection may be conveyed through the blood stream or through the lymphatics themselves.

There are two recognised forms of Tuberculous Peritonitis, viz. the Acute and the Chronic. The acute form may occur as a manifestation of Miliary Tuberculosis, but the chronic form is more commonly met with. The latter may be subdivided into two main types which are clinically distinct, viz. the dry and the exudative type. The appearance of the abdomen will vary with the predominance of either form. In the dry or plastic form, the thickening of the peritoneum may be felt on pinching up a fold of the abdominal wall. This is more easily demonstrated when the patient is emaciated. The abdomen also has an unusually doughy feeling, and pseudo tumours of matted bowel may be felt. In the ascitic or exudative type, fluctuation will be obtained which will vary with change of position. There may also be enlargement of the spleen due to amyloid degeneration.

Tuberculous disease of the intestines is always associated with disease of the peritoneum and lymphatic glands. In advanced cases of this form of Abdominal/

Abdominal Tuberculosis, acute intestinal obstruction may occur. If laparotomy be carried out, it is generally found that the intestines are so matted together and bound down by adhesions that the only available course open to the Surgeon is to perform a colotomy.

#### SYMPTOMS.

The onset of Abdominal Tuberculosis is in most cases insidious. In my experience medical advice is generally sought when the child is growing thin and pale, and the abdomen becoming appreciably distended. Abdominal tenderness on palpation, and pain resembling colic are sometimes present, but these are not constant symptoms. There is generally a history of alternate diarrhoea and constipation, and in some cases the motions present a lack of pigment similar to those seen in icterus. The child frequently complains of being easily tired, and shows a disinclination to play with other children. Unlike tuberculous cervical adenitis where the disease is usually localised, the child's health soon becomes seriously impaired, and ere long a fatal issue invariably takes place.

ABDOMINAL TUBERCULOSIS IN SCOTLAND.

Abdominal Tuberculosis is one of the commonest and most fatal affections of childhood in Scotland. It is the cause of incalculable suffering among children, and is directly responsible for the loss to the nation each year of much valuable child life.

If the Registrar-General's Returns for Scotland (See Page 15) be consulted, it will be seen that by far the highest incidence occurs among children under five years of age. In the light of recent investigations this is unquestionably due in great part, if not entirely, to two main reasons:-

1. In Scotland the supervision and control of the milk supply is not efficient.
  2. In Scotland unsterilized cow's milk enters largely into the diet of infants and young children.
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I have investigated the question of Abdominal Tuberculosis in a series of twenty consecutive cases occurring in children under five years of age, residing in the Burgh of Paisley. In each instance I have enquired particularly into several points of clinical importance in order to obtain information regarding a probable origin of the disease. These points are as follows:-

1. Mode of feeding of the child during first eighteen months.
2. Previous health of child.
3. Family history.

In the cases referred to, 70% occurred in children between one and three years of age; 20% between three and five, and 10% in infants under one year. All the cases in question came under my observation at the Child Welfare Clinics, and I am able to present Photographs of Cases 4, 8, 9, 10, 11, 12, 13 and 16. In 90% of the Cases in the series, unsterilized cow's milk was used in feeding the child during the first eighteen months of life. In one of the two cases, viz. Case 5, to which this did not apply, there was a very definite history of Tuberculosis in the family.

The results are given in Tabular form herewith:-

## Clinical

Data regarding twenty cases of Abdominal Tuberculosis  
in Children under five years of age.

<u>Initial.</u>	<u>Age.</u>	<u>Previous Health.</u>	<u>Additional manifestations of tuberculous infection.</u>	<u>Milk Supply.</u>	<u>Family History.</u>
1. M.F.	$2\frac{8}{12}$			Breast fed 9 months. Unsterilized cow's milk.	
2. M.T.	$2\frac{5}{12}$	Measles		Breast fed 9 months. Unsterilized cow's milk.	
3. I.W.	7 mos.			Unsterilized cow's milk.	Maternal Uncle died from Pulmonary Tuberculosis.
4. B.C. See Photos 1 & 2.	$1\frac{4}{12}$	Broncho-Pneumonia		Breast fed 9 months. Unsterilized cow's milk.	Brother died from Pulmonary Tuberculosis. He also suffered from Spinal Tuberculosis.
5. A.S.	$2\frac{6}{12}$			Breast fed 12 months.	Brother suffered from Abdominal Tuberculosis 3 years ago. Elder Sister died in Hospital from Tuberculous Meningitis two months ago.
6. D. McK.	2 yrs.			Breast fed 3 mos. Patent Foods & Unsterilized Cow's Milk afterwards.	
7. A. McN.	$1\frac{5}{12}$			Breast fed 9 months. Unsterilized cow's milk.	
8. M.H. See Photos 3 & 4.	$3\frac{9}{12}$	Whooping Cough. Broncho-Pneumonia.		Breast fed 6 months. Unsterilized cow's milk.	

9. D.J. See Photos 5 & 6.	3 yrs.	Whooping Cough.		Breast fed 9 mos. Unsteril- ized cow's milk.
10. E.O'H. See Photos 7 & 8.	$1\frac{4}{12}$	Measles.		Breast fed 6 mos. Patent Food & un- sterilized cow's milk afterwards.
11. E.C. See Photos. 9 & 10.	$4\frac{6}{12}$	Measles.		Tinned milk 9 mos. Unsterilized cow's milk.
12. J.G. See Photo. No.11.	$1\frac{2}{12}$	Measles.		Breast fed 5 weeks Unsterilized cow's milk.
13. A.S. See Photo. No.12.	$4\frac{6}{12}$			Breast fed 12 mos. Unsterilized cow's milk.
14. J.T.	$1\frac{6}{12}$			Breast fed 6 mos. Unsterilized cow's milk.
15. P.G.	$1\frac{2}{12}$		Tuberculous Cervical Adenitis.	Unsterilized cow's milk.
16. D.McK. See Photo. No.13.	$3\frac{6}{12}$	Measles & Whooping cough.		Breast fed 9 mos.
17. J.McE.	2 yrs.	Pneumonia. Whooping Cough.		Unsterilized cow's milk.
18. E.C.	$2\frac{3}{12}$	Measles.		Unsterilized cow's milk.
19. A.Q.	$1\frac{1}{12}$	Measles & Whooping cough.	Phlyctenular ulceration of eyes.	Breast fed 7 mos. Unsterilized cow's milk.
20. M.C.	$1\frac{6}{12}$	Measles.		Unsterilized cow's milk.

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1.



2.



B. C. Case No.4.

3.



4.



M. H. Case No.8.

Duration of illness 15 months.  
Was at Convalescent Home for 7 months.

5.



6.



D. J. Case No. 9.

Duration of illness 2 yrs. and 3 months.  
Shows marked emaciation.  
Advanced Abdominal Tuberculosis.

7.



8.



E. o'H. Case No. 10.

Shows marked emaciation. Advanced Abdominal Tuberculosis.

9.



10.



E. C. Case No. 11.

11.



J. G. Case No. 12.

Advanced Abdominal Tuberculosis with marked emaciation. Duration of illness 5 months.

12.



A. S. Case No. 13.

Early Abdominal Tuberculosis. Duration of illness 5 weeks.





D. McK. Case No.16.

This child also has Chronic Hydrocephalus.

PART II.

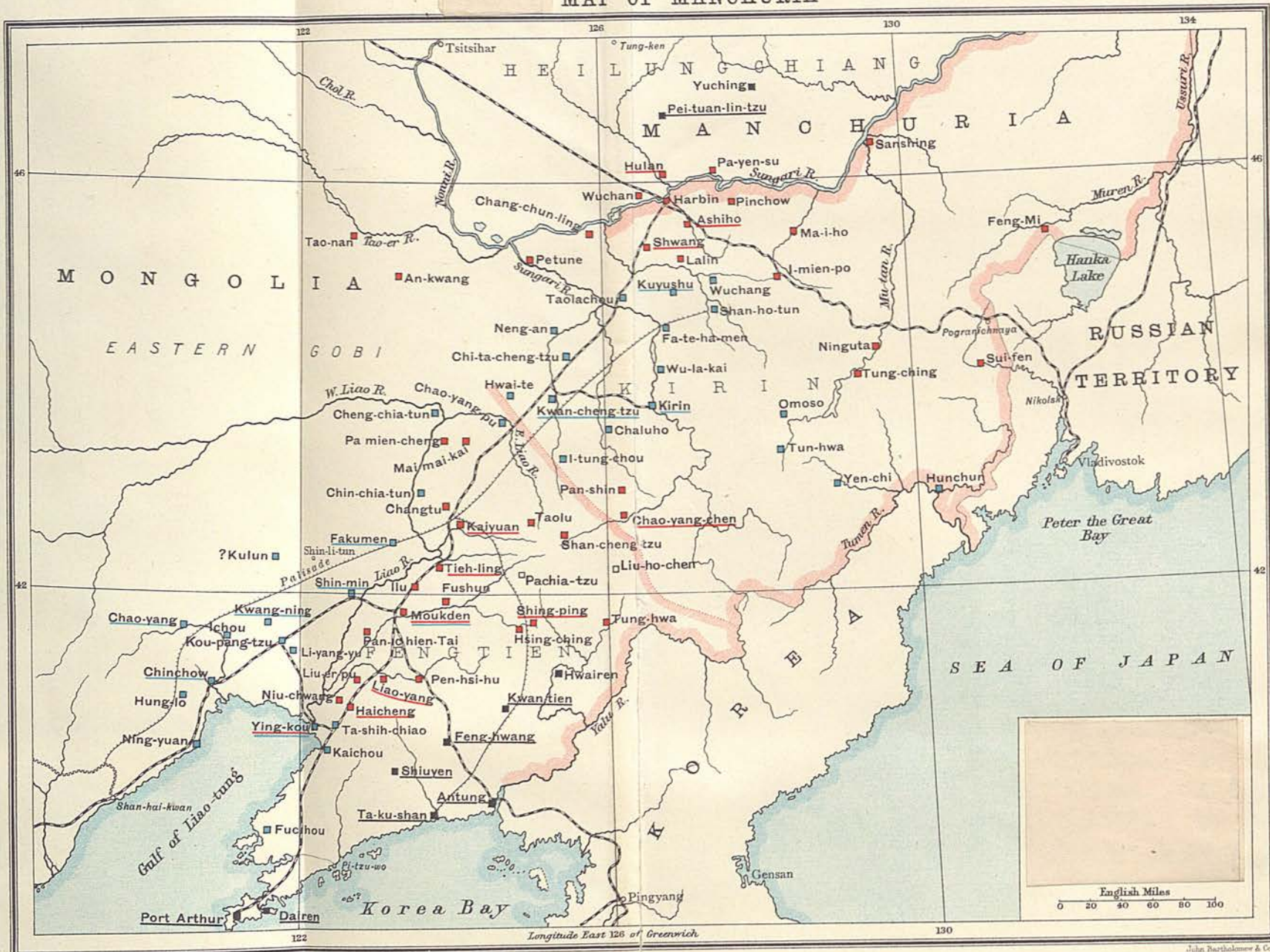
A SKETCH OF THE MANNERS AND CUSTOMS OF THE PEOPLE  
OF MANCHURIA AS BEARING ON THE QUESTION OF  
TUBERCULOSIS IN THAT COUNTRY.

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I N T R O D U C T I O N .



# MAP OF MANCHURIA



Manchuria, or as it is called by the Chinese "The Three Eastern Provinces", is a district of some 263,000 square miles. Although an integral part of the Chinese Republic, it is separated from the latter by the Great Wall and the Eastern Mountains. Manchuria is about six times the size of Scotland, and its population has been estimated at from 12 to 20 millions. The people are of a very mixed type. Immigrants have flocked in from Mongolia and from all parts of China, while the Manchus form an exceedingly small percentage of the total number.

Manchuria, with its two extremes of heat and cold, affords a good example of a continental climate. By reason of its proximity to Siberia and Mongolia, the country, although situated in the same latitudes as those of France and Spain, is ice-bound from October to March. During the winter season the Thermometer may register from 26° Fahr. to 40° Fahr. below zero in the North, while in the South, e.g. Moukden, these readings would be 10° or 20° higher.

In Summer the heat generally averages 80° Fahr. in the South, and 70° in the North. As one would expect, where Temperatures are so extreme, respiratory diseases/



diseases are naturally very prevalent. The prevailing winds are from the North and West. These winds drive back the moisture-laden breezes from the sea with the result that there is generally fair weather and a cloudless sky from the month of September until May. This dry climate during the greater part of the year offers an additional theoretical difficulty as to the prevalence of Tuberculosis. Severe dust storms which blow across from the Desert of Gobi, visit Manchuria in early Spring, and are, in my opinion, no mean factor in the dissemination of the bacillus of Tuberculosis.

Towards the end of June the rainy season sets in. While it continues, all vegetation quickly rushes to its full height, and myriads of flies and other insects swarm everywhere.



HOUSING CONDITIONS:

The houses of the people are for the most part primitive, being built of sun-dried mud bricks, with thatched roofs, mud floors, and paper windows. The houses all have a southern exposure. The windows are constructed in such a way that to obtain ventilation, the upper half of the latticed frame-work requires to be removed in its entirety. The custom of the people, however, is to keep the windows rigidly closed while the cold season continues, viz. from October until the end of March. In addition every inlet, by which the outside air may find its way into the room, e.g., through the badly fitting window frames, is carefully plastered up with mud.

The variety of Chinese or Korean paper which serves the purpose of window glass, is a tough opaque material which soon becomes dark brown or black in colour from the kang and tobacco smoke which pervade the room. Thus not only is fresh air but also daylight partially, and in many cases, wholly, excluded from the living rooms of the Chinese in Manchuria during the greater part of the year.

The/



Interior of Hospital showing Kang  
similar to that found in native houses.

The kang, of which an illustration is given, is an essential structure without which no Manchurian native house is complete. In shape it resembles a brick platform about three feet high and six feet broad, heated from below. It extends the whole length of the living room. As a general rule each room has two kangs, one on the North side and the other on the South, with a broad passage-way between. In most of the small houses inhabited by the poorer classes, however, only one kang is found.

The kang serves many useful purposes, including that of a bed. At night each person unrolls his quilted mat, pulls a similar one over him, and without removing any garments excepting his outer robe, settles himself to sleep. A narrow space is allotted to each individual, and among the poor class of Chinese where the kang space is extremely limited, the sleepers are practically touching one another. The sick and the healthy members of the household all sleep together. No attempt is made to isolate a person suffering from "fei dzu bing", i.e. lung disease, although the danger of contagion is well recognised. On one occasion I was called to see a patient in the last stage of Phthisis Pulmonalis who, together with his wife and three children, occupied a/  
a/



a kang which did not exceed ten feet in length. The breadth of the kang never varies, and all are constructed on the same principle. The length varies according to the size of the house, whether it be one "chien" or two "chien". One chien is equal to 12 x 18 x 10 ft; while a double chien room is equal to 12 x 18 x 20 feet.

During the day the women sit cross-legged on the kang and sew; children use it as a playground, and pet animals sleep on it. No chairs are required. A slim papered partition of latticed wood work separates the kitchen from the living room of the house, and the fire which cooks the family millet is made use of to warm the kang. The heat passes along the kang flues, while the smoke finds an outlet through a chimney situated at the gable end of the house. When, as very often happens, owing to the construction of the building, the heat from the kitchen fire cannot be utilised in the manner described, provision has to be made for firing the kang from the interior of the room. This is a most objectionable procedure. Each time fresh fuel (i.e. millet stalk) is required, the whole apartment becomes filled with a dense pungent white smoke possessing a particularly acrid taste. This smoke gives rise to profuse lachrymation, coughing and sneezing on the part of the unfortunate occupants, and is the direct cause of much Rhinitis, Laryngitis, Bronchitis and Asthma.

SANITATION AND HYGIENE.

Strictly speaking, there is no attempt at either sanitation or hygiene among the native population of Manchuria. An appalling state of ignorance exists with regard to such matters, and no doubt this factor contributes largely to the extreme prevalence of Tuberculosis among the people. Take for example the universal habit of expectorating. Every man, woman and child expectorates freely, not only when smoking, but at all times and in all places. In some of the large warehouses cuspidors are provided "for the use of customers", but in the dwelling houses, the mud floor is the family spittoon. When one enters a family dwelling of any standing or antiquity, one treads on the sputa of the ages.

There is no drainage system in the country, and the most primitive arrangements are in force with regard to sanitary conveniences. A small portion of the back yard, screened off, suffices for the wants of the family. Dogs and pigs act as scavengers, and these, together with the long severe winter, help to keep down outbreaks of epidemic disease. When epidemics do break out, no attempt is made to isolate the sufferers, with the result that great havoc/

havoc is wrought in the densely populated towns and villages.

Personal hygiene and cleanliness are not outstanding characteristics of the people. This is mainly due to three reasons, viz. poverty, lack of privacy in the houses, and the severity of the long Manchurian winter. Public baths are provided in all large towns "for men only", but apart from these, there are practically no facilities for encouraging personal cleanliness. Soap is not generally used among the working class population, as it is considered rather an expensive luxury. The better classes have Japanese soap which they use sparingly and infrequently on account of its price.



THE CHINESE AT HOME.

In a typical Manchurian house a soiled curtain hangs before the door of the living room in an endeavour to secure greater privacy and warmth, while cats, hens, large dogs of the collie type, and occasionally rabbits, wander in and out at will. The smaller variety of Pekinese dog, so often seen in Manchurian households, is accorded a privileged place on the kang beside its master.

The Patriarchal system of family life prevails, and all generations live under the one roof. The sons of the house bring their wives into the ancestral home, while the daughters, on reaching marriageable age, leave the family roof-tree to wed the husbands whom their parents have chosen for them.

Opium smoking is not indulged in to any extent in Manchuria as the sale of that drug is illegal, but all classes of the community, both men and women, smoke coarse home-grown tobacco in long stemmed Chinese pipes. The pipes belonging to each household are common property, used by all the members and also by any casual visitor who happens to call. The duty of lighting the pipes for the family and for the visitor falls, according to Chinese etiquette, on/

on the youngest daughter-in-law of the house. She does this by thrusting each filled pipe in turn into the glowing embers of a charcoal brazier. When the pipe is lit she gives a few puffs, then wipes the mouthpiece on her robe and hands the pipe to the one who is to smoke it. In this way Tuberculosis must be frequently conveyed from one person to another.

The peculiar etiquette which is observed when guests are dining with a Chinese family may also be responsible for the spread of Tuberculosis. The correct procedure at a Chinese feast is that each one should from time to time throughout the course of the meal, assist his neighbour to some choice portion of food from the central dish. As no special chopsticks or other implements are provided, this act of courtesy is effected through the medium of one's own chopsticks.

DRESS:

Both sexes adopt the same style of dress, viz. blue or black cotton trousers neatly tucked in at the ankles, and a long blue cotton robe reaching almost to the feet. The under-garments are few in number, and are all made of the same material, viz. cotton or unbleached calico, woollen articles of apparel being entirely unknown. White cotton socks which tightly encase the feet, and a pair of heel-less cloth shoes complete the toilette. In winter the outer robe is quilted with native cotton wool, which forms an admirable protection from the piercing North winds which blow across the Mongolian plains. Although the robe wears out, the same cotton wool has to do duty over and over again.

The clothes of a deceased person, consumptive or otherwise, are as a rule worn by the other members of the family, and it is no uncommon sight to see a woman with advanced Tuberculosis teasing out cotton wool prior to sewing it into a wadded robe for her husband or child. Cloth shoes in winter are replaced by a thick hard felt variety, but the white cotton socks are worn all the year round. The women and children wear no hats except in midwinter. The wealthier classes aspire to fur-lined robes in winter, while the carters (who form a class by themselves), wear rough sheepskin coverings.



FOOD.

The people of Manchuria, like most of the Oriental races, are almost exclusively vegetarian. Their staple food is millet (sorghum) both large and small varieties, and this is generally supplemented by pickled cabbage in winter and beans or bean sprouts in summer. Potatoes have been introduced into the country by the Westerner and they are a favourite adjunct to the midday meal, but their price is prohibitive among the poorer classes.

The meat market is controlled by the Mohammedans, but meat is purchased and eaten only by the rich. Chinese pork, although more easily procured - since most families rear their own pigs - is looked upon by the masses as "good food" to be consumed only on special occasions such as New Year. Meat of any kind does not therefore enter into the daily dietary of any but the opulent and well to do. The vast majority of the people who comprise the agricultural and labouring classes, subsist entirely on millet - usually the large variety as it is the cheaper of the two kinds - and vegetables.

The prevailing custom among the people with regard to meals is to have two per day in winter and three per day in summer. In winter the first meal is/

is eaten at 10 a.m., and the second at 4 p.m., whereas in Summer when the working day is long, the first meal is at 8 a.m., the second at 2, and the third at 7 p.m. Although there is this dissimilar régime during the two seasons, the total amount of food eaten is, as far as I could judge, practically the same. In winter the appetite is stimulated and more food is consumed at each meal. As I fell in with the national customs I found that my Hospital Food bills during winter varied very little from those in summer.

I investigated the question of the food of the Chinese in Manchuria from the standpoint of its Caloric value, as I formed the opinion that the daily diet of the poorer people was deficient in this respect. I have been unable to obtain complete data regarding a mixed diet, as no research work has been done on the subject in Manchuria, but I have succeeded in calculating the average daily yield of Calories from millet alone.

The following Table gives the analysis of Millet, showing the proportion of each of its component parts, and also the total number of Calories yielded by 100 grammes of the food. This figure is a little higher than that of rice, and lower than that of corn.

H <sub>2</sub> O	12.2		
Proteins	8.2	x 4.1	33.62
Fat	4.2	x 9.3	39.06
Carbohydrate	70.6	x 4.1	<u>289.46</u>
Cellulose	3.1		362 Calories yielded
Minerals	<u>1.7</u>		by 100 grammes
			of Millet.
	<u>100.0</u>	grammes	

Millet is always sold in a special wooden measure called a Tou (pronounced Dou) which is of two standard sizes, viz. one containing 1.63 gallons, and the other containing 1.13 gallons. One Tou of millet is considered an ample allowance for an adult Chinese man or woman for a period of thirty days. If the average of these two figures be taken, viz. 1.38 gallons and the daily allowance calculated, one obtains an average of 3/8ths of a lb. per day per person. This in grammes represents 171, which is equal to 619 Calories. Although other articles of food, which are by no means constant among the poorer classes, be taken into account, the total caloric value of the daily diet of the poor Chinese in Manchuria must of necessity fall short of the average standard in this country. This is no doubt another predisposing cause of Tuberculosis in that country.



CONTAMINATION OF FOOD.

In the principal streets of every Manchurian town or city, itinerant food sellers are to be found. In summer, fruit in the form of sliced melon, pomegranate or pomelo is usually displayed; while in winter, bowls of cooked rice or millet stand in a row before the passerby. Great ignorance prevails among the people regarding infection through the medium of dirty food. In Temples, roadside stalls and private houses, all food is uncovered, and is thus exposed to dust and flies. At large funeral processions, dishes of rice and meat - offerings to the gods - are carried round the town along a route lined by crowds, and when the funeral obsequies are over, these dishes are taken home and consumed.

At the great Temple Fairs which occur periodically throughout the year, viands of various descriptions are exposed in bowls for several days before the Buddhas while thousands of pilgrims prostrate themselves and burn incense. When the Fair terminates, the priests - a consumptive crew - who regard the offerings as personal perquisites, lose no time in devouring them.

INFANT FEEDING:

There is absolutely no substitute for mother's milk in Manchuria, with the result that lactation is continued until the child reaches the age of two years or more, when he or she is able to use chopsticks and eat 'food', i.e. millet. I have seen a child of five years run in from play and snatch a drink from his mother's breast. Chopsticks, the art of using which is acquired very gradually, would be of no use to a child of a year or eighteen months, and spoon-feeding is practically unknown among the Chinese. Agalactia is therefore a serious complaint, and I found that the best results could be obtained by the judicious use of Lactogen as a Galactagogue. As a rule Manchurian mothers are able to nurse their children for the required period, but if for some reason there is permanent interference with lactation, and no wet nurse can be obtained, the child usually dies from starvation and inanition. Among the wealthy classes it is a common procedure to procure the services of a wet nurse in cases where the mother is unable to suckle her child, but among the poor people the cost of hiring such a nurse is generally prohibitive. In my experience instances of Agalactia occurred most frequently among the leisurely classes.

Milch cows and also goats are reared in Manchuria, but the milk of these animals is never taken for the purposes of human consumption. The people exhibit a natural antipathy towards, and disgust for cow's milk as an article of diet. This rooted aversion from milk in any form presents a supreme difficulty in the treatment of medical cases on dietetic principles.



SCHOOL LIFE AND AFTERWARDS.

Manchurian girls and boys lead a comparatively free life up to the age of 11 or 12. Education is not compulsory, with the result that many children grow up unlettered and untaught. Since Government Schools have been established, however, many more children receive education than formerly.

Government Schools in Manchuria are for the most part overcrowded and deficient as regards light and ventilation. The question of hygiene does not bulk largely in the calculations of those who plan the buildings as the architects are Eastern both by birth and education. Most of the schools I have seen are merely dwelling houses adapted to suit scholastic requirements, the mud floors and kang remaining in situ. The situation of such schools is usually in the centre of a crowded city, hemmed in by buildings on either side, with no open space in front.

The Mission Schools on the other hand are, in most cases large, airy and in every way as hygienic as it is possible to make them. The cubic capacity of air space allotted to each scholar, in several instances even exceeds that of the standard in this country. The following may be cited as examples:-

School.	No. of Scholars.	Size of Class Room.	Cubic space per head.	Floor space per head.	Home Standard cubic space per head.	Home Standard floor space per head.
Moukden Girls' Primary	12	3000 cub. ft.	250 cub. ft.	25 sq. ft.	150 cub. ft.	15 sq. ft.
	5	1500 "	300 "	30 "	"	"
	30	3400 "	170 "	17 "	"	"
Moukden W. Pottery School	30	4800 "	160 "	16 "	"	"
KaiYuan, Boys' Secondary	16	4000 "	250 "	25 "	"	"

It is therefore not surprising to find that Tuberculosis is markedly less prevalent among the children attending the Mission Schools as compared with those who attend the Government Schools. In addition the Mission School children are medically examined at regular intervals, and in this way early cases of Tuberculosis are brought under the notice of the medical supervisor.

On leaving School a choice of occupations is open to a boy. The cult of the Priesthood may appeal to some, while those who prefer a business career enter the merchant service. The literati or scholarly class draws its recruits mainly from among the wealthy Chinese families, but the majority of Manchurian boys follow the vocation of their fathers and become agriculturists. This class rarely receive any education, and from a very early age are accustomed to work in the fields from sunrise until sunset.

Until comparatively recent years girls in Manchuria received no education at all. Parents considered it a needless expensiture of money to educate a girl. Since the establishment of both Government and Mission schools for girls, however, the situation has changed considerably. Many girls nowadays are educated, but such education is still not universally popular./



popular. A Manchurian girl is not so fortunate as her brother in being able to choose a vocation. From childhood the goal for her is marriage, and she is brought up to regard her marriage as the consummation of her parents' hopes, and indeed the only justification for her own existence. A young girl on reaching the age of thirteen or fourteen is kept practically in seclusion until the day when she crosses the threshold of her father's house to enter the red sedan chair which bears her to her future husband's home. Marriage is purely a financial transaction, and it is arranged by the parents through the medium of a third person or "go-between". According to Chinese etiquette, the bridegroom-elect is not permitted to see his future bride until the wedding day. In this way tuberculous girls may be wedded to tuberculous boys, and vice versa. No cognizance is taken of the fact that one or both of the contracting parties may be affected with the disease. If there be outward manifestations of Tuberculosis such as scars, sinuses, or joint affections, these undoubtedly reduce the monetary value of the bride, but the transaction takes place all the same. In a land where even the imbeciles fetch their price, a tuberculous spouse may be quite expensive.

APPRENTICES:

The custom which prevails throughout Manchuria with regard to shop employees has an important bearing on the prevalence of Tuberculosis among the young male adult population.

All large shops and warehouses employ a staff of youths as apprentices, in number varying from half a dozen up to fifty or more, depending on the size of the establishment. These youths all live in and receive board and lodging from their employers. Their working hours are long, extending from sunrise to sunset, both in summer and in winter. In addition they require to work seven days each week as a seventh day of rest is not recognised in a heathen country like Manchuria. The rooms provided for their sleeping accommodation are dull and cheerless, being usually situated at the back of the shop where the sun rarely penetrates, and where the ventilation is of the most meagre description. In a large warehouse in one of the Northern towns I have seen dormitory accommodation provided for twenty youths, the whole extent of which did not exceed 4,320 cubic feet. This figure allowed only 216 cubic feet of air space per head in place of 700 - 900 per head/

head which is the standard in this country for youths between twelve and eighteen years of age.

The evil effects of this overcrowding among apprentices were well exemplified during the serious outbreak of Pneumonic Plague which occurred in Manchuria in the winter of 1910-11 and which swept over the country with alarming rapidity. At that time we found that the apprentice class suffered in a very marked degree on account of their unfavourable environment. In many instances whole warehouse staffs were completely wiped out, one person infecting the others by contact. At the height of the epidemic it was no uncommon occurrence to find shops remaining closed for days, and when the doors were forced open, rows of apprentices would be seen lying dead on the kang.

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ALCOHOLISM AND DRUGS AS PREDISPOSING CAUSES  
OF TUBERCULOSIS.

The Chinese in Manchuria as a nation are temperate with regard to intoxicating liquor. The wine of the country is a crude variety of spirit, and its price prohibits its use by any but the rich. The same is true of all other forms of intoxicating liquor.

The beverage par excellence among all classes of the people is the innocuous Chinese tea which consists of the dried flower petals of the Tea plant.

The fact that the sale of opium has been made illegal in Manchuria precludes the possibility of opium smoking being indulged in to any great extent. A certain amount of the drug is, however, annually smuggled into the country. Within recent years Morphia has been introduced by the Japanese, and victims of Morphinism are frequently met with. This is especially the case in large commercial towns such as Kuanchengtzu and Harbin where there is a considerable Japanese community of shoopkeepers. These Morphiomaniacs belong chiefly to the vagrant class of Chinese, a class particularly poor as regards physique and resisting power. Many of these human derelicts eventually drift into the Mission Hospitals in an advanced stage of pulmonary Tuberculosis.

PULMONARY TUBERCULOSIS IN MANCHURIA.



PULMONARY TUBERCULOSIS IN MANCHURIA.

Of all the many forms of Tuberculosis met with in Manchuria, the pulmonary type, "fei dzu bing" "lung disease" as it would be translated literally, is by far the commonest and is most dreaded by all classes of the people. Similarly to what one finds in Scotland, however, this form is seldom seen in infants and young children. It occurs most frequently in young people of both sexes, and it exacts its heaviest toll of victims from among the school boy and girl class between the ages of thirteen and eighteen. There is also a high mortality, as already indicated, among the apprentice youths who serve in warehouses and shops. This is no doubt partly explained by the unhealthy conditions under which they have to live and work.

In Manchuria early cases of Tuberculous infection seldom come for treatment, and the pulmonary variety is no exception to this rule. It is only when the grosser signs and symptoms become manifest that the patient seeks medical advice. I am inclined to think that in some cases coughs due to lung lesions may be overlooked in the early stages since Laryngitis, caused by kang smoke, is very prevalent, and the habit of expectorating is universally practised/



practised by all classes of the community whether well or ill. There are, of course, many other and perhaps more likely reasons which may account for the delay in seeking medical advice. Among these may be mentioned the following:-

1. Procrastination, which is one of the characteristic traits of the Oriental.
2. The inborn prejudice of a large proportion of the Chinese against the foreigner and against Western methods of treating disease.
3. Paucity of skilled medical help. Years may elapse ere a patient becomes cognisant of the existence of a 'foreign' Doctor and Hospital.
4. Difficulties of travelling. There are no proper roads in Manchuria except in the large towns and cities. Cart tracks across fields are the only roads available. At certain seasons these tracks become quagmires, and are thus rendered impassable for either pedestrian or vehicular traffic.
5. The long Manchurian winter, during which the people, especially the women, remain indoors most of the time.

6./

Inland Travelling in Manchuria.



Picture showing "Small Cart" drawn by Mules -  
Common mode of conveyance.



(行裝箱真為清水)

河 波 車 馬 河 渾 天 奉

"Large Carts" drawn by Ponies and Mules,  
crossing a River near Moukden.

6. Segregation of the young unmarried women.
7. Religious Festivals and Temple Fairs which occur periodically throughout the year and which engage the attention of the people.
8. Chinese New Year Celebrations which continue over a lengthened period.
9. Poverty of the people. Villagers in particular are often too poor to afford hire of cart to bring them within reach of medical help.

In the routine medical inspection of children attending the various Mission Schools, which I carried out, I had opportunities of detecting incipient cases of pulmonary tuberculosis. I was thus able to have these cases segregated and placed under the best hygienic conditions for combating the disease. But the vast majority of Chinese children in any large town or city cannot be reached in this way. Those in attendance at the Government Schools receive no medical supervision at any time during school life. The children also who attend no school at all and who form quite a large percentage of the total number, since education is not compulsory, have few chances of coming under medical surveillance.

In/



In the majority of instances the disease attacks the boy or girl approaching puberty, a time when, as I have already pointed out, an extra strain is thrown upon the young growing organism. In this connection it is interesting to note that among the Chinese the "tubercular appearance" which was appreciated by the older writers, is quite apparent to the careful observer. The two recognised types of conformation, viz. the "tuberculous" with bright eyes, pink cheeks, long eyelashes, and thin bones; and the "scrofulous" with coarse heavy figure and large thick bones, are commonly met with.

The onset of pulmonary tuberculosis in the Manchurian boy or girl is no doubt insidious, but it is almost impossible to verify this as one rarely meets with an early case. In most patients the signs and symptoms are so evident and leave no doubt as to the nature of the complaint. In girls Amenorrhoea is often the first subjective symptom which brings the patient to the Consulting Room. This in itself is of serious import at that age in view of the girl's impending marriage, as the possibility of her being sterile is sufficient, according to Chinese law, to annul the marriage contract. In my experience Amenorrhoea is a late symptom, and I usually found the lung condition to be well advanced before it makes its appearance.

The/

The course of the disease is very similar to what one finds among young people suffering from Pulmonary Tuberculosis in Scotland, except that it is shorter in duration, as the patients go downhill more quickly. This is no doubt explained by the fact that in Manchuria we are dealing with patients whose resisting powers are feeble, whose general physique is poor, whose surroundings are often unhygienic, and whose family history is, in nine cases out of ten, a tuberculous one.

No section of the community is immune from Pulmonary Tuberculosis, and sufferers are to be found in all ranks in life. Of the four great Vocations as classified by the Chinese, viz. 1. Priests (who are celibates), 2. Literati, 3. Agriculturists, 4. Merchants, the Farming class shows a lower incidence than do the other three. Yet the fact remains that the daughters of farmers are affected equally with the daughters of either Merchants or literati. This is undoubtedly in great part due to the universal custom which prevails among all classes of the people of segregating the young unmarried girls.

I have selected four illustrative cases from among my Notes, and give a brief summary of each case as it was presented to me.

1./

1. Miss Yang Yu Hwa - aet.  $14\frac{6}{12}$ , younger daughter of a farmer. Patient showed the characteristic tubercular appearance, viz. pink cheeks, long eyelashes, fine hair. Admitted to Hospital with history of cough lasting six months, together with sputum, haemoptysis and progressive emaciation. Elder Sister died two years previously of "fei dzu bing" - "lung disease".

On examination patient was found to have an extensive cavity at right apex. She did not improve under sanatorium treatment. Returned home at end of two months, and died shortly afterwards.

2. Miss Hsü Ai Hsin - aet. 15 yrs. Daughter of a local merchant. Left the Government School at the age of 14 and migrated to Northern Province of Manchuria in company with married sister. After six months residence in the North she caught a severe chill and developed cough and sputum. Returned to her home in Southern Province. Was brought to Hospital as out-patient on account of Amenorrhoea, cough and loss of weight. On examination was found to have both apices affected. Before patient could be admitted for Sanatorium treatment, acute tuberculosis supervened, and patient/



patient died within two weeks. On enquiry one elicited the information that various relatives had died of "lung disease" within recent years.

3. Chang Te Fu - aet. 15. Son of a Merchant. Employed as Table Boy in house of a 'foreigner'. Tubercular appearance particularly well marked. History of cough during six months, together with lassitude and weakness. Sputum appeared and haemoptysis supervened. Sputum examined bacteriologically and found to contain Tubercle Bacilli. Patient admitted to Hospital for Sanatorium treatment, but condition became gradually worse, and patient died within eight months of onset of disease.
  
4. Miss Chang Hsi Mei - aet. 16 years. Maid to wife of Chinese Official. Family history unobtainable as patient was an orphan and had been brought when young to Manchuria from Province of Shantung in China proper. Medical advice sought on account of Amenorrhoea lasting three months, together with slight cough and sputum. On examination left apex was found to be affected. Patient was immediately placed under Sanatorium treatment, /

treatment, but her physique and resisting powers were feeble. She quickly became worse and died within two months of admission to Hospital.

The great majority of cases of pulmonary tuberculosis among young people in Manchuria have a fatal termination. (The reasons for this I have already indicated.) The few whose physique and resisting powers are strong enough to overcome the initial infection pass into the chronic stage of phthisis pulmonalis. It is no uncommon thing to find such patients pursuing their daily avocations and enjoying years of comparatively good health.

In view of the frequency of Pulmonary Tuberculosis in Manchuria, and its attendant high mortality, it was my constant endeavour to carry on an Anti-tuberculosis campaign among the people. The widespread distribution of the accompanying Calendar, (prepared by the China Medical Missionary Association Council on Public Health,) together with a series of popular Lectures on Health and Hygiene, with special reference to "Fei dzu bing" as a preventable disease, were among the principal methods which I employed.



# 癸卯年月份單



A Strong People

## 民強

A Happy Country

## 國富

欲行新法以衛生。忠頑固不允。二人反目。孝遂啟門而出。



大湖之濱。有昆仲二人。長名王忠。次名王孝。二人俱患肺病。一日孝

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十一歲大雪

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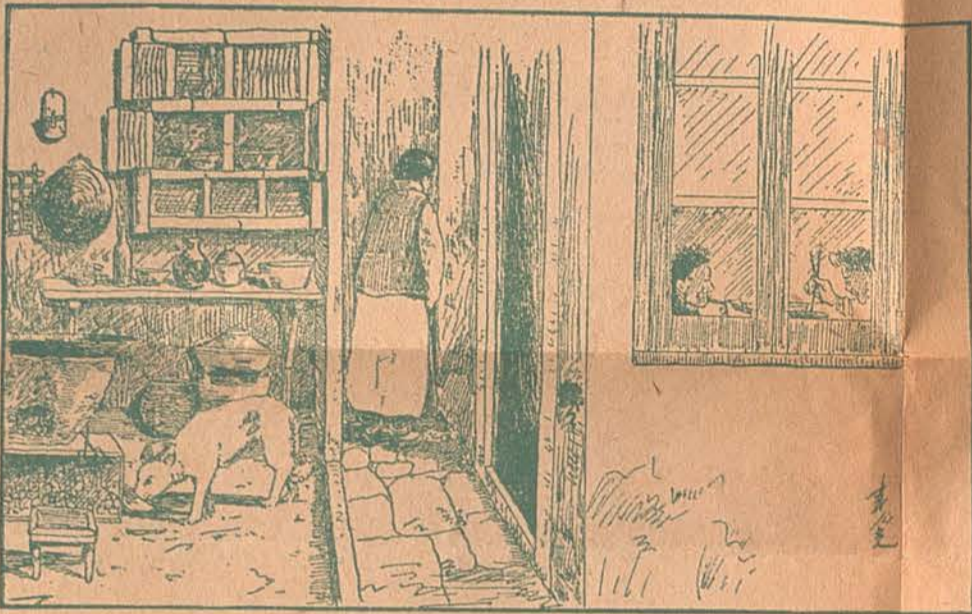
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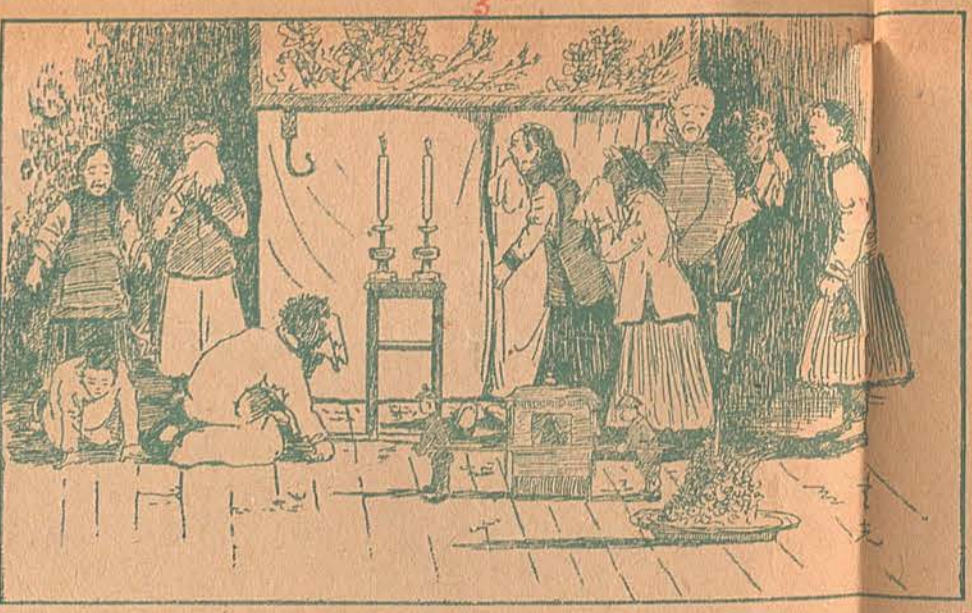
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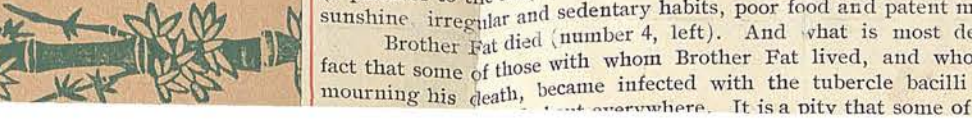
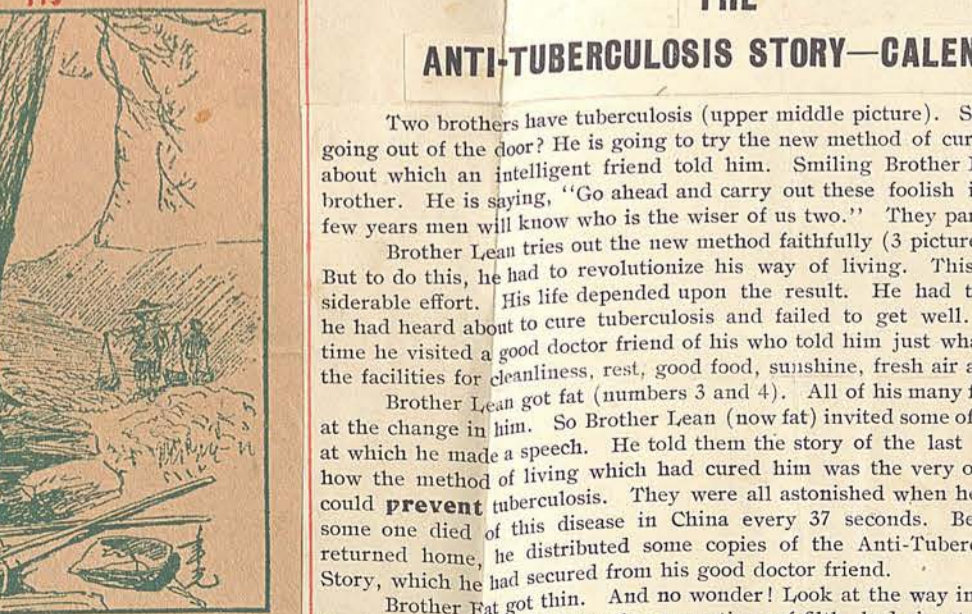
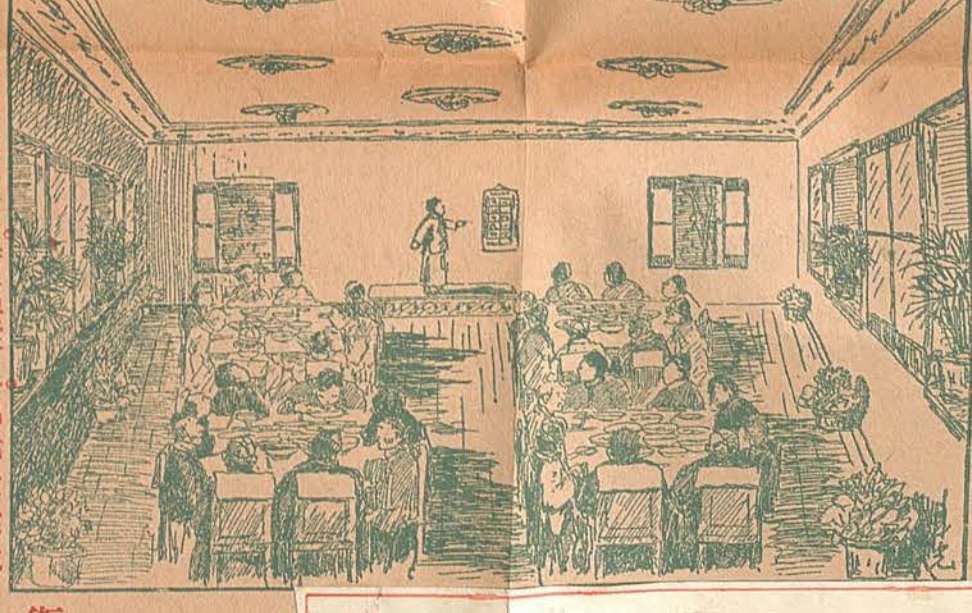
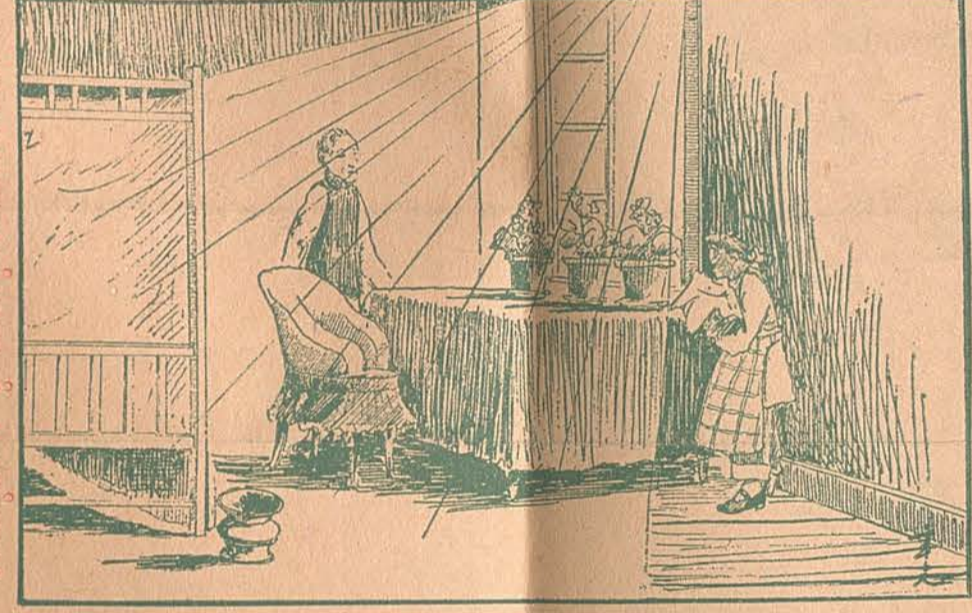
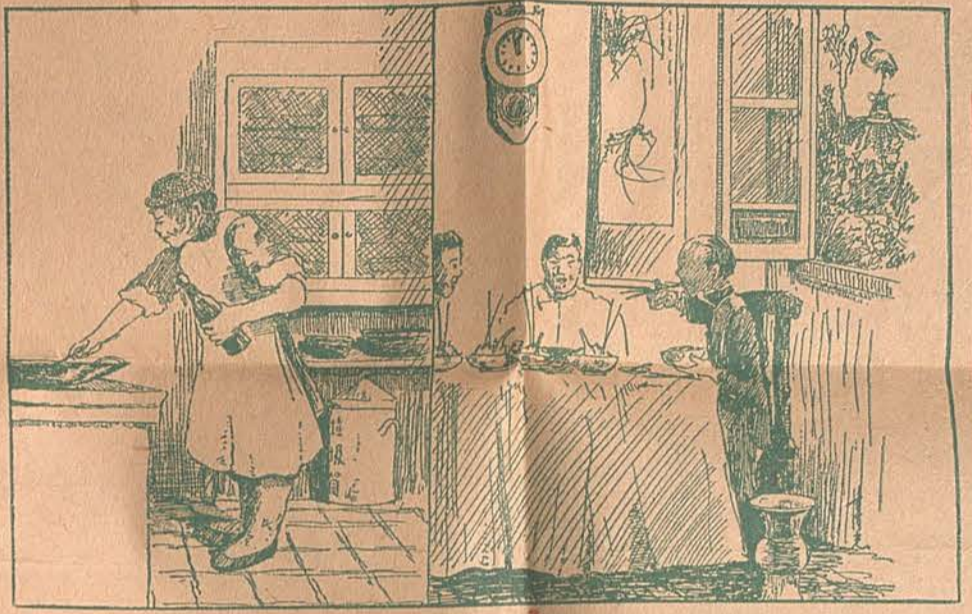
王忠仍僻居守舊。窗扉閉。暗空氣穢。濁膳室臥房。厨便所。俱在咫尺之間。膳時。蠅蚊野犬。時來啄食。匙箸不分。口沫傳染。



王忠不效良醫。僅閱廣告。擅購救急常備之便藥。如補血丸。潤肺露之類。以身嘗試。加以烟霧薰蒸。痰涎滿地。蠅蚊沾染食物。兒童吞之亦病。



屈指昆仲反目。甫屆三年。頑固之兄。竟遭癆菌之侵襲。而逃汗潮熱。咯血氣喘。相逼而來。湫然以逝。



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七歲小寒

七歲大雪

八歲小寒

八歲大寒

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衛生與不衛生之分別



必須預防。治病務宜從早。  
 華民因勞致死 每日二千人  
 防治此毒傳染 大眾要講衛生  
 起臥宜有定時 飲食務須清新  
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### THE ANTI-TUBERCULOSIS STORY—CALENDAR

Two brothers have tuberculosis (upper middle picture). See Brother Lean going out of the door? He is going to try the new method of curing tuberculosis about which an intelligent friend told him. Smiling Brother Fat scoffs at his brother. He is saying, "Go ahead and carry out these foolish ideas! Within a few years men will know who is the wiser of us two." They part.

Brother Lean tries out the new method faithfully (3 pictures to the right). But to do this, he had to revolutionize his way of living. This cost him considerable effort. His life depended upon the result. He had tried everything he had heard about to cure tuberculosis and failed to get well. From time to time he visited a good doctor friend of his who told him just what to do. Note the facilities for cleanliness, rest, good food, sunshine, fresh air and exercise.

Brother Lean got fat (numbers 3 and 4). All of his many friends marveled at the change in him. So Brother Lean (now fat) invited some of them to a feast at which he made a speech. He told them the story of the last few years, and how the method of living which had cured him was the very one by which all could prevent tuberculosis. They were all astonished when he told them that some one died of this disease in China every 37 seconds. Before his guests returned home, he distributed some copies of the Anti-Tuberculosis Calendar Story, which he had secured from his good doctor friend.

Brother Fat got thin. And no wonder! Look at the way in which he lived (3 pictures to the left)! Note the suggestions of filth, bad air, stuffy bed, lack of sunshine, irregular and sedentary habits, poor food and patent medicines.

Brother Fat died (number 4, left). And what is most deplorable is the fact that some of those with whom Brother Fat lived, and who are now seen mourning his death, became infected with the tubercle bacilli which careless



# 單份月癆免



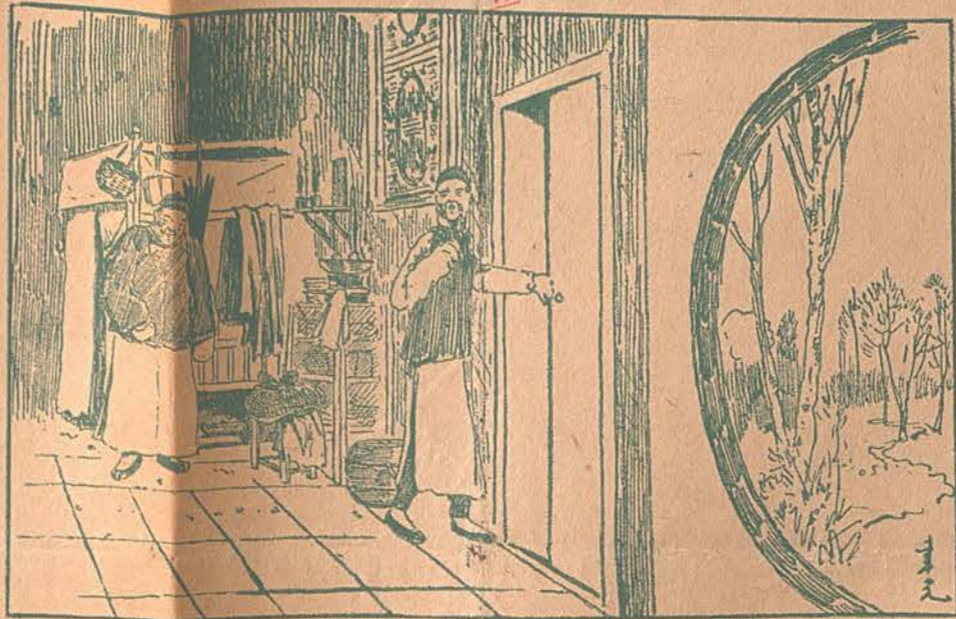
## 民強

A Strong People

## 國富

A Happy Country

欲行新法以衛生。忠頑固不允。一人反目。孝遂啟門而出。



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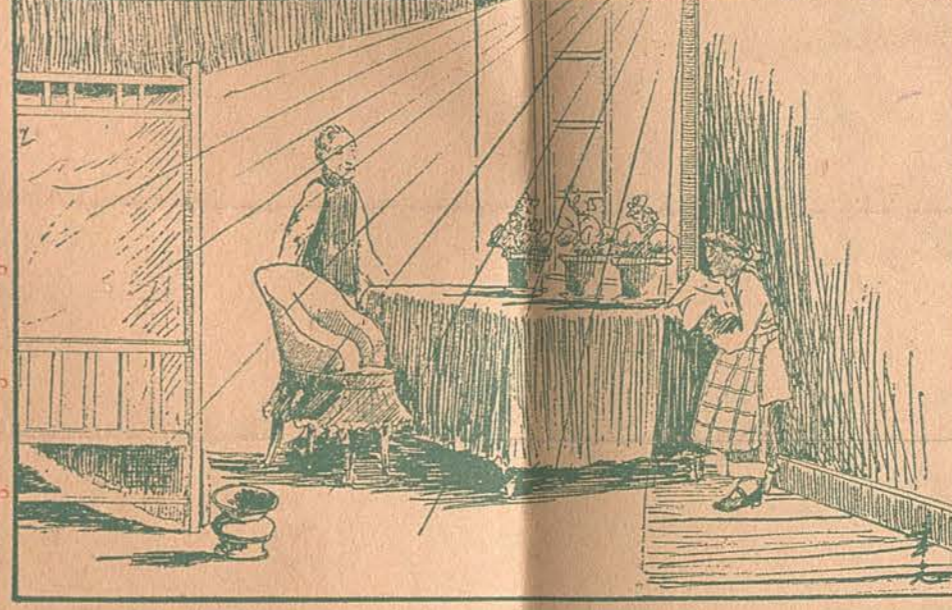
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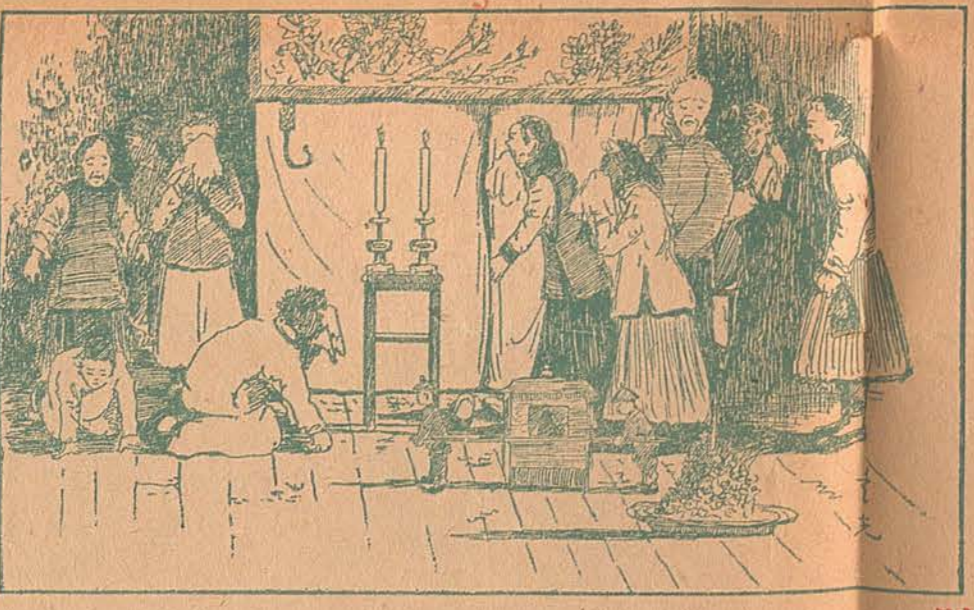
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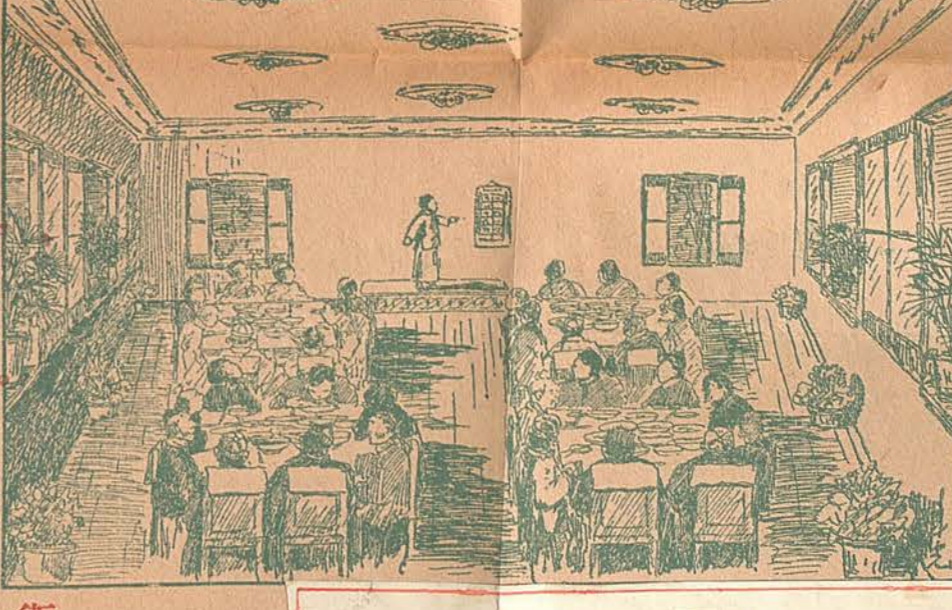
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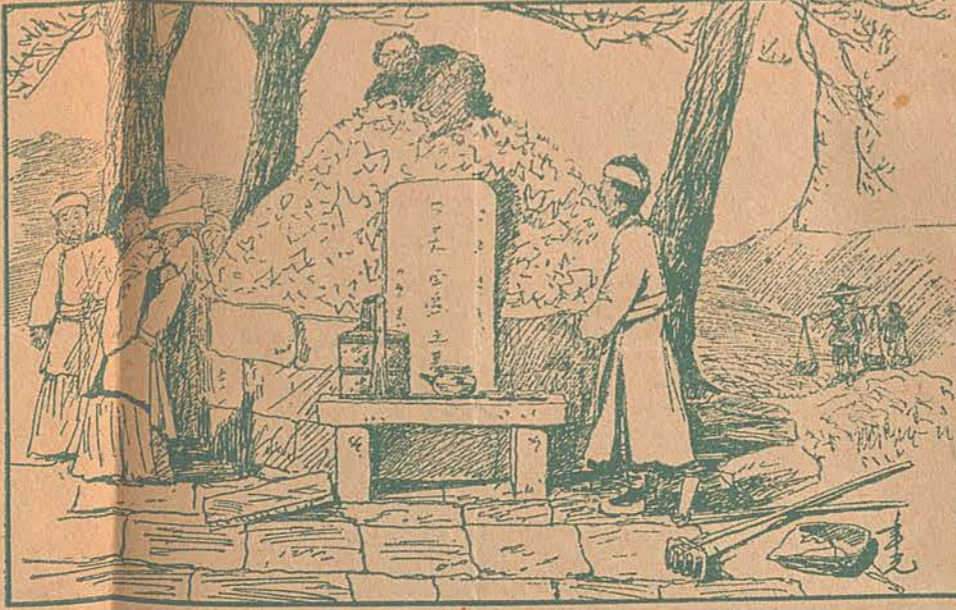


屈指昆仲反目。甫屆三年。頑固之兄。竟遭癆菌之侵襲。而逃汗潮熱。咯血氣喘。相逼而來。溘然以逝。



王孝辭養逾年。病軀康復。抱先覺覺後之志。開一宴會。堂中布置精良。陽光滿室。分箸分匙。看核清潔。遍發防癆月份單。而宣講其要義。

衛生不與衛生之別



必須預防。治病務宜從早。鳳賓敬述

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中華民國四年五月五年			
六號立夏	五號芒種	六號芒種	六號芒種
一號二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號	一號二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號	一號二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號	一號二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號

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次歲 卯乙 丙辰			
八號立冬	七號小雪	八號大雪	十一號冬至
一號二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號	一號二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號	一號二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號	一號二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號









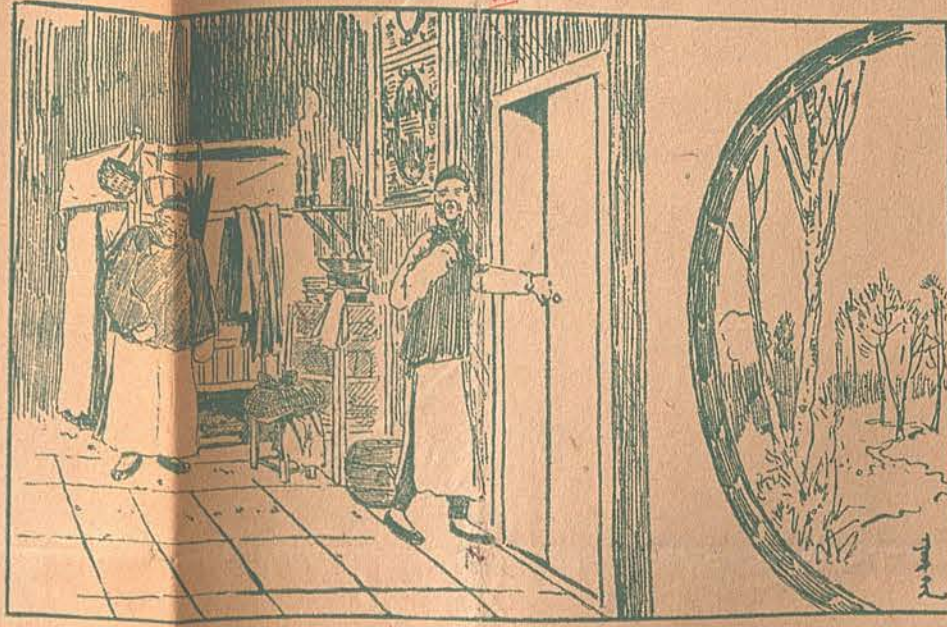
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A Strong People

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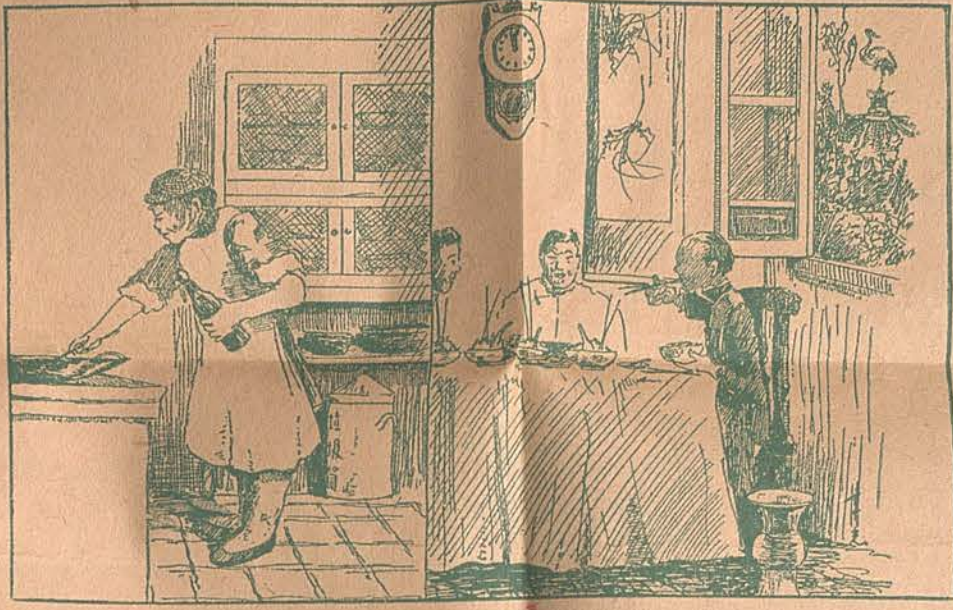
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A Happy Country

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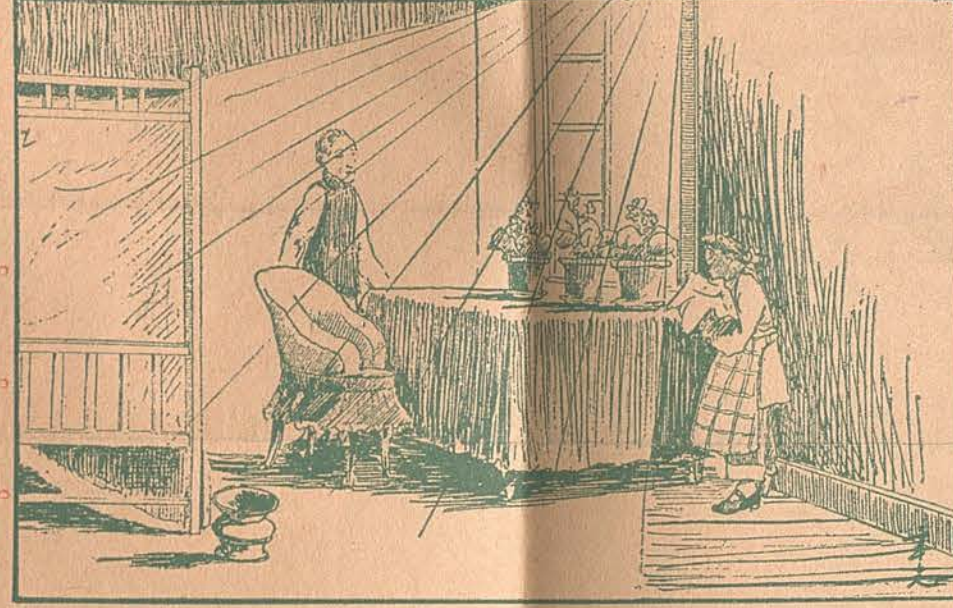
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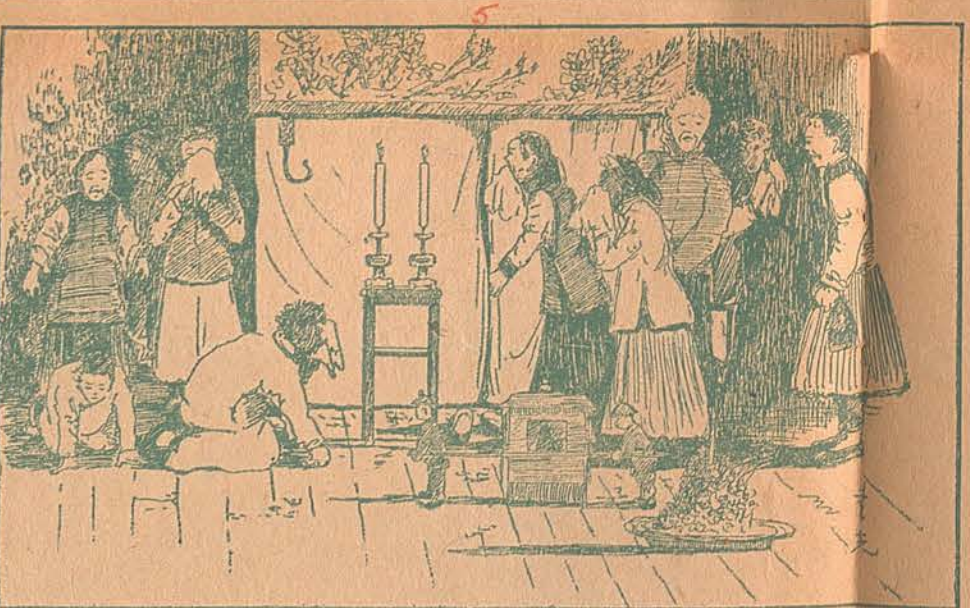
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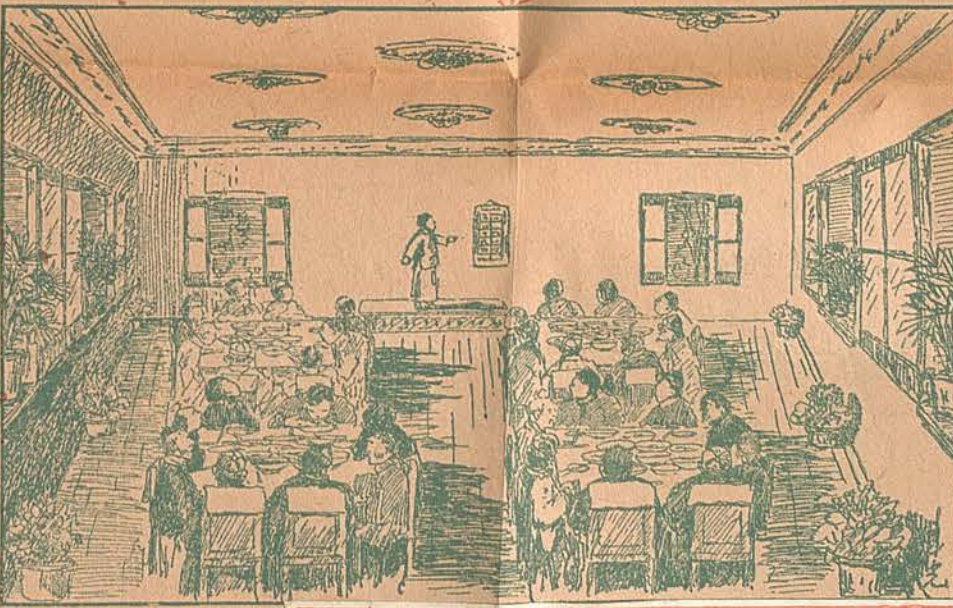
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別分之生衛不與生衛



必須預防。治病務宜從早。

鳳賓敬述

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年五至年四國民華中

六號立夏	一號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號
廿二號小滿	廿二號三號四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號
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廿四號立秋	廿四號五號六號七號八號九號十號十一號十二號十三號十四號十五號十六號十七號十八號十九號二十號二十一號二十二號二十三號二十四號二十五號二十六號二十七號二十八號二十九號三十號

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Brother Pat got thin. And no wonder! Look at the way in which he lived (3 pictures to the left)! Note the suggestions of filth, bad air, stuffy bed, lack of sunshine, irregular and sedentary habits, poor food and patent medicines.

Brother Pat died (number 4, left). And what is most deplorable is the fact that some of those with whom Brother Pat lived, and who are now seen mourning his death, became infected with the tubercle bacilli which careless Brother Pat scattered about everywhere. It is a pity that some of these mourners will in turn be mourned within a few years.

The brothers meet again (bottom picture) at a newly-made family grave. One of them is on the inside, the other on the outside of the grave.