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OR

RETARDATION OF LYMPH, AS AN ELEMENT IN THE CAUSATION OF DISEASE;

ESPECIALLY IN REGARD TO

SCROFULA AND TUBERCULOSIS.

BY

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(GRADUATION THESIS, WITH APPENDIX.)

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PREFACE.

This little work mainly comprises a Thesis accepted in lieu of the written and clinical examination in medicine for the degree of M.D., London University, 1889. Some copies have already been distributed among members of the medical profession. Nearly a year having elapsed since it was printed, the author has been enabled to make some additional post-mortem examinations, reports of which will be found in the Appendix.

Through the kindness of his numerous friends, the author has been permitted to utilise a considerable amount of material in illustration of the views which he has endeavoured to formulate, and which in general he has entertained for several years past.

The author has derived much help by referring to the writings of the late Dr. Moxon in the 'Transactions' of the Pathological Society of London, and in Wilks' and Moxon's 'Pathological Anatomy;' also to Niemeyer's 'Lectures on Phthisis,' issued by the New Sydenham Society, 1860. Reference should also be made to valuable papers by Dr. Joseph Coats, of Glasgow, on the 'Nature of Constitutional Susceptibility to Disease,' published in the

'Lancet,' January, 1888, and similarly in the 'Brit. Med. Journ.,' August, 1889. Other eminent authorities are referred to in the text.

BRIGHTON; *June*, 1890.

LYMPH-STASIS.

I.

In studying the causes of various diseases, it has appeared to me that the search for other factors than the immediate and determining one has received too little attention. Nevertheless, these antecedent conditions may be as indispensable from an etiological point of view, as the particular circumstance which presents itself last in the series of events.

Views regarding the relationship of caseous deposits to tuberculosis.

Much prominence has, of late years, been rightly given to what is known as the "germ-theory" of disease. Anyone who has had much practical experience in morbid anatomy must have been struck with the almost constant presence of caseous material in some part of the body in cases of tuberculosis. Many authors have called attention to this fact, but the exact relationship between the two sets of phenomena does not appear to have been definitely settled. Are they related to each other as cause and effect, or are they merely conjoint effects of some ulterior cause or causes, and so independent of any true causal relationship? Again, are the caseous glands originally dependent on the same specific germ that subsequently attacked other parts of the organism? If so, is it a case of auto-infection due to subsequent dissemination of the germ, which may have been dormant in the gland until some accidental circumstance set it free to circulate in the organism and infect distant parts? Or is the general infection independent of the caseous gland as a *focus*, in some cases at least, and due to the subsequent introduction from without of the same species of microbe that was resident in the caseous gland? This last view I am induced to believe is the correct one.

It is important to note that I have said "as a focus," since the presence of caseous material in a gland may, to my mind,

predispose the individual to attacks of the specific "materies morbi," or germ, otherwise than by taking an *active* part in the process, though it is probable that sometimes auto-infection takes place. My observations lead me to believe that it is generally by its retarding effect on the lymph-current of an organ that the caseous gland renders the part depurated specially vulnerable to the attacks of disease germs in general, the bacillus of tubercle included. The theory of auto-infection may obtain credence from the experiments on animals of Villemin* and others, but there is no proof that such is the case in most instances, nor would it appear necessary, as the bacillus must frequently gain access to various parts of the body with the air and food, especially in towns. Many observations have been made, it is true, which tend to prove that caseous glands usually contain the bacillus of tubercle, but there is no proof that the specific germ is the *cause* of the enlargement and caseation, since it is quite conceivable that the bacillus occupies the gland simply because the conditions have been such as specially to favour its growth in that situation.

The theory of lymph-stasis.

The hypothesis I will endeavour to set forth, and which I think accounts for the apparent relationship above mentioned, further suggests an explanation for the presence of tubercle in those cases where no caseous material is found, as when tuberculosis complicates lymphadenoma and other changes in the glands, tending to retard the flow of lymph from the organ depurated.

This theory of retardation of the lymph-current or lymph-stasis, as I have termed it for the sake of brevity, is best studied by reference to individual cases, and for this purpose a few remarks have been added to each of the abstracts tabulated below (*vide* p. 13).

It is important to bear in mind that lymph-stasis may be brought about by conditions other than the presence of caseous glands, the latter being specially potent factors in its production when present, by virtue, as I believe, of the mechanical obstructive effect being resident in themselves. They may secondarily set up a fibrosis of the tissues in their vicinity, which may intercept and obstruct a neighbouring lymph-current. If the gland should attain a large size it may obstruct not only by

* 'Gaz. Méd.,' December 16th, 1865.

the disease within itself, but by pressing on other channels in its vicinity it may obliterate them also. Much will depend on the number of glands diseased and the possibility of by-currents being established by regeneration, as is known to occur when the thoracic duct of an animal is tied.*

The lymph-static factor exemplified in the case of lung affections.

Let us consider what occurs in the case of deeply-situated organs, such as the lungs. It must be remembered that the space at the roots of the lungs is limited, whereas in many other parts there is ample room for side-routes to form. This may be one reason why tuberculosis of the cutis is very rare, and that extensive disease of the superficial sets of glands is so often unattended by serious results, general tuberculosis being only an occasional occurrence.

If all the bronchial glands be diseased or surrounded by fibroid tissue, in such a way as to completely arrest the flow of lymph from the lungs by that route, there is still the possibility of the lymph being returned by the set of lymphatics which have been shown to exist in great abundance under the visceral pleuræ. In this case the deeper parts of the lungs would probably suffer to some extent owing to the lengthened course which the lymph would have to take. The possibility of its being returned by the sub-pleural set will depend also upon the condition of the lung-tissue in that situation, for dense adhesions often form at the surface and the adjacent lung-tissue undergoes a more or less fibroid change.

In this latter condition, the stomata, which Recklinghausen and Klein have demonstrated, are presumably closed, so that their safety-valve action, which one would imagine to exist in healthy states of the visceral pleura, would be unavailable.

If these views be correct we shall not be surprised to find, in reviewing the abstracts, that fibrosis frequently occurs about the roots of the lungs, which we may surmise is the result of a lymph-stasis and attempt at organisation, more or less successful, of lymph products which have become arrested. We should expect a pneumonia arising in a patient suffering under these conditions to be long in clearing up, if indeed it clear up at all; and we should expect, moreover, that pleurisy would supervene on account of the great determination of waste pro-

* Astley Cooper, 1798; Andral, 1824; Magendie, 1821.

ducts to the surface of the affected lung. If the patient eventually recover from the acute stages of the pneumonia more or less adhesion of the surface or possibly an empyema may result. The tendency being for chronic pleuritis to set up a fibrosis of the surface there will be more or less complete arrest of lymph and waste products within the lung. The late Dr. Moxon has published an interesting case of surcharged lymphatics (*vide* 'Transactions' of the Pathological Society of London, vol. xxiv).

On reviewing the abstracts it will be found that it is under such conditions as these that cavities are most frequently found. It would appear that tubercle may be either an early or a late feature. In some cases it appears to be quite secondary to the fibroid changes and excavation, whilst in others cavities appear to form by the massing of tubercle simply, when they are usually small, smooth-lined, and multiple, being due probably in the first instance to mere yielding of tissue from retention of fluids, and not to a necrobiosis. As the lymphatics become further charged with lymph-elements fibroid changes arise, and the tissue readily undergoes ulceration, whilst the walls of the cavities become ragged.

Occasionally, in very young children, one meets with a large cavity in the lower lobe of the lung, which is firmly adherent to the diaphragm, and exhibits advanced caseous changes in those parts of the lobe not yet excavated. The cavity has ragged walls composed of broken-down lung tissue, and contains soft putty-like material along with purulent fluid in most cases. If a pneumothorax have not already resulted there is little separating the lung cavity from the cavity of the pleura. There may or may not be a few tubercles in the lungs of such cases. The natural inference is that a broncho-pneumonia of the base occurred and that it failed to undergo resolution, caseation and formation of cavity being the result. The chronic pleurisy and changes in and around the bronchial glands are, in my opinion, the chief factors which determine these degenerative changes, and especially do I lay stress on the fact that the lymphatics of that half of the diaphragm must be obstructed.

It is quite conceivable that during the last days of an illness fluids tend to accumulate in the tissues, the lungs included, on account of the feebleness of the blood circulation. Under these

conditions a slight amount of glandular disease may be sufficient to engender a retardation of lymph, whereas the lymphatics were competent up to a few days before death. It seems to me that considerations such as these will explain the fact that tubercles frequently develop in various organs during the last days of an illness, and particularly if the patient be already the subject of tubercle in some other organ. But it is especially in parts, such as near the diseased bronchial glands, where a certain degree of lymph stasis may be presumed to be present, that this late form of tuberculosis is apt to arise. The same remark applies to instances of recent tubercle developing in the vicinity of caseous deposits other than those met with in the lymphatic glands.

My observations lead me to believe that a certain degree of stasis of lymph is necessary in order that tubercle may develop, and that this stasis is engendered by various conditions, most important because most directly effectual, being caseous disease of the lymphatic glands related to the part in which the tubercle appears.

The occurrence of tuberculosis is not usually the primary effect of lymph-stasis. Non-absorption of lymph precedes it, and this lymph may be the result of an acute inflammation.

Other facts relating to the nature and distribution of tubercle.

The structure of true tubercle is essentially lymphoid, and has been described by Rindfleisch and others as originating in the endothelium of lymphatics. One can readily understand how the cells lining the lymphatics will be the first to suffer from lowered nutrition when retardation of lymph occurs. The bacillus of tubercle appears to have its seats of election like other specific germs, but the possibility of its growth depends, so far as my observations lead me to believe, upon a certain degree of lymph-stasis. This condition, as I remarked before, is obviously much more readily induced in some organs than in others. Tuberculous ulcers of the intestines are always found associated with caseous* mesenteric glands. The latter, however, may be far advanced in disease whilst the associated ulcers sometimes appear not to be of long standing. Where only one or two mesenteric glands are diseased and situated at

* Or some other structural change, such as amyloid disease (*vide* Abstr., No. 77).

a distance from the bowel this is more likely to be the case than where several glands are affected or situated near the gut, as is the group related to the lowermost portion of the ileum. Thes facts are explained by the assumption that the lymph in the former case has greater facility for escape than in the latter. Tubercles will often be found studding the lymph channels only in the vicinity of ulcers or between them and the associated diseased glands.

The muscular structures do not allow of stasis of lymph, though their proper muscular fibres may be affected as regards nutrition by reason of imperfect removal of waste products; whilst the bones, not being subjected to compression, afford facilities for lymph-stasis. It is true that the existence of lymphatics has not been satisfactorily demonstrated in the case of bones, but this is probably owing to the obstacles which naturally present themselves to successful injection.

The apices of the lungs are affected more than the bases, probably on account of the former being less subjected to the expiratory compressing influence of the chest and abdominal muscles.

Lymph-stasis induced by whooping-cough.

The forcible expiratory and often long-continued puffs which precede the drawing in of the breath in whooping-cough must tend to drive the lymph out of the lungs through the bronchial glands. Now, if pneumonia have supervened the lymphatics will be overladen with lymph and much "choking" of the glands will arise from the cough. It is under these conditions that we meet with the much enlarged, softened, bronchial glands, which are supposed subsequently to undergo caseous change. If no broncho-pneumonia exist in whooping-cough cases the glands will be found quite small and the lungs highly emphysematous usually. The pneumonia of whooping-cough, together with that of measles, scarlatina, and diphtheria, is very prone to resist all attempts at cure and to undergo acute softening or chronic degenerative change, all of which owe their non-resolution to the extensive implication of the bronchial glands often met with in these diseases. I have sometimes observed at post-mortems on such cases that the pneumonia was commencing about the roots of the lungs, evidently in the vicinity of bronchial glands, whilst the peripheral portions of the lungs were simply emphysematous. I surmise that these damaged bronchial glands afford

specially favorable conditions for the growth of the bacillus of tubercle.

Lymph-stasis favouring attacks of specific microbes other than the bacillus of tubercle.

Whilst lymph-stasis appears to be a necessary antecedent condition for the development of the bacillus of tubercle within the organism, my observations also point to such a condition favouring attacks of other specific microbes. For instance, whooping-cough tends to follow measles quickly, and diphtheria supervened in some of the cases of caseous glands noted in the abstracts. In both of these instances we may suspect some lymph-stasis to be a predisposing factor.

Family predisposition to tuberculosis and scrofula.

Viewed in the light of the foregoing considerations tubercle is not likely to be of *congenital* origin any more than measles or whooping-cough. But there are reasons for supposing scrofula, or, at any rate, caseous deposits in glands, to be sometimes congenital, as these lesions are found occasionally in quite young infants. Much less can it be maintained that tubercle is *hereditary*. But we can well understand how a *disposition* to caseous deposits (scrofula) may be hereditary, if we regard its essential nature to be some morphological variation in the elements of the lymphatic system tending to originate lymph-stasis.

The caseous material in a lymphatic gland will be observed first usually in the peripheral parts where the afferent lymphatics are distributed. It is looser in texture than the medullary part, so that the latter probably offers more resistance to the passage of lymph. Now, according to experiments by Onimus,* cells form and multiply in lymph plasma subjected to osmotic action at blood heat whilst enclosed in thin animal membranes. Under normal conditions the passage of lymph through a structure such as that of a lymphatic gland must be very materially checked. Austin Flint † believed that this retarding effect of the gland accounts for the normal increase of lymph corpuscles during the passage of lymph through its meshes. Is it not possible, therefore, that certain inherited variations from the normal type disturb this delicate adjustment, which fails possibly on account of the larger size of the cell-elements, since

* Onimus, 'Journal de l'Anatomie et de la Physiologie,' Paris, 1867, t. iv.

† Austin Flint, M.D., 'Physiology of Man,' p. 526, vol. ii, New York, 1867.

this tendency has been ascertained by Rindfleisch* to be a notable feature of scrofula? The characteristic manifestation of scrofula then will be caseous deposits, especially in the lymphatic glands, the presence there of the bacillus of tubercle being of casual import, though when present possibly intensifying the obstructive effect by its own tendency to induce large cell-forms.

Lymph-stasis arising as a primary condition in various organs, or partly so.

But besides some inherent defect on the part of the lymph-glandular system lymph-stasis would appear to arise primarily in some cases from such conditions as tend to flood its channels. These conditions are: (1) Deficient blood circulation from some cause, as in great prostration during the last days of an illness; (2) increased physiological action in an organ; (3) acute inflammation from any cause. In all three there is a tendency to overload the lymphatics and to disturb the adjustment either temporarily or permanently. Reasoning on this basis one is not surprised to find strumous disease of the bones in growing children, in which case many factors may combine to bring about lymph-stasis. In nearly every case of strumous bone or joint disease one gets some history of injury which may be viewed as the immediate exciting cause.

One word may be said with regard to inflammation. Its clinical features will depend upon the specific cause in each case, as well as the constitution or state of health of the individual at the time of its onset. Simple traumatism may lead to increased physiological action in the part, but extensive inflammatory changes are usually attributable to the introduction of some form of microbe. Waste products, unless speedily carried away by the blood-vessels and lymphatics, will cause a "choking" of the lymph-glandular system related to the inflamed area. If the lymphatics be functionally adequate little harm will probably arise as the result of the inoculation, but when the reverse obtains many specific organisms will find a congenial soil for their growth.

Everyone must be acquainted with the difference presented by the cicatrix which forms after a superficial inflammation in a strumous and in a non-strumous subject. The hypertrophic aspect in the former may be due to defective absorption by the lymphatics.

* Ziemssen's 'Cyclopædia of Practical Medicine,' vol. v.

Abstracts of Cases in which Caseous Deposits or Tubercles were discovered Post Mortem.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
1 E. T. Tuberculosis	4	Both the anterior and posterior mediastinal glands much enlarged and caseating and softened. Mesenteric glands caseating	Grey tubercles disseminated, and corymbose groups of yellowish tubercles throughout both lungs; no pneumonia, there being crepitant lung between the groups. Chains of small tubercles along the courses of the intercostal vessels	Some superficial tuberculous ulcers of ileum; peritoneum studded with grey granulations	One or two isolated patches of lympho-pus on surfaces of hemispheres of brain; no tubercles	Rather pale; tubercles; and small bile-stained cavities	Studded with yellow tubercles, and one wedge-shaped area at the periphery	One or two yellow tubercles	The general and advanced disease of mediastinal glands caused much retardation of lymph-current; consequently much deposit of tubercles in both lungs and pleuræ. Similarly, the commencing tuberculous ulceration of the small intestine was dependent on the advanced disease in the mesenteric glands.
2 P. C. Caseating glands; bronchitis; emphysema; ? pertussis	3½	Left bronchial glands much enlarged, caseating and softening in the centres. One large, softened, congested gland at bifurcation of trachea (=peach stone), not caseating	No excess of fluid in pleural cavities; grey tubercles deposited in the pleuræ between the lobes of both lungs, especially of the left; no tubercles in the substance of either lung	No tubercle	No meningitis; no tubercles	Natural; no tubercles	Firm; no tubercles	Large, pale, soft, the cortex being increased; no tubercles	The effect of the bronchitis and emphysema (? produced by whooping-cough) was to increase the lymph-stasis already present; consequently the tubercle was just commencing in parts where the lymph was most obstructed in its passage.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
3 F. W. Tuberculosis	2¼	Left bronchial glands, a few of them enlarged, caseous, and soft; tubercles thickly studding the lung tissue in their vicinity. The right bronchial glands not affected. Mesenteric glands natural, except some enlargement of post-cæcal glands	Both lungs emphysematous anteriorly; much congestion of posterior and lower parts of both lungs; no tubercle in right lung. Fine greyish tubercles in posterior parts and in vicinity of caseous glands at root of left lung	No tubercles in peritoneum; Peyer's patches somewhat congested; no ulcers of mucous membrane	No meningitis or tubercles	Large, congested; one or two tubercles	Congested; no tubercles	Congested; no tubercles	Note that the tubercles developed in the vicinity of the bronchial glands of left lung, whereas the bronchial glands of right lung being unaffected there were no tubercles in their vicinity.
4 L. D. Caseous glands; typhoid fever	8½	Bronchial gland at bifurcation of trachea as large as a bean; softened, caseous, and gritty; the other bronchial glands natural. Mesenteric glands enlarged and softened	Right lung non-adherent; left lung adherent firmly at apex; no tubercles in lungs	Peritonitis; no tubercles; extensive ulceration from typhoid fever, but no actual perforation of bowel	Natural	Large and fatty	Large and soft	Congested	Only one bronchial gland affected. Though caseous and softened it did not produce tuberculosis. ? Did it favour the introduction of the typhoid germ by retarding lymph.
5 A. S. Tuberculosis with cavities in lungs	4	Bronchial glands greatly enlarged. Mesenteric glands also much enlarged, soft, and yellow on section	Left pleural cavity obliterated by adhesions; right contained about 5 fluid ounces of serum. In both lungs grey and yellow tubercles in groups; upper lobe of each solidified by tubercles, with some small cavities	Peritoneum thickly studded with greyish tubercles; intestines adherent; numerous ulcers of mucous membrane of ileum	No meningitis; no tubercle; considerable increase of fluid, nearly clear, in ventricles of brain	Fatty, grey, and yellow tubercles in its substance	A few grey tubercles	Congested	Bronchial glands being greatly enlarged retarded the lymph in lungs; massing of tubercles at apices favoured softening by interfering with the blood supply.
6 R. M.	2	Bronchial glands in right lung very case-	Right lung firmly adherent to diaphragm,	?	Natural	Some grey	A few grey	Congested	Extensive changes in bronchial glands of

culosis; pneumothorax; cavity in lung		ous, one of them as large as pigeon's egg at the bifurcation of trachea; it was very soft. Mesenteric glands natural	a cavity at the base containing pus and communicating with the pleural cavity; grey and yellow tubercles in both lungs; a mass of yellow tubercles at right apex			tubercles	tubercles		right lung; pleurisy producing adhesions of its base. The result was great retardation of lymph-current, consequently much impairment of nutrition in the lower lobe, and formation of cavity, with deposit of tubercles.
7 W. C. Bronchiectasis; no tubercle	3¾	Bronchial glands enlarged, one at bifurcation of trachea as large as an almond, soft, not caseating; no appearance of tubercle in it. Mesenteric glands natural	Right lung intimately connected with the chest wall by dense adhesions; fibrous degeneration of upper and middle lobes; riddled throughout by dilated bronchi; lower lobe deficient in crepitation. Left lung crepitant; congested; no solid areas	Natural	(No permission to examine head)	Congested	Congested	Congested	Patient had been subject to bronchitis since 6 months of age. Loss of contractile power in bronchi of right lung, and lung tissue itself, resulted chiefly from the fibroid changes (most advanced in upper and middle lobes), which were possibly due to obstruction to lymph-current caused by the dense adhesions of its surface. These latter were most dense at apex.
8 H. C. Tubercular meningitis	4	Gland at bifurcation of trachea and that above the left bronchus much enlarged; one part of it softening; bodies like tubercles in its substance	A few grey tubercles scattered through the lungs; a considerable amount of grey tubercles in the visceral pleuræ, especially the right, in the vicinity of tuberculous glands	No tubercles?	A little glueing of the convolutions about base of brain, with much fine grey tubercle	No tubercles?	A few yellow tubercles	Pale and soft; no tubercles	The tubercle was most advanced in the spleen, consequently this may have been the focus of infection. The illness commenced with head symptoms 11 days before death.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
9 A. S. Phthisis	4½	Bronchial glands enlarged, yellow, and firm, except two at bifurcation of trachea, which were large and greyish yellow, and rather soft, not caseating. Mesenteric glands enlarged and soft; tuberculous; not caseating	Both lungs adherent everywhere, not firmly; a large cavity in upper lobe of each; grey and yellow tuberculous infiltration of the adjacent lung tissue; a few collections of tubercles in each lower lobe	No tubercles or adhesions of the peritoneum; well-marked tubercular ulcers of small bowel at intervals	Small deposit of lymph in the left parietal region of cortex; no tubercles viewed	Rather soft; no tubercles	No tubercles	No tubercles	Great retardation of lymph current caused by diseased bronchial glands and adhesions of pleuræ; deposit of tubercles in upper lobes of lungs; lowered nutrition; formation of cavities.
10 M. L. Tuberculosis and meningitis (? tubercular)	5¼	Bronchial glands all enlarged and infiltrated with roundish yellowish bodies (? tubercles). That at bifurcation of trachea very large, pressing on and narrowing right bronchus; softened in centre into a puriform material. Mesenteric glands natural	Small collections of miliary tubercles at lower border of left lower lobe, near the surface	Natural	Some stickiness of surfaces of hemispheres; intra-ventricular fluid increased; no tubercles viewed	No tubercles; fatty	No tubercles	No tubercles; congested	Extensive disease of bronchial glands; pressure on structures in mediastina, including lymph vessels; lymph-stasis caused thereby, and further enhanced by feeble state of circulation of blood; commencing deposit of tubercles in left lung; meningitis, but no tubercles viewed in pia mater, though head symptoms lasted 10 days altogether.
11 H. H. Tubercular peritonitis	11	Bronchial glands much enlarged and caseating. Mesenteric glands: Post-cæcal much enlarged and caseating, and still more so those alongside the iliac vessels	Right pleural cavity posteriorly obliterated by adhesions; no tubercle in lungs; a caseous deposit on the upper aspect of diaphragm	Some small ulcers of ileum, not in Peyer's patches, but apparently due to ulceration from without. Ileum adherent to bladder at	Not examined	Soft; no tubercles	Rather large; no tubercles	Capsules somewhat adherent; no tubercles	The ulcers of ileum apparently due to yellow tubercles perforating the wall of gut. Tubercle of the peritoneum seems sometimes to develop in a quiescent manner under adhe-

					the site of tubercular deposits in the peritoneum, of which there were many (mostly of the firm yellow variety)					sions for a considerable time, having no tendency to infect the body, but shut off as it were.
12 T. S. Tuberculosis	3¼	Bronchial glands all greatly enlarged; that at the bifurcation of trachea, and others above that situation, reduced to a pulpy consistence by caseation and softening. Mesenteric glands not much altered, not caseating	Both lungs studded throughout with yellow tubercles, especially at the apices; some recent pneumonia; lungs adherent to parietes in places	No tubercles in peritoneum; a few shallow circular ulcers of mucous membrane of small bowel	No meningitis; no tubercles	Numerous large bile-stained tubercles	Firm; aggregated yellow tubercles	One or two tubercles	General and advanced disease of bronchial glands; lymph-stasis; deposit of tubercles in both lungs. The pneumonia probably was the immediate cause of death; if this had not set in it is probable that the lungs would have soon become excavated.
13 E. P. Tuberculosis; caseous deposits in pons and bulb	2¼	Bronchial glands caseous; that at bifurcation of trachea had softened and discharged into right bronchus. Mesenteric glands natural	Both lungs studded with grey tubercles	Natural	Caseous deposits in pons and bulb	Natural	Natural	Left kidney contained a mass of softened yellow tubercle	Patient died from pressure of the tumour on important nuclei in the medulla oblongata. The tubercle in the lungs was quite recent, and must have formed during the last days of the patient's illness, when the respiratory movements and circulation of blood had become greatly impeded.
14 W. W. Tuberculosis; meningitis	4½	Bronchial glands enlarged, not caseating. Mesenteric glands swollen, not caseating; no tubercles viewed in them	Both lungs studded with grey miliary tubercles; no solidified portions to any extent; no pneumonia. Right lung firmly adherent at the base, where it was œdematous	Ileum: A few small recent ulcers of mucous membrane; no peritoneal tubercles	Acute meningitis; (?) a few miliary tubercles on surfaces of hemispheres	Natural	Natural	Natural	No caseous glands found anywhere, but bronchial glands were enlarged. Duration of head symptoms = 18 days; well-established meningitis discovered with tubercles, rudimentary.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
15 E. S. Phthisis	12	Bronchial glands, especially that at bifurcation of trachea, much enlarged, not caseating, and no definite tubercles in them. Mesenteric glands enlarged, not caseating	Both lungs firmly adherent in places; upper lobes of lungs contained large cavities; greyish pneumonic consolidation and yellow tubercles viewed around the cavities	Intestines adherent in places; no disseminated tubercles, but walls of small bowel infiltrated with yellow tubercles under the peritoneum in some places; a few small circular ulcers of mucous membrane, apparently not tubercular	Head not examined (no cerebral symptoms during life)	Natural	Natural	Natural, except cortex rather swollen (? slightly granular)	Note that the bronchial glands were not caseous, but greatly enlarged. They probably caused considerable pressure on parts about roots of lungs. The firm adhesions of the lungs would further tend to hinder the return of lymph.
16 E. W. Phthisis	4½	Tracheal and mediastinal glands generally much enlarged and caseating, some of them softening. Mesenteric glands greatly enlarged, yellow on section, and softening in places	A few discrete fine grey tubercles under the visceral pleuræ, but none viewed in substance of lungs on section; apex of left lung adherent to parietes; upper lobes of both lungs presented large cavities; greyish tubercular infiltration of walls, but not extending far into substance of lung between the cavities	Intestines adherent where the coils met, separable; some recent lymph on peritoneal surface; no tubercles viewed in peritoneum. Ileum: Numerous transverse tubercular ulcers	No meningitis; no tubercles	Some yellow tubercles	Natural	Natural	Patient had measles and whooping-cough 18 months previously. This may account for the general and advanced disease of the bronchial glands, as he had suffered with cough since, but never laid up with lung complaints before the present time. Lymph-stasis might readily arise, especially as bowel mischief tended still further to reduce his strength. The father died of phthisis 26 days before the patient, and there was a history of consumption in his and the mother's parents.
17 W. G.	4½	Bronchial glands much enlarged, yel-	Right lung natural, except that there	No peritoneal adhesions. Intes-	Not examined	Congested; soft	Rather tough,	Cortex much in-	Patient is said to have had an attack of in-

Caseating glands; empyema (left); nephritis; no tubercle		low, caseating. Mesenteric glands enlarged somewhat, not caseating	were a few old adhesions. Left pleura much thickened. Left lung quite solid from chronic pneumonia; section firm and granular; no tubercles in either lung.	tines: no ulcers of Peyer's patches; congested in places			otherwise natural	creased; large, white	flammation of the lungs 2 years ago, but recovered apparently from that whooping-cough, 15 months ago. It is difficult to say which is the older lesion, the caseous bronchial glands, or the lung trouble; but I suspect the chronic lung trouble is the result of defective absorption.
18 F. R. Tuberculosis	6¾	Caseating glands in neck and in mediastina, a few softening, but mostly firm and yellowish on section. Mesenteric glands had yellowish deposits in them	Lungs non-adherent; some excess of fluid in pleural cavities, blood stained. Both lungs contained much greyish tubercle; one deposit of yellow tubercle in lower lobe of right lung	Peritoneum: no tubercle. Intestines: Two ulcers of mucous membrane, one at the commencement of ileum, the other in caput cæcum coli	No meningitis; no tubercles	Pale and fatty; some yellow tubercles	Some yellow tubercles	? No tubercles	The grey tubercles were more numerous and grouped at the apices than elsewhere. In the lower lobes they were of the disseminated miliary type, and probably only became deposited as the patient's strength became much reduced.
19 J. B. Tuberculous deposits in glands; chronic peritonitis	4½	Bronchial glands somewhat enlarged, some contained small yellowish (?) tubercles near the peripheries, none caseating. Mesenteric glands enlarged; no deposits	Both lungs adherent, rather firmly; about 3 fl. oz. of curdy pus, non-offensive, at base of right pleural cavity; some patches of fine grey tubercles and catarrhal pneumonia in lower lobe of left lung; a small collection of curdy, non-offensive pus in left pleural cavity, next the pericardium	Peritoneal cavity almost obliterated by rather old adhesions; a collection of curdy pus posteriorly; no tubercles in peritoneum. Intestines presented no ulceration of the mucous membrane	No meningitis; no tubercles	Large, soft; ? a few tubercles	Very large, soft; adherent externally; no tubercles	Large, pale	The collections of curdy puriform material may be regarded as evidence of lymph-stasis resulting from the adhesions of pleuræ and peritoneum. Notwithstanding the adhesions of peritoneum no tubercle was deposited there, probably partly owing to the fact that the mesenteric glands were fairly healthy.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
20 G. B. Phthisis	8	Bronchial glands considerably enlarged, not caseating; gland at bifurcation of trachea had apparently softened and discharged into bronchus, leaving a small pouch; the glands alongside the trachea much enlarged, caseating, and softening. Mesenteric glands: none very large, some caseating	At apex of each lung a cavity of considerable size; some greyish pneumonic consolidation of adjoining lung tissue; one or two deposits of yellowish tubercle in lower lobe of each lung; no disseminated grey tubercle	Some old adhesions of abdominal organs to one another and to parietes near the cæcum; no peritoneal tubercles viewed; well-marked and numerous tuberculous ulcers of small bowel	No meningitis; no tubercles	Fatty; bile-stained; no tubercles	Large; no tubercles; no amyloid changes made out	Large, *nil* else	The gland at bifurcation of trachea, in the process of softening and discharge into the bronchus, together with those alongside the bronchi, would tend very much to obstruct the lymph-current, and engender the deposit of tubercle at apices of lungs.
21 M. H. Tubercular meningitis	3	Bronchial glands: Some enlarged and caseating; that at bifurcation of trachea enlarged, but not caseating; some greyish tubercles in it apparently. Mesenteric glands natural	Both lungs non-adherent to parietes; no pneumonic consolidation; a few grey miliary tubercles confined to portions of lung in the vicinity of caseating glands; they extended thence under the visceral pleuræ in the fissures between the lobes	Natural	Much basic meningitis; minute grey tubercles in pia mater, covering the cerebellum	Natural	Natural	Natural	Head symptoms present for 5 weeks before death; much meningitis at base, but tubercles quite rudimentary. The tubercles in lungs and pleuræ probably developed only when the powers began to fail, a few days before death.
22 L. T. Chronic peritonitis (tubercular)	9	Alongside the trachea and bronchi, and in the anterior mediastinum, greatly enlarged, soft and caseating. Mesenteric glands enlarged	A few small collections of grey and yellow tubercles in lungs; no tubercles or adhesions of pleuræ	Adhesions of abdominal viscera to one another, and to the parietes; coarse yellow tubercles on surface of liver	Natural	Firmly adherent to diaphragm; enlarged somewhat; no	A few tubercles on the surface; none elsewhere	No tubercles; some hæmorrhage into the substance of one of	The lungs being non-adherent, there was no great obstruction to the return of lymph, which was returned probably by their surfaces. The

		somewhat, not caseating. Glands in portal fissure of liver caseating		and under aspect of diaphragm, also in Douglas's pouch; some of the coils of the small bowel communicated where adherent; no ulcers elsewhere in the intestines		tubercles in its substance		them	chronic yellow tubercle of peritoneum does not appear liable to infect distant organs. (*Vide supra*, case of H. H.)
23 F. P. Tubercular meningitis, with pulmonary tubercle	3	Bronchial glands considerably enlarged, caseating and softened; puriform material in the centres of two of them. Mesenteric glands enlarged somewhat; no deposits viewed on section	Right lung almost everywhere adherent externally. Left lung non-adherent. Middle lobe of right lung infiltrated with grey tubercles. Some grey tubercles in other parts of both lungs	Some greyish tubercles on under surface of diaphragm; intestines not matted together; ? no ulcers of intestines	Meningitis, chiefly basic; much deposit of fine grey tubercles in pia mater of both hemispheres and cerebellum	Natural	Natural	Natural	Advanced changes in bronchial glands; adhesions of right lung; much deposit of recent tubercles in it as compared with left. Softening of the middle lobe would probably have occurred had the patient lived longer.
24 E. S. Caseous deposits in brain; thoracic and abdominal tuberculosis; cavity in lung	7½	Bronchial glands contained yellowish deposits. Mesenteric glands infiltrated with yellowish deposits	Left lung firmly adherent to parietes at apex, where a small cavity existed. Both lungs showed deposit of grey tubercles on section, more especially in the upper lobe of left lung. No yellow tubercle	Much deposit of yellow tubercles on peritoneal aspect of small intestines; coils adherent in places, especially about cæcum; two large ulcers of mucous membrane near the lower end of ileum, and two in the cæcum and ascending colon	A caseous deposit in right lobe of cerebellum; a similar deposit on surface of left supra-marginal gyrus; no meningitis or deposit of grey tubercles visible	Pale and fatty; no tubercles	Natural	Natural	The greater amount of recent tubercles at left apex may be due to the adhesions which had formed.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
25 W. K. Acute general tuberculosis	3	Bronchial glands much enlarged, tuberculous-looking, not caseating. Mesenteric glands enlarged somewhat, tuberculous-looking, not caseating	? Lungs not adherent anywhere. Both lungs thickly studded with groups of greyish tubercles, especially in the upper lobes, which were almost solid. No pneumonia apparently	Small roundish ulcers at intervals throughout the small bowel. Some discrete yellow points (? tubercles) just beneath the surface of the mucous membrane in other parts, between the ulcers	No basic meningitis; some excess of clear subarachnoid fluid; a few grey tubercles at summits of hemispheres	Large, pale, studded with tubercles of various sizes	Studded with yellow tubercles	A few yellow tubercles	General involvement of bronchial glands; lymph-stasis; deposit of tubercles, especially in upper lobes. The ulcers of small bowel were probably the result of swollen solitary glands.
26 G. H. Tuberculosis; caseous deposits in brain	5½	Bronchial glands caseous, not softening. Mesenteric glands contained yellow deposits	Lungs: Much deposit of grey tubercles, especially in the upper lobes; small cavities at the apices; a few deposits in the left pleura	Some grey peritoneal tubercle	Multiple tubercular masses in brain and cerebellum, not softening in centre	Adherent to diaphragm	Adherent to diaphragm	Natural	Diseased bronchial glands and lowered force of blood-stream engendered lymph-stasis, which allowed of the deposit of tubercles at apices of lungs; ? the cavities formed in consequence of cutting off of the blood supply.
27 E. M. Tuberculosis	5	All the thoracic and cervical glands much enlarged, caseating, and many softening; the smallest contained numerous small yellowish specks. Mesenteric glands natural, except the post-cæcal, which were caseous	No pleural adhesions; some straw-coloured fluid. Both lungs studded throughout with grey and yellow tubercles	Minute grey tubercles in great omentum; two large tubercular ulcers of lower end of ileum, none elsewhere	No meningitis	Adherent to diaphragm; grey and yellow tubercles on section; deposits of yellow tubercles	Much enlarged; patches of yellow tubercles	One deposit of yellow tubercles	There must have been great pressure on parts about roots of lungs, caused by the enlarged glands; much hindrance, if not complete arrest, of the lymph-current by this route would seem probable. The post-cæcal group of

						where adherent			glands, being caseous, probably much hindered the return of lymph from bowel in that part.
28 W. S. Tuberculosis	4	Tracheal and bronchial glands much enlarged; infiltrated with firm yellowish material; no softening. Portal and pancreatic glands apparently tuberculous. Mesenteric glands simply a little enlarged	No adhesions of lungs. Both lungs presented much grey tubercle on section, but chiefly at apices, where there were also some yellow tubercles; no cavities. Lungs œdematous	Fine, grey miliary tubercles in great omentum; some limited adhesions. One small punched-out ulcer in small bowel; none in colon	?	Intimately studded with fine grey tubercles	Much enlarged; studded throughout with large yellow tubercles	Natural; no tubercles	Massing of tubercles at apices due to lymph-stasis caused by the extensive disease of mediastinal glands. Some yellow tubercles at apices, where tubercle is apt to be first deposited; ? on account of these parts of the lungs being subjected less to respiratory movements.
29 F. T. Tuberculosis; meningitis	3½	Glands near bifurcation of trachea caseous. Glands along upper border of pancreas contained yellow specks. Mesenteric glands natural	In both lungs scattered recent grey tubercles	Natural	Basic meningitis, with fine grey tubercles	Tubercles in capsule	No tubercles	No tubercles	The head symptoms had lasted 5 weeks, and basic meningitis was well established, but the tubercle was quite recent.
30 F. S. Tuberculosis; cavities in lung	5	Glands at bifurcation of trachea very large, softening in the centre; tuberculous-looking. Mesenteric glands: One bunch caseating, softening in centre	Left lung, upper lobe, nearly the whole, the seat of grey pneumonic consolidation, softening, and small cavities in central parts; a few scattered grey tubercles. Both lungs firmly adherent everywhere	Much deposit of grey tubercles in peritoneum, including the great omentum. Intestines adherent to each other; one tuberculous ulcer of upper part of ileum, in connection with bunch of caseating mesenteric glands	Natural	A few tubercles	A few grey and yellow tubercles	?	No history of acute illness, never had any infectious disease; yet the appearances at the apex of left lung point most probably to the remains of a pneumonia which did not clear up on account of the hindrance to return of lymph caused by the diseased glands and the adhesions.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
31 D. S. Tubercular meningitis	17 mos.	Bronchial glands much enlarged and caseous. Mesenteric glands normal	Lungs studded with grey tubercles. At root of left lung, and extending outwards from that part, was a mass of caseous material (= a walnut), surrounded by dense deposit of yellow tubercle (not softening)	Normal	Meningitis with tubercles	Some tubercles	Some tubercles	Some tubercles	Caseous deposit at root of left lung, probably the remains of a pneumonia, which he is said to have contracted a few months previously.
32 F. C. Phthisis	6½	The gland at bifurcation of trachea enlarged somewhat; ? tuberculous; a gland in the anterior mediastinum contained some firm putty-like material. Mesenteric glands contained yellowish deposits, chiefly in the medullary portions	Right lung adherent almost everywhere, especially at upper part. Left lung adherent at upper part, only slightly so over the lower lobe. Right lung: Upper and middle lobes quite airless, the seat of a red and grey broncho-pneumonia. A few small cavities near the periphery, none bigger than a pea. A few groups of fine tubercles. Lower lobe the seat of early broncho-pneumonia; no tubercles. Left lung: Whole of upper lobe composed of solid areæ and numerous small cavities; also a larger cavity (= pigeon's egg) at the extreme apex. Some scattered greyish tubercles in upper; no yellow tubercles. Lower lobe same as right lower	No tubercles in the peritoneum. A few small ulcers, very shallow, in Peyer's patches	?	No tubercles	No tubercles	No tubercles	This would appear to be a case of phthisis commencing as pneumonia which did not clear up owing to arrest of lymph-current. Not much tubercle anywhere. The ulcers in bowel were probably secondary to the disease in the mesenteric glands. I suspect that the disease in the latter lowered the nutrition of the Peyer's patch in relation with it, so that a catarrhal ulcer resulted, which might have developed into a tuberculous one if the patient had lived longer.

33 C. G. Phthisis	2	Bronchial glands large, yellow, softening. Mesenteric glands yellow, not soft	Some adhesions at anterior borders of both lungs; no tubercles under the pleuræ. Some thickened patches of visceral pleuræ corresponding to the position of underlying cavities in the lungs. Left lung: Upper lobe non-crepitant; patches of chronic pneumonia, alternating with areæ of collapse, and several small cavities. Some yellowish specks, something like tubercles, but not firm. Right lung: Outer part of apex excavated, also another cavity near the fissure separating it from the lower lobe (each about = a walnut in size) surrounded by dense greyish broncho-pneumonic tissue. Both lower lobes the seat of recent broncho-pneumonia	No peritoneal tubercle; a few small ulcers of mucous membrane of ileum, one being situated just above the ileo-cæcal valve; not in Peyer's patches	No meningitis; no tubercles	No tubercles	No tubercles	No tubercles	The case is similar in many respects to the foregoing. Both had had measles and whooping-cough 18 months previously. In this case the mother died 10 months previously of consumption, whilst in the foregoing case there was no history of consumption in the family.
34 E. C. Tuberculosis (chiefly abdominal)	3	Bronchial and other mediastinal glands somewhat enlarged; not tuberculous or caseating. Mesenteric glands all much enlarged, one of them caseating in the centre; the others had in their peripheries yellow deposits	Some slight adhesions of lungs. A few grey tubercles in groups scattered through upper lobe of each lung	Deposits of flattened yellow tubercles on the under aspect of the diaphragm and elsewhere in peritoneum. Coils of small bowel adherent, with ulcers having tubercles in their floors. Shotty deposits (? tubercles) in some of Peyer's patches; some tubercular ulcers of cæcum	Membranes natural; no tubercles	Large, fatty; a few small tubercles under the capsule	A few tubercles near the surface	Natural	Lymph-stasis would be engendered by the much diseased mesenteric glands, and by the adhesions of the coils of bowel to each other. Not much disease of bronchial glands, consequently not much tubercle in lungs, but the adhesions may have obstructed the lymph to a certain degree.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
35 G. O. Acute tuberculosis; ? cavity in lung	2½	All the bronchial glands much enlarged; rather soft; pale red on section; none caseating. Mesenteric glands all much enlarged, containing yellowish deposits and caseous material	No pleural adhesions; no tubercles under the pleuræ. Both lungs intimately studded throughout with greyish tubercles. A small contracted ? cavity at apex of left. There was apparently no pneumonia present	No adhesions of intestines; no peritoneal tubercle; numerous tuberculous ulcers of small bowel; a few in caput cæcum coli	No permission to examine head	One or two tubercles	A few grey tubercles	Natural	Probably much retardation of lymph-current in lungs and in Peyer's patches.
36 W. C. General tuberculosis	5	Bronchial glands somewhat enlarged and firm. That at bifurcation of trachea had a little greyish (? tubercular) infiltration at the lower end, none caseating. Mesenteric glands all considerably enlarged and firm; one caseating and softening	General adhesions of left lung, rather old; no adhesions of right lung. Some yellow tubercles in the upper intercostal spaces of right side. Both lungs infiltrated equally with greyish tubercles	No general deposit of tubercle in peritoneum, but tubercles deposited in mesentery between the bases of ulcers in small bowel and the mesenteric glands. Numerous tubercular ulcers of small bowel, having thickened bases; coils adherent	Lymph and fine tubercles deposited along course of left mid-cerebralartery, and tubercles almost confined to the area supplied by that vessel	Large, fatty; no tubercles	Large, soft; no tubercles	Large, firm; no tubercles	The chief interest lies in the fact that recent tubercles developed in parts where lymph was most obstructed.
37 R. F. General tuberculosis	7½	Gland at bifurcation of trachea enlarged, firm, yellow on section. Most of the bronchial glands enlarged (? not tubercular). Some of the	Left lung firmly adherent in places. Right lung non-adherent. Both lungs studded throughout with fine grey granulations. No tubercles viewed	No peritoneal tubercles; no peritonitis. Some small ulcers, with thickened margins in ileum and	Plastic meningitis of base of brain; no tubercles viewed	Pale, soft; fine tubercles under capsule	Large, soft; tubercles under capsule	Large; some grey tubercles in left kidney; two	There was old disease of both middle ears. Note the absence of tubercles in pia mater, to naked eye.

		trachea enlarged and caseous. Mesenteric glands not much enlarged, containing yellow specks		bercles viewed in connection with them)					
38 A. C. Phthisis	11	Gland at bifurcation of trachea reduced to a hard gritty mass. The other bronchial glands enlarged, soft, not caseating	Tubercular ulceration of larynx. Pleural cavities obliterated by old dense adhesions. No tubercles under the pleuræ. Large cavities in both lungs. Much fibroid induration around the bronchi at the roots of the lungs. Some greyish tubercles in parts of lungs not excavated	No peritoneal tubercle. Intestines non-adherent. The lowermost 6 inches of small bowel presented tuberculous ulceration. Extensive tuberculous ulceration of cæcum	Natural; no tubercles	Large, fatty; no tubercles	Rather large, pale; no tubercles	Large, pale; no tubercles	The fibroid induration (? around glands) at roots of lungs, together with the dense pleural adhesion would effectually retard the lymph-current.
39 E. C. Acute tuberculosis	2	Gland above the right bronchus (alongside the trachea) caseous. That at bifurcation had apparently tubercles in its substance. Mesenteric glands natural	Lungs studded with fine grey miliary tubercles. Pleuræ free from adhesions and tubercle; no pneumonia	No peritoneal tubercles. Intestines natural	Basic meningitis with tubercles	Rather pale; studded with recent tubercles	Rather large; some fine grey tubercles	No tubercles	The tubercles in the lungs and pia mater were of the fine grey miliary type. The illness began with head symptoms 18 days prior to death, when the meningitis was found well established. There was no disease of middle ears.
40 A. C. Tubercular peritonitis	10	Gland at bifurcation of trachea enlarged, containing tuberculous-looking material, not caseating. Mesenteric glands enlarged, a few yellowish deposits, not actually caseous	Lungs quite normal	Adhesions of intestines; numerous deposits of yellow tubercles in peritoneum; small intestine perforated apparently by one of them; no ulcers of mucous membrane	Natural	Large; no tubercles in its substance	Adherent to diaphragm; no tubercles	Natural	Note that the tubercles only developed under the peritoneal adhesions, where the lymph would tend to be obstructed.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
41 A. C. Acute miliary tuberculosis	3½	Bronchial glands enlarged; deposit of yellow ? tubercles; non-caseating. Mesenteric glands enlarged somewhat, a few contained yellow specks; non-caseating	Some grey miliary tubercles deposited throughout both lungs; they were more numerous in the upper lobes. No pleural tubercles. ? No pneumonia	No peritoneal tubercles. Intestines natural	Basic meningitis, with tubercles	Enlarged, freely studded with fine grey tubercles	Enlarged, some rather fine grey tubercles	No tubercles	Head symptoms had first appeared 22 days before death, when much meningitis was found, but the tubercle in the pia mater was quite recent apparently; it was chiefly deposited in the area of distribution of the mid-cerebral arteries.
42 J. E. Acute tuberculosis	3½	Bronchial and mesenteric glands contained yellowish deposits; not actually caseous	Lungs infiltrated with fine grey tubercles, most marked in the upper lobes. A deposit of yellow ? tubercles at extreme right apex, which was adherent to vertebræ	A few tubercles in great omentum; numerous tubercular ulcers (some very chronic) along course of ileum	Basic meningitis, with tubercles, especially at left Sylvian fissure. Brain soft there	A few grey tubercles in its substance	Numerous grey tubercles	A few grey tubercles	The left petrous bone was infiltrated with pus. This fact is interesting as it is on the same side as the principal deposit of tubercle, which was particularly well marked in the sheath of the left middle cerebral artery.
43 T. M. Tuberculosis	7½	Bronchial and tracheal glands greatly enlarged and very firm; not actually caseous, but yellow on section. The mesenteric gland presented yellow specks on section. Portal glands caseous	No pleural adhesions. Right lung: Bronchopneumonia, with grey tubercles throughout. Left lung: Scattered grey tubercles; no pneumonia	One small ulcer of ileum	A small deposit of yellow tubercles (=split pea) in pia mater at summit of transverse fissure; *nil* else	Rather soft; a few tubercles	Softening; no tubercles	Congested; no tubercles	Case similar to some of the foregoing.
44 P. E. Phthisis	7	Gland at bifurcation of trachea not enlarged, but several glands enlarged and containing ? tubercles about primary divisions of bronchi	Right lung adherent everywhere, and firmly so at extreme apex and base posteriorly, where the lung was fibroid and the pleura much thickened	Some tubercles about bases of ulcers in small bowel; none elsewhere in peritoneum;	One small yellow tubercle on under aspect of cerebellum; *nil* else	?	?	?	Lymph-stasis must have occurred to a much greater degree in the right lung than in the left; consequently the

		Mesenteric glands formed a large mass; they contained yellow deposits; not softening	cavities in underlying lung, and also about primary divisions of bronchi, disseminated grey and one yellow tubercle. Left lung non-adherent; disseminated grey tubercle; no cavity	cæcum coli. The ulcers of small bowel were numerous, and traversed the gut transversely					not.
45 J. McG. Phthisis	7	Bronchial glands enlarged somewhat; that at bifurcation of trachea = a hazel-nut in size, pale and soft on section, non-caseous, no appearance of tubercles in it. One gland above the right bronchus soft on section, non-caseous, but much enlarged. Mesenteric glands all much enlarged, containing yellow deposits not actually caseous; they formed a large mass	Both lungs adherent everywhere, the adhesions being evidently old and fibrous; massing of grey tubercles at apices; some small cavities at right apex; apparently no broncho-pneumonia. No tubercles under the parietal pleuræ	No general deposit of peritoneal tubercles, but some about bases of ulcers in small intestine, at which situations the coils of the bowel were adherent. The ulcers in the bowel were well advanced and transverse	Natural	No tubercles, ? not amyloid	Large, firm, amyloid	No tubercles, not amyloid	The case is somewhat similar to the foregoing, but cavities at right apex appeared to be partly due to the massing of the tubercles, which may themselves have caused lymph-stasis. They were quite small, smooth-lined cavities (about = peas).
46 B. D. General tuberculosis (cavity in one lung)	2	Bronchial glands enlarged, caseating, one had ulcerated and discharged into right bronchus. Mesenteric glands contained yellowish deposits at the peripheries	Right lung firmly adherent, solidified by chronic broncho-pneumonia; much fibroid tissue throughout. Lung much increased in bulk and heavy; some grouped grey tubercle in it; a cavity (= walnut) at anterior part of upper lobe. Left lung contained patches of grey tubercles in upper lobe, the intervening lung tissue being apparently healthy	No peritoneal tubercle. Numerous small ulcers in ileum, and one in cæcum	Caseous deposit in left lobe of cerebellum	Much fine grey tubercle	A few greyish tubercles	No tubercles	The fibroid changes and cavity suggest much hindrance to return of lymph from the right lung, which was firmly adherent, whilst the glands at its root had undergone more extensive changes than those at the root of left.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
47 A. F. Tuberculosis	16 mos.	Bronchial and mediastinal glands much enlarged and caseous; one or two had puriform specks at the peripheries. Mesenteric glands: Three of them contained ? tubercles and caseous material	Lungs slightly adherent; grey tubercles discrete and grouped; both upper lobes airless and the seat of softening grey broncho-pneumonia; very little tubercle and pneumonia in lower lobes; some yellow tubercles under parietal pleuræ	A few grey tubercles in great omentum, along the courses of blood-vessels; two or three small round ulcers of ileum	No meningitis; no tubercles	Tubercles	Tubercles	No tubercles	Condition of upper lobes of lungs suggests much hindrance to return of lymph. The source of tubercles was probably the mother, who had suckled the child up to one month previously, and who was said to be laid up with advanced consumption.
48 A. B. Acute miliary tuberculosis	3¼	Gland at bifurcation of trachea enlarged, and containing bodies like tubercles. One mesenteric gland contained yellow deposits	Recent adhesions of left lung to chest wall and diaphragm, with deposit of fine grey tubercles; these conditions were much less marked on the right side. Lungs intimately studded with grey tubercles; no pneumonia	Numerous ulcers along course of small bowel; no peritoneal tubercles	Much deposit of yellowish tubercle along course of left middle cerebral artery, very little along right middle cerebral artery; general fine grey tubercles over surfaces of hemispheres, especially over the left temporo-sphenoidal lobe	Numerous fine tubercles under capsule	Numerous fine grey tubercles	Cortex of each studded with grey tubercles	Duration of illness altogether = 26 days. Began as a hemiplegic attack (right side) quite suddenly, the patient falling. The one-sided distribution of tubercles was not dependent on otitis, as none existed. Never suffered from otorrhœa. The ulcers along course of small bowel were not definitely stated to be tubercular in the report of post-mortem.
49 C. B. Tubercular	2½	Gland at bifurcation of trachea caseous, softening (creamy) in centre. Bronchial	Lungs non-adherent; fine grey tubercles scattered through upper lobes	A few rather recent ulcers in course of ileum	Much matting and thickening of membranes at intermedius	?	?	?	Much basic meningitis, but note that the tubercle was not

		contained ? tubercles, not caseous			of fine grey tubercles over surfaces of hemispheres; not along the course of trunks of middle cerebral arteries				at parts where the lymph-current was probably slowest. It would probably be quickest alongside the larger arteries at the base.
50 L. R. General tuberculosis	4½	A large, firm, caseous gland beneath upper end of sternum; similar glands, but somewhat pigmented, at bifurcation of trachea, and immediately above right bronchus. Mesenteric glands enlarged, yellow deposits	Both lungs intimately studded throughout with greyish-yellow tubercles, in groups; no cavities; a few tubercles under the parietal pleuræ	Great omentum intimately studded with fine grey tubercles; no adhesions of parts; several small ulcers of Peyer's patches; one or two submucous tubercles	Basic meningitis, with tubercles	Studded with grey and yellow tubercles	Scattered tubercles and numerous wedge-shaped areæ of yellow at margins	Tubercles in cortex of each	Tubercles in pia mater were both of the grey and yellow variety. The latter formed a sheath-like investment of the left middle cerebral artery, and also isolated deposits about left supra-marginal gyrus. Patient admitted for lung trouble two months before death.
51 H. F. General tuberculosis; softening yellow tubercles in lungs	7½	Gland at bifurcation of trachea, and that above right bronchus, contained softening yellow deposits. Mesenteric glands: A few enlarged on account of yellow deposits; some caseous glands about head of pancreas. Glands adjacent to cæcum enlarged, not caseous	Lungs somewhat adherent, increased in bulk, owing to their being studded throughout with yellow softening tubercles; some grey tubercles under the visceral pleuræ; no areæ of pneumonia; a few grey tubercles under the parietal pleuræ	Much tubercle deposited on the under aspect of the diaphragm. Ileum presented numerous yellow deposits (? tubercles), at intervals, under the mucous membrane (=hemp seeds); they were situated mostly in Peyer's patches, one of which presented a small ulcer. The Peyer's patch immediately above ileo-cæcal valve was not ulcerated, but had a pitted appearance	A few yellow tubercles in pia mater; some thickening of membranes at base of brain (? result of meningitis)	Studded with grey and yellow tubercles	Studded with yellow tubercles	A few yellow tubercles about bases of pyramids	Duration of illness =2 months, began with shivering, feeling of malaise, vomiting, and breathing quickly. The history defines the age of the tubercles in the lungs with tolerable certainty. A brother died of consumption of the bowels 3 months before the patient was taken ill (post-mortem). Patient said to have been strong and well up to the commencement of the present illness, and never had any infectious disease. Father and mother strong; no consumption on either side.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
52 J. D. General tuberculosis; cavities in both lungs	3¾	Bronchial glands, and one above right bronchus, next trachea, enlarged and caseating; that at bifurcation of trachea enlarged and pigmented, not caseating; no appearance of tubercles in it. Glands in portal fissure and those about head of pancreas enlarged somewhat, no deposit in them apparently	Both lungs intimately studded with grey and yellow tubercles, especially in the upper lobes, which presented numerous cavities and dilated bronchi; no fibroid changes in lungs; a few yellowish tubercles under the parietal pleuræ	A few ulcers of ileum, apparently not tubercular; cæcum and colon natural	Some basic meningitis; grey and yellow tubercles over hemispheres of brain; a caseous deposit in right optic thalamus	Yellow tubercles and bile-stained cavities in its substance	Studded with yellow tubercles	One or two tubercles on cortex	The massing of tubercles in upper lobes of lungs would lower the vitality of the part, but the bronchi, being dilated, probably had some effect in producing the numerous small cavities there.
53 R. P. General tuberculosis	2	Bronchial glands enlarged, especially one above and one below right bronchus, caseating and softening. Mesenteric glands presented some yellow deposits	Some tubercles under the parietal pleuræ; both lungs studded throughout with greyish tubercles	Some grey tubercles in omentum, and yellow tubercles on the under aspects of diaphragm. Ileum: Numerous small ulcers at intervals	Some meningitis, with grey and yellow tubercles of pia mater	Some tubercles	Some tubercles	No tubercles	Considerable obstruction to return of lymph by roots of lungs, probably.
54 R. M. Tubercular meningitis	3	Bronchial glands somewhat swollen, *nil* else. Mesenteric glands much softened, several of them reduced to collections of puriform material	No pleural adhesions or tubercles. Lungs: Some patches of fine grey tubercles in upper lobes; no pneumonia; some emphysema	Some congestion and ulceration of Peyer's patches at lowermost part of ileum	Basic meningitis, with tubercles	No tubercles	No tubercles	No tubercles	The fine grey tubercles in upper lobes of lungs probably resulted from the reduced rate of the blood-current during the later stages of the meningitis. The father said to be in consumption at the time. Patient subject to otorrhœa; worse of late.
55 L. W. Tubercu-	3¾	No caseous glands discovered, but several glands alongside the	Old adhesions of right lung. Left lung non-adherent; a deposit	Natural	Basic meningitis, with tubercles	No tubercles	No tubercles	No tubercles	? Source of the caseous deposit at left apex. Patient had

									whooping-cough 8 months previously and had always been a weakly child, subject to bronchitis. The deposit of recent tubercle in the vicinity of the caseous deposit might have been favoured by the loss of contraction of the lung tissue there during expiration. The lymph-stasis would also be increased by the reduced force of the blood-stream and diminished absorption of fluids by that means.
56 W. D. General tuberculosis; cavities in lung	4½	Gland at bifurcation of trachea (=hazel-nut) firm, yellowish on section; all the bronchial and mediastinal glands similarly affected. Tracheal and sub-maxillary glands presented caseation and softening in their central portions. Mesenteric glands much enlarged, caseating, and softening	Right lung: Grouped grey tubercles in upper lobe; a cicatrix at apex, with fibrous bands extending inwards; no pneumonia. Left lung: Upper lobe slightly adherent; some groups of small cavities at apex, with fibroid induration and deposit of grey tubercle in surrounding lung tissue. Both lungs: Lower lobes congested; no tubercles	Fine grey tubercles in omentum; no peritoneal adhesions; tubercular ulcers in ileum and caput cæcum coli; tubercles in bases of ulcers	Commencing meningitis, with fine grey tubercles	—	—	—	The fibroid changes at apices were in part probably the result of reduced power of absorption in the bronchial glands, which were affected to such an extent as to render their function nugatory.
57 J. R. Morbus coxæ; tuberculosis	2¾	Gland at bifurcation of trachea fibrous, pigmented, non-tubercular, non-caseous; some other bronchial glands caseous, softening, not very large. Mesenteric glands natural	Upper lobes of both lungs contained much fine grey tubercle; no pneumonia; no tubercles in pleuræ	Natural	A few yellow tubercles and much lymphopus on surfaces of hemispheres; brain-substance rather soft	Natural	Numerous grey tubercles	Natural	The disease of bronchial glands probably resulted from attacks of bronchitis, to which he was a long time subjected, after the whooping-cough, at 6 months of age. He contracted measles one month before the whooping-cough, but made a good recovery. Hip-joint disease since a fall when aged 2 years. Did not the measles and whooping-cough predispose him to joint disease? There was no history of consumption in the family.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
58 M. S. Tuberculosis; cavity in lung	3¼	Gland at bifurcation of trachea considerably enlarged, caseating, softening at one end; the other bronchial glands contained some caseous deposits. Mesenteric glands enlarged, mostly caseous and soft; some contained puriform material	Left lung almost universally adherent, and firmly so at the base, where there were yellow tubercles under the pleura. Right lung nearly solid at the base, from rather old broncho-pneumonia; a cavity near the root, with dense tissues around; yellowish lines radiated from this part towards the circumference of lung; some grey tubercles in upper lobes	Some old tubercular ulcers of ileum; none found in large bowel	A few yellow tubercles on the surfaces of the hemispheres of brain; no general deposit of tubercles or meningitis	Fatty; no tubercles	Firm; a few yellow tubercles	One grey tubercle	The yellowish lines radiating towards the circumference of lung were probably distended lymphatics. The pneumonia at base of right lung would probably tend to overburden the lymphatics with waste material, and so clog the glands at the root of lung. It must be admitted that the state of bronchial glands rendered their function almost nugatory.
59 A. M. Tuberculosis; cavities in lungs	5½	Glands at bifurcation of trachea and along bronchi slightly enlarged, none caseating; no appearance of tubercles in them. Mesenteric glands: One or two caseating	Both pleural cavities obliterated by firm adhesions; lobes united to each other; large cavities in both lungs; bronchi dilated; grey and yellow tubercles	Tuberculous ulcers of mucous membrane of small bowel and commencement of large intestine; some deposits (? yellow tubercles) in mucous membrane of ileum	—	Large, soft; no tubercles	Soft; no tubercles	Pale cortex; no tubercles	The diseased glands, dense adhesions and dilated bronchi must have favoured the formation of cavities. It probably commenced as tubercle in the upper lobes, as there was no history of an acute attack of lung disease.
60 H. M. General tuberculosis	9	Bronchial glands, especially at bifurcation of trachea, much enlarged, caseating, and softening. Mesenteric glands enlarged; two bad tuberculous-looking	Throughout both lungs much deposit of small yellowish tubercles; no cavities; much recent pneumonia. At bases posteriorly a few old adhesions; a little	No adhesions of peritoneum; a little fine yellowish tubercle in great omentum and under surface of diaphragm; no	No meningitis; no tubercles	Large; deposit of grey and yellow tubercles	Large; studded with fine yellowish tubercles	A few yellow tubercles at cortex	Duration of illness = 9 weeks. The recent pneumonia probably was the immediate cause of death. The parts

attacked by it very soft, this pointing to arrested power of absorption. The softening of the bronchial glands may be due to

deposits in them | deposit of tubercles | ulcers of bowel | clogging in the attempt to remove the lymph in the lungs. There

		deposits in them	deposit of tubercles in upper intercostal spaces	ulcers of bowel	clogging in the attempt to remove the lymph in the lungs. There would probably be no time for new lymph-vessels to form to take the extra effused products resulting from the pneumonia.				
61 M. H. Strumous disease of cranial bones; hyperpyrexia	15 mos.	Bronchial glands large, soft, and caseous (putty-like). Mesenteric glands slightly enlarged, none caseating or tuberculous apparently	Right lung adherent at base, less so at upper parts; subpleural softening caseous deposits next the spine on the right side; lung-substance *nil* of note	Natural	Strumous disease of frontal and left temporal bones; no meningitis; no tubercles viewed	Natural	Natural	Natural	The caseous deposits were probably the result of impaired absorption power in the glands. Life terminated rather suddenly with hyperpyrexia (? cause).
62 S. P. Caseous glands; diphtheria; no tuberculosis	1½	Bronchial glands mostly enlarged and caseating. Gland at bifurcation of trachea greatly enlarged and caseating. Mesenteric glands slightly enlarged	Patches of recent broncho-pneumonia in both lungs; no tubercles	Mucous membrane of Peyer's patches injected; no ulcers	Natural	Natural	Congested; no tubercles	Cortex swollen, pale, soft; no tubercles	Patient was admitted for croup. No membrane observed in the fauces at that time, though it subsequently developed on tonsils. Was the patient predisposed to diphtheria on account of the caseous bronchial glands? By retarding the lymph they may have favoured the implantation of the germ of that disease in the parts depurated by the diseased glands.
63 J. W. Tuberculosis; broncho-pneumonia; gangrene of lung following an attack of measles	2¾	Bronchial glands considerably enlarged and caseating, not softened. That at bifurcation of trachea = walnut, not softening; buff coloured on section; adherent to bronchus very firmly; bronchi not narrowed. Mesenteric glands: Yellowish points	Left lung bound to parietes at base, where it was gangrenous and excavated. Both lungs studded with grey and yellow tubercles	A few small round ulcers in Peyer's patches; some grey tubercles in great omentum	(Head not examined)	Fine grey tubercles	A few yellow tubercles	Natural	Admitted 6 weeks after measles with signs of consolidation of left base. There must have been great interference with absorption on account of the disease of glands and the adhesions at left base.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
64 E. K. Tuberculosis; brocho-pneumonia 3 months after measles	3	Gland at bifurcation of trachea enlarged; yellow specks in it; not caseating. Mesenteric glands natural	Recent adhesions of right lung at base; no subpleural tubercles; disseminated grey tubercles, not abundant, in both lungs; pneumonia of both lungs	Peyer's patches a little swollen; no ulcers	Natural	Pale, enlarged somewhat; numerous fine grey tubercles	Grey and yellow tubercles chiefly under the capsule, as in case of the liver	Natural; no tubercles	Measles three months previously.
65 C. M. Acute tuberculosis and meningitis	3½	Bronchial glands much enlarged, softening at one or two points only; yellow and caseous on section. Gland at bifurcation of trachea unaltered. Mesenteric glands enlarged with fine yellow specks	Rather firm fibrous adhesions of both lungs. Both lungs studded with much grey and some yellowish tubercles; no cavities; some lobular pneumonia	No tubercles in peritoneum; a few punched out tuberculous ulcers of small bowel	Basic meningitis with tubercle	Disseminated grey tubercles	Disseminated grey tubercles	Natural	Much retardation of lymph must have resulted from the disease of bronchial glands and the adhesions of lungs. Cavities might have subsequently formed had not meningitis caused death.
66 W. M. General tuberculosis and meningitis	3	Gland at right side of trachea softening after caseation. All the bronchial glands enlarged. That at the bifurcation of trachea contained some yellow specks. Mesenteric glands enlarged; none caseating throughout, but	Both lungs studded with grey tubercles; no adhesions	No peritoneal tubercles except on the under surface of diaphragm; a few small round ulcers of mucous membrane of ileum	Much meningitis and deposit of miliary grey tubercle, and one patch of yellow tubercles in right parietal region of cortex	Grey and yellow tubercles	Grey tubercles	Natural	Duration of lung symptoms = 6 weeks; head symptoms = 16 days. The tubercle in lungs was mostly grouped, especially at the right apex, where it had begun to soften, probably owing to many causes combined,

		some contained yellow specks							but all favouring the accumulation of liquids in the part.
67 E. H. Tuberculosis	6½	Bronchial glands enlarged; no caseation, and apparently no deposit of tubercles. Mesenteric glands all much enlarged and caseating; not soft	No pleuritic adhesions; no tubercles under the pleuræ of parietes. Both lungs studded with grey tubercles; no cavities; no pneumonia	Great omentum adherent to intestines and infiltrated with grey tubercles; numerous transverse tuberculous ulcers of small bowel	Natural	Grey and yellow tubercles	Grey tubercles	? A few small tubercles	Duration of illness = 5 months. On admission, 6 weeks before death, the patient was much emaciated, the finger-ends clubbed and blue. With this state of the circulation there is no wonder that she developed tubercle in the lungs.
68 G. G. Tuberculosis; pyopneumothorax; cavity in lung	14 mos.	Bronchial glands somewhat enlarged; some yellowish specks on section. That at bifurcation of trachea had discharged into œsophagus. Mesenteric glands contained yellow deposits; one of the glands caseating	Left lung collapsed except the lower lobe, which was softened and excavated at the base, the cavity communicating by a minute aperture with the pleural cavity, which was filled with pus and air. Some grey tubercles in right lung. Pleuræ not much thickened	No peritoneal adhesions; numerous tuberculous ulcers of small bowel; yellowish specks in their floors and at situation of the solitary glands. One tuberculous ulcer of colon	No meningitis, but several deposits of yellow tubercles on surfaces of hemispheres	Fatty; some tubercles	Numerous tubercles	Large, pale; no tubercles	The patient probably had a pneumonia at the base, which, owing to the disease of the bronchial glands and the wasted anæmic state of the child for 6 months past, did not clear up, but underwent softening. The rest of the lung, being collapsed, developed no tubercle, but this was commencing in right lung.
69 T. C. Tuberculosis; purulent meningitis	2	One softened gland above right bronchus alongside the trachea. Mesenteric glands natural	Right lung firmly adherent at base; a few grey tubercles in it. Left lung: Some broncho-pneumonia; no tubercles	Some swelling of Peyer's patches; no ulcers	General purulent meningitis; no tubercles of meninges	Natural	Natural	Natural	The condition of the lower lobe of right lung (firmly adherent) favoured lymph-stasis.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
70 A. P. Tuberculosis	18 mos.	Bronchial gland at bifurcation of trachea considerably enlarged, caseating, and softening at the lower end; several other bronchial glands caseating. Some glands alongside the pharynx and trachea enlarged, and presenting yellow specks. Mesenteric glands much enlarged, caseating, and many softened	Right lung firmly adherent at base. Left lung non-adherent. No tubercles in the adhesions. Both lungs studded with grey tubercles. A caseous deposit at junction of middle and lower lobes of right lung. Dense fibroid tissue about deep bronchial glands of right lung	Much grey and yellow tubercle in peritoneum everywhere. Numerous tuberculous ulcers of small bowel	(Head not examined)	Large, fatty; some tubercles under capsule	Rather large grey and small yellow tubercles	Natural	The caseous deposit at junction of middle and lower lobes of right lung probably the result of lymph obstruction, caused by the dense fibroid tissue in the vicinity of the glands there.
71 J. D. Broncho-pneumonia; cavity in lung; tubercle in spleen	16 mos.	Bronchial and tracheal glands enlarged simply, except that at bifurcation of trachea, which was tougher than usual, and contained yellow specks. Mesenteric glands swollen slightly; no other changes observed	A caseous deposit, and some excavation, at root of right lung (? a gland), surrounded by fibroid tissue. Left lung solid from recent broncho-pneumonia. Some patches of pneumonia in right lung. No tubercles discovered in either lung. Some deposit of recent lymph on outer surface of left lower lobe	No peritonitis. Peyer's patches swollen in places. No ulcers	No meningitis; no tubercles	Natural	Some yellow tubercles	Natural	Caseous deposit at root of right lung may have resulted from an attack of measles six months previously. Child said to have been strong and well up to that time.
72 E. B. Softening gland in	3½	Lymphatic gland at bifurcation of trachea large, soft, containing puriform mate-	Right pleural cavity nearly obliterated by rather firm adhesions; pleuræ not	Natural	Abscess in left frontal lobe; no meningitis	Congested; no tubercles	No tubercles	No tubercles	Patient had whooping-cough at 3 months of age, and had always been subject to bron-

mediastinum; chronic pleuritis; abscess in brain		rial. Some cretaceous particles external to right bronchus (? degenerated glands). Mesenteric glands simply enlarged	much thickened. Remains of an empyema, which had been opened externally, existed at base of right pleural cavity. Right lung airless, fibroid. Left lung natural. No tubercle in lungs						chitis; much cough and wasting for six months; breathing worse for six weeks. With this history it is probable that the cretaceous particles were the remains of degenerated glands; diminished power of absorption caused by their loss; lung thereby rendered more susceptible to inflammation.
73 E. A. Empyema; cavities in lung; tuberculosis	11 mos.	Glands below right bronchus enlarged, caseating, and softening. Mesenteric glands slightly enlarged; a few fine specks in their peripheries viewed on section	Right lung much disorganised, being almost replaced by the presence of two cavities, which communicated with each other and with the pleural cavity; remains of lung tough and fibroid and very firmly adherent in places to the parietes. Left lung adherent rather firmly in places; on section it presented a few greyish tubercles	No peritonitis; Peyer's patch, just above ileo-cæcal valve, had commenced to ulcerate; no tubercles viewed in its vicinity	(No permission to examine head)	Natural	Natural	Natural	Probably a pneumonia occurred which underwent degenerative changes, and caused destruction of right lung, owing to obstruction to lymph-current in the glands at its root, and possibly the excavation was still further enhanced by firm adhesions of its surface; fragments remaining.
74 W. W. Scrofulous disease of wrist-joint; tuberculosis	11	Gland at bifurcation of trachea enlarged, greyish, soft, not caseating; ? contained any tubercles. Mesenteric glands slightly enlarged (? tubercles) about cæcum, not caseating. (Has had enlarged cervical glands, which have softened and discharged during life)	No old pleuritic adhesions; a little recent lymph over base of left lung. Both lungs contained much fine grey miliary tubercles, especially in the upper lobes; no cavity in either lung	No peritonitis; some tubercles; peritoneal tubercles over lower end of ileum; well-marked tuberculous ulceration of lower end of ileum and in cæcum	Much basic meningitis, with tubercles, both grey and yellow	Large, fatty; a few grey tubercles	Natural	Right kidney presented a caseous nodule on section	Disease of wrist-joint = 2 years in duration at least. Measles at 3 years of age. Whooping-cough at 18 months of age. Had bronchitis several times. Enlarged glands in neck for 4 years. Consumption in both the father's and mother's family.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
75 A. L. Tuberculosis and diphtheria	3	Gland, 2 inches above left main bronchus, next the trachea, much enlarged and caseating. Glands at bifurcation of trachea and above right bronchus presented yellow deposits. Mesenteric glands, near the ileo-cæcal valve, contained yellow deposits, softening	Right lung, upper part of middle lobe firmly adherent to chest wall; a caseous deposit in lung subjacent thereto, tapering towards root of lung; the adjoining lung tissue healthy. Left upper lobe contained some grey tubercles. No tubercles under the pleuræ	No peritoneal tubercle; no intestinal ulceration, but patch above ileo-cæcal valves showed a puckered condition of the mucous membrane	Natural	A few tubercles on the surface	A few tubercles	No tubercles	Caseous deposit in middle lobe of right lung, probably the result of lymph obstruction. The middle lobe presents a large surface compared with its bulk. When firmly adherent to adjoining parts there is little means of escape for the lymph should the bronchial glands be also diseased.
76 A. H. Caseating mediastinal glands; purulent pericarditis	3½	Glands alongside bronchi of left lung and that at bifurcation of trachea much enlarged; the last named was caseating, not softened. Mesenteric glands: Many contained yellow specks	Both lungs firmly adherent to parietes; pleuræ considerably thickened; fibroid changes throughout left lung, especially about the root; airless; lobules distinct; bronchi dilated. Right lung normal; no tubercles in either lung or caseation	No tubercles in peritoneum; no peritonitis; some superficial ulceration of lowermost Peyer's patch; not tuberculous apparently	Not examined	Congested	Congested	Congested	The fibroid changes are possibly due to lymph-stasis. The greatly distended pericardium probably caused pressure on roots of both lungs, but especially of left. This may account for the fibroid tissue at root of left lung more particularly.
77 A. L. Phthisis; lardaceous disease	11	Bronchial glands enlarged slightly; some of them contained caseating specks; some amyloid change found. Mesenteric glands	General slight adhesions of both lungs; cavities in both upper lobes; some tubercles in upper lobes, and very little elsewhere	Tubercular ulceration of Peyer's patches at lower end of ileum. General adhesions of peritoneum (old) with	Natural	Amyloid; no tubercles	Amyloid; no tubercles	? Amyloid; no tubercles	The amyloid changes in glands would probably cause much hindrance to return of lymph.

		enlarged, ashy grey on section, not caseating, but distinctly amyloid		deposit of tubercles					
78 W. W. Phthisis	13 mos.	Bronchial and mediastinal glands generally much softened	Right lung adherent everywhere, and firmly attached to chest wall at the base. The pleura covering the lower lobe was considerably thickened. Right lung much increased in volume and heavier than it should be; its upper lobe solid from chronic fibroid pneumonia; some scattered groups of grey tubercles in its substance. The lower and middle lobes presented a honeycomb appearance on section, the peripheries of the lobules being occupied by fibroid material, whilst the centres were caseous and softening. There was also a large cavity at the lower lobe, with rugged walls and putty-like contents. It communicated with small cavities at the root of the lung, next the bronchi and bronchial glands. The lower lobe presented no definite tubercles. Left lung non-adherent, emphysematous; no solid areæ; a few tubercles in the upper lobe	?	Natural	Nutmeg; fatty; fine miliary tubercles under capsule	Large, soft; some grey tubercles at periphery	Large, pale, soft	The honeycomb appearance probably arises from the softening of individual lobules of lung. The disease of bronchial glands and thickening of the pleuræ accounts for the softening and excavation of parts of right lung. The fibroid changes in the peripheries of lobules are probably induced by stasis and organisation of lymph. Patient had ? whooping cough 3 months previously. This seems to have been the date of the commencement of his illness.
79 M. P. Tuberculosis; cavity in lung	6 mos.	All the bronchial and tracheal glands much enlarged and caseous. One above and one below the right main bronchus reduced to a pultaceous mass, with fibrous capsule. Mesenteric glands caseous, one softening	Lungs non-adherent, increased in volume. The greater part of both rendered solid from broncho-pneumonia of old standing apparently; numerous buffy points visible on section. They were not firm like tubercles. There were no grey tubercles discovered, except possibly a few beneath the visceral pleuræ. A small cavity at root of right lung in the lower lobe contained puriform material	No tubercles in peritoneum; several rather large ulcers of mucous membrane of small bowel near its termination, their margins raised and indurated, and presenting yellowish specks (? tubercles)	?	Some grey tubercles	Firm; much grey tubercle	In the periphery of the left there was one yellow tubercle	The general and advanced disease of the bronchial glands must have interfered very much with the return of lymph from both lungs. Patient had a cough almost from birth. The mother of patient died of rapid consumption 3 months after its birth.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
80 E. B. Pott's disease of spine; diphtheria	4	One bronchial gland caseating. Mesenteric glands simply a little swollen	A little catarrhal pneumonia at roots of lungs	Peyer's patches and solitary glands much swollen and injected	Normal	Congested simply	Congested simply	Congested simply	The case is interesting as being an instance of diphtheria complicating strumous disease. Did the pneumonia attack the roots of lungs by preference owing to greater degree of lymph-stasis there?
81 E. O'G. Pyonephritis; perinæal section for cystitis; tuberculosis	5	Several old dry caseous and cretified glands about bifurcation of trachea adherent to adjacent parts. Mesenteric glands not caseating	Considerable amount of fine grey tubercles in both upper lobes	No adhesions; no tubercles; Peyer's patches a little swollen, not ulcerated	Some thickening of membranes about base of brain; no lymph; no tubercles	Rather soft; no tubercles	Large, soft; a few grey tubercles in its substance	Large, soft; purulent deposits; no tubercles?	Died 10 days after the operation. Note the recent tubercles developing, probably within a few days of death, in parts of lungs most at rest, and where the lymph would probably be most obstructed.
82 E. V. Tubercular meningitis	5¼	Bronchial glands and that at bifurcation of trachea contained caseous points. Mesenteric glands natural	Lungs non-adherent; no tubercles; bases congested	Natural	Basic meningitis, with tubercles	Natural	Natural	Natural	The caseous deposits in the bronchial glands were not dependent on tuberculosis in the lungs in this case at any rate, *vide* similar cases.
83 G. S. Tubercular	3	Gland at bifurcation of trachea slightly enlarged; no appearance of tubercles or	Natural	Numerous small tuberculous ulcers of small bowel; tuber-	Tubercular meningitis, chiefly in the distribution of	? Tubercles	Enlarged, numerous grey tubercles	Natural	Note that the tubercles were deposited between the diseased glands and the ulcers

meningitis		caseation. Mesenteric glands all enlarged and caseating		cles seen under peritoneum at their bases, and between those situations and the mesenteric glands	left middle cerebral artery				of intestines; also chiefly distributed in area of distribution of left middle cerebral artery.
84 T. F. Tuberculosis; cavity in one lung	2¾	Glandulæ concatenatæ, both sides of neck much affected with yellow deposits. Gland at bifurcation of trachea (= walnut) softened; the other bronchial and mediastinal glands contained yellow deposits (? tubercles). Mesenteric glands enlarged, caseous, not softening; they formed a mass = a man's fist. Portal and splenic lymphatic glands contained caseous material	Right lung adherent anteriorly; a wedge-shaped deposit of firm caseous material (? tubercles) at apex; in the middle lobe there was a cavity (= cherry stone). Mucous membrane of trachea presented some small ulcers at the bifurcation. Left lung non-adherent. Both lungs studded intimately with yellow grouped tubercles	No matting together of intestines; a few yellow tubercles under the parietal peritoneum. Numerous transverse tubercular ulcers of small intestine, the bases of which presented numerous fine yellow points (? tubercles)	Head not examined (no cerebral symptoms during life)	Yellow tubercles under capsule	Yellow tubercles	Left kidney absent; right hypertrophied	The fact that the bronchial glands were much diseased, and that the right lung was adherent, explains the presence of the caseation and also of the small cavity. The floors of the ulcers in bowel would afford a suitable ground for tubercles to develop in.
85 W. A. Tubercular peritonitis	2½	Bronchial glands natural. Mesenteric glands slightly enlarged; most of them contained yellow specks (? tubercles); one (= walnut) near the cæcum caseous, softened	Lungs non-adherent; no tubercles; no pneumonia	Intestinal coils firmly matted together; much deposit of yellow tubercles under peritoneum covering the small bowel; tubercular ulceration of ileum just above the ileo-cæcal valve; none elsewhere	?	No tubercles	No tubercles	No tubercles	Note the absence of tubercles in the lungs with normal condition of bronchial glands. Also note the ulceration of bowel only where in connection with diseased glands.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
86 A. B. General tuberculosis; pericarditis	10	Tracheal, bronchial, and mediastinal glands considerably enlarged (some = filbert), presenting yellow deposits, not softened. Mesenteric glands normal	Lungs contained grouped recent tubercles; no yellow tubercles; no cavities. Both lungs somewhat œdematous	No peritoneal adhesions, except that the liver and spleen were adherent to the the diaphragm. Much disseminated grey tubercle in the great omentum and mesentery, and over the coils of small bowel. No ulcers of bowel	(Head not examined; no cerebral symptoms)	A few yellow tubercles under capsule	Intimately studded with small yellow tubercles	A few tubercles in cortices	No ulcers in the intestines because the mesenteric glands were healthy? The tubercle was oldest in liver and spleen apparently. The disease of bronchial glands favoured the development of tubercles in the lungs. Did the disease of mediastinal glands predispose the patient to pericarditis, by interfering with return of lymph?
87 C. G. Caseous tracheal gland; old empyema	4	One gland above right bronchus contained a dry caseous deposit; the other glands unaffected, not amyloid. Mesenteric glands slightly enlarged, soft, not caseous	Right lung contracted, fibrous; thick fibrous adhesions between it and the chest wall. Left lung natural. No tubercles in lungs	Plastic lymph in peritoneal cavity; no tubercles. No ulcers of bowel (? villi of small bowel amyloid); no tubercles	(Head not examined; no cerebral symptoms)	Large, firm, amyloid; no tubercles	Large, firm, amyloid; no tubercles	Large, firm, amyloid; no tubercles	The patient probably escaped tuberculosis on account of the bronchial glands being unaffected. Right lung, being contracted, was not liable to be affected by tubercle.
88 H. L. Tuberculosis	9 mos.	Gland at bifurcation of trachea contained yellow deposits at one end. Mesenteric glands much enlarged, caseous, and soft; they formed a mass = a man's fist	Both lungs studded throughout with minute grey tubercles, non-adherent; no pneumonia	Numerous tuberculous ulcers of Peyer's patches; a few tubercles in great omentum	(Not examined; no cerebral symptoms)	No tubercles	A few grey tubercles and some yellow	Natural	It would seem probable that there was no tendency to general tuberculosis till the strength of the patient was much reduced by the disease in the intestines.

89 A. C. General tuberculosis	19 mos.	Bronchial glands simply a little congested. Mesenteric glands much enlarged, caseous, softened, especially those in relation with the ulcers of ileum. Glands in portal fissure firm, large, pale, non-caseous	Lungs non-adherent; fine grey miliary tubercles throughout both, with patches of recent pneumonia. Larynx and trachea presented ulcers (apparently not tubercular; ?diphtheritic)	Numerous tubercular ulcers of ileum; tubercles in mesentery near them	Natural	Large, fatty, with grey tubercles	Some miliary tubercles	Natural	Case somewhat similar to the foregoing.
90 W. B. Otitis and tuberculosis; cavities in one lung	21 mos.	Glands alongside great vessels of neck much enlarged and caseous, especially on the right side. All the bronchial and tracheal glands considerably enlarged, most of the larger ones containing gritty material. Mesenteric glands enlarged and caseous	Numerous small cavities in the anterior and lower part of upper lobe of right lung; greyish infiltration and ? tubercles in adjoining lung tissue. Some greyish patches (? tubercles) scattered through both lungs. Some narrowing of the main bronchi through pressure of the enlarged glands. No recent pneumonia. Some adhesions of upper lobe of right lung, not extensive	Intestines adherent at situation of ulcers, in the bases of which some tubercles were visible	Natural	Natural	Natural	Natural	The bronchi being distinctly narrowed by the presence of the much enlarged glands, and being filled with mucus, would seem to be chiefly responsible for the excavation. Lymph-stasis probably existed also as the result of the pressure about the roots of lungs.
91 J. B. Tuberculosis; amyloid disease	12	Tracheal and bronchial glands enlarged somewhat, not caseous; a little firmer than usual. Glands in portal fissure and behind the peritoneum considerably enlarged, softer in some parts than in others, not caseous	Right pleural cavity almost obliterated by rather firm adhesions. Left pleural cavity natural. Both lungs somewhat emphysematous; normal otherwise	Most of the organs adherent to one another; scattered yellow tubercles under the visceral peritoneum; no ulcers in the intestines except at the extremity of the vermiform appendix, which was adherent to the cellular tissue in iliac fossa	(Not examined; no cerebral symptoms)	En-larged; ? amyloid	Much enlarged; amyloid	En-larged; ? amyloid	The tubercles developed only in parts most favouring its growth, viz. under the peritoneal adhesions. No tubercles in lungs because the bronchial glands were healthy?

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
92 J. S. Tuberculosis	2½	Gland at bifurcation of trachea (=filbert) greyish yellow on section; not actually caseous; much enlarged. Gland above right main bronchus enlarged, not caseous. The glands alongside right main bronchus enlarged, caseous, and softening. Mesenteric glands enlarged slightly; a few contained yellow specks	No adhesions of lungs except some recent lymph on the posterior surface of upper lobes of right. At roots of both lungs, especially of right, in the vicinity of bronchial glands, there was considerable deposit of fine grey tubercles, and grey infiltration (? tubercular). Buffy grey pneumonic consolidation of nearly the whole of middle lobe of right lung	No peritoneal tubercles; no ulcers of intestines	(Not examined; no cerebral symptoms)	Natural	? One tubercle	Natural	Note the changes at roots of lungs, probably the result of lymph obstruction, more marked on the right side, as the glands were more diseased than on the left. The changes in middle lobe probably due to same cause.
93 E. H. Caseous mesenteric glands; peritonitis; no ulceration of small intestine	8	Bronchial glands, *?nil.* Mesenteric glands caseous (many = Barcelona nuts), softening. One or two pelvic glands were in a similar condition	Left lung presented recent adhesions externally to parietes. Both lungs considerably collapsed; no tubercles	Chronic ulceration of rectum and lower end of colon (? tubercular); general peritonitis; no ulcers of ileum or jejunum discovered	(Head not examined; no cerebral symptoms)	Natural	Natural	Natural	The ulceration of small bowel was certainly not advanced, if it existed at all. Patient died of acute peritonitis starting from a perforation of the rectum. Would ulceration of ileum have set in eventually if this accident had not happened?
94 B. P. Morbus coxæ; tuberculosis	10	Tracheal and bronchial glands caseous, containing also gritty matter. Mesenteric glands natural	Right lung rather firmly adherent to parietes. The anterior parts of both lungs contained pigmented deposits of tough grey tubercles; no	Natural	Natural	Natural	Large, firm in consistence; not amyloid; no tubercles	Natural	There appears to have been an abortive attempt at tubercularisation of lungs. Possibly the patient's health improved through some means.

			tubercles at apices of lungs						which served to arrest its progress.
95 R. V. (sister of E. V.) Pertussis; bronchitis; tuberculosis	2½	Gland at bifurcation of trachea much enlarged, caseous, softening; at one spot the periphery of the gland presented dots of caseous material. Mesenteric glands natural	No pleural adhesions. Lungs emphysematous; a few grey tubercles in central parts of both	Natural	(Head not examined)	Rather congested	Natural	Natural	Possibly the lymph obstruction was increased on the supervention of whooping-cough, thus determining the growth of tubercle.
96 J. W. Empyema; purulent meningitis; tuberculosis	18 mos.	Several large, caseous, but not softened glands pressing against lower part of trachea. A few large caseous glands at root of left lung	Left lung collapsed except quite the apex, œdematous, and somewhat fibrous. It contained a few miliary grey tubercles; no tubercles under parietal pleura. Right lung hypertrophied; a few miliary tubercles at the surface	Natural	Purulent meningitis; no tubercles viewed	Numerous fine grey tubercles, especially of surface	Enlarged slightly; no tubercles	Natural	Patient died of purulent meningitis, which probably reduced his strength sufficiently to allow of lymph-stasis and development of tubercles in the parts affected.
97 T. V. Phthisis	10	Glands at bifurcation of trachea much enlarged, greyish, pigmented, soft; no caseation or definite tubercles. Mesenteric glands (notes omitted)	Both pleural cavities obliterated by dense adhesions. In right mammary region the adhesions were almost cartilaginous in consistence. The whole of right upper lobe excavated with the exception of parietes, which were solid, and infiltrated with greyish tubercles. Lower lobe contained some tubercles. Left lung contained some tubercles; no cavity. A pocket of curdy pus, external to pleura, in left mammary region; also some caseous deposits between base of left lung and vault of diaphragm, together with tracks of curdy material in the vicinity of the caseous deposits	Deep tubercular ulcers of ileum; subperitoneal miliary tubercles investing coils of small bowel	(Head not examined; no cerebral symptoms)	Natural	Natural	Left kidney atrophied (? congenital); right hypertrophied	The dense adhesions of right upper lobe would account for the excavation there. The enlarged and softened state of the gland at bifurcation of trachea indicated probably engorgement with lymph; caseous deposits at base of left pleural cavity, probably due to blocking of lymphatics.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
98 J. B. General tuberculosis; cavities in lung	3¼	All the bronchial and mediastinal glands enlarged, mostly caseous, especially about root of right lung. They were not soft; very adherent to adjacent structures. Mesenteric glands enlarged with yellow deposits	Both pleural cavities contained an excess of serum, especially the right. In lower part of upper lobe of right lung was an old cavity, whilst a very tough pleural adhesion existed adjacent to it. Several other roundish cavities with fibroid changes in the adjoining lung tissue. Both lungs thickly studded with grey and yellow tubercles. The right contained more than the left	No peritoneal adhesions; no disseminated tubercles of peritoneum; a few tubercular ulcers of small bowel, with yellowish tubercles in their floors	(Head not examined)	Large; grey and yellow tubercles	Large; grey and yellow tubercles	Some grey tubercles in cortices	The adhesion of glands to parts about root of right lung was probably the chief factor in the causation of the cavity, by creating lymph-stasis.
99 E. J. Acute tuberculosis	6¼	Cervical glands on both sides of neck, adjacent to pharynx and trachea, much enlarged. Mediastinal glands much enlarged, especially those at bifurcation of trachea; adherent to the bronchial tubes. The more deeply placed bronchial glands = hazel nuts, all caseous, and mostly softening in their centres; air-tubes not much, if at all, narrowed by them. Mesenteric glands, in vicinity of cæcum.	No old adhesions of pleural surfaces; some tubercles under parietal pleura of left side; about half pint of turbid straw-coloured fluid in left pleural cavity. Both lungs intimately studded with fine grey tubercles. At centre of outer part of left upper lobe, at the surface, was a wedge-shaped deposit of firm yellow ? tubercles (diameter at surface = 1 inch, wedge-shaped)	A little (? tubercular) ulceration of ileo-cæcal valve. No other ulceration of intestines. No peritoneal tubercles or peritonitis	?	A few fine tubercles	A few fine tubercles	A few grey tubercles	Compare this case with the foregoing, to which it is closely similar. The tubercle in the lungs was mostly more recent than in that case. The mesenteric disease appeared to be older than the ulceration of the intestine.

		caseous (= hazel nuts)							
100 J. D. General tuberculosis	2	All the bronchial glands caseous, not very large; not much softening. Mesenteric glands contained yellow deposits (? tubercles)	No adhesions. Both lungs studded with grey miliary tubercles, not thickly	Some recent peritoneal tubercles. Some ulcers of small bowel, with tubercles under the peritoneum, at their bases	Basic meningitis with tubercles	? Some yellow tubercles	A few greyish-yellow tubercles	Natural	The general tuberculosis is probably accounted for by the depressing effect of the meningitis on the respiration and circulation.
101 W. B. Tuberculosis; caseous pneumonia and cavity in one lung	12½	A gland below the left main bronchus much enlarged (= walnut); softened caseous material throughout. A gland had discharged into right main bronchus at some time previously, leaving a sac-like dilatation. Mesenteric glands *en masse* = a man's fist, caseous and softening	Right lung firmly adherent, except at the apex; caseous degeneration of whole of lower lobe, with excavation of lower third; the upper and middle lobes contained a few yellow tubercles. Left lung, a few scattered greyish-yellow tubercles; no pneumonia; non-adherent	No peritoneal tubercles; no adhesions of intestines. A few tuberculous ulcers of small bowel	(No permission to examine head)	Large, fatty; no tubercles	Large, fatty; no tubercles	Natural	Condition of right lung probably due to lymph-stasis, caused by diseased bronchial glands, and firm adhesions at its lower part.
102 A. M. Tuberculosis; cavity in lung	14 mos.	Glands at bifurcation of trachea and root of left lung caseous and softening. One mesenteric gland (= bean) contained yellowish deposits	Left lung adherent rather firmly almost everywhere. Some yellow tubercles under parietal pleuræ, and at margin of left lung, base, and anteriorly. At lower part of upper lobe was a cavity (= walnut) with puriform contents; walls rugged and infiltrated with tuberculous material; some caseous nodules there; very little tubercle elsewhere in upper lobe and none in lower; some recent broncho-pneumonia in lower lobe. Right lung fairly normal; no tubercles found on section	No peritonitis; no ulcers of intestines	(Head not examined)	Natural	One grey tubercle of surface	Natural	The disease of glands at root of left lung, and the adhesions, would favour the deposit of tubercles and formation of cavity. The absence of these conditions probably explains the absence of similar changes in the right lung.

No. and initials.	Age.	Lymphatic glands.	Lungs and pleuræ.	Intestines and peritoneum.	Cranial cavity.	Liver.	Spleen.	Kidneys.	Remarks.
103 T. H. Acute tuberculosis	2¼	Glands at bifurcation of trachea (= filbert) caseous, softened. Mesenteric glands natural	Lungs non-adherent; no excess of fluid. Both lungs thickly studded with fine grey tubercles, especially in the upper lobes; no pneumonia	Peritoneum natural; intestines natural	Basic meningitis with tubercles	Large; a few grey tubercles	Large; a few grey tubercles	? A few tubercles	The meningitis probably determined the general tuberculosis by depressing the respiration and circulation.
104 T. H. Caseous mass in cerebellum; tubercles in one lung	11	Glands about both primary divisions of bronchi much enlarged. Caseous and puriform centres in some; greyish (? tubercular) section in others	Right lung extensively adherent to the parietes, and rather firmly so. Deposit of grouped greyish tubercles in upper part of lower lobe. Considerable area of lung tissue rendered solid thereby; no cavity. Left lung normal	Natural	Caseous deposit in cerebellum; no meningitis; hydrocephalus	Natural	Natural	Natural	The patient died from the effects of the cerebellar tumour. Had life been prolonged a little longer it is probable that a cavity would have formed in right lung
105 A. L. Phthisis	7	Submaxillary glands, each side, considerably enlarged; also at sides of trachea and about bronchi, all more or less caseating and softening. The gland at bifurcation of trachea large, soft, yellowish, but not actually caseous; slightly pigmented (? tubercles). One gland above right main bronchus converted into putty-like material enclosed in a sac; only fragments of gland tissue remained. Mesenteric glands much enlarged, caseous, and some softened	Both lungs slightly adherent at apices, and intimately studded with grouped grey and yellow tubercles. At extreme left apex there was a cavity (= walnut) filled with creamy puriform material, and smooth lined. No massing of yellow tubercles in either lung	Some old adhesions of great omentum; numerous ulcers of small bowel, with tubercles in their floors and under the peritoneum at their bases	?	A few scattered tubercles	Studded with grey tubercles	Tubercles in both cortices and bases of pyramids	The extensive disease of bronchial glands must have created great obstruction to return of lymph. ? The cavity was due to lymph-stasis, as it was smooth lined, not having the appearance of breaking down of lung-tissue.

106 F. Y. Tuberculosis; diphtheria	2½	Glands at root of right lung caseous and gritty. Those at bifurcation of trachea simply enlarged. Cervical glands enlarged, not caseous. Mesenteric glands all enlarged (some = filberts); caseous specks in some of them	Much yellowish, firm, plastic lymph glued the base of each lung to vault of diaphragm; no old adhesions. Both lungs studded with groups of grey granulations, notably in upper lobes and middle lobe of right lung; no yellow tubercles	Plastic lymph in patches and fringes deposited in peritoneal cavity. Numerous transverse ulcers of ileum, with tubercles under the peritoneum, at their bases	(Not examined; no cerebral symptoms)	A few small grey tubercles under capsule	No tubercles	No tubercles, except a softened caseous deposit in one of the pyramids	Deposit in middle lobe of right lung probably due to obstruction to lymph-current, caused by caseous gland at root.

NOTE.—Abstracts Nos. 1 to 81 are compiled from notes, taken by the author, of cases occurring at the Children's Hospital, Great Ormond Street, London. Most of them were under the care of Dr. Cheadle, Dr. Sturges, or Dr. Barlow. Some of the earlier cases were under Dr. Dickinson or Dr. Gee. The surgical cases were under Mr. Marsh, Mr. Owen, or Mr. Morgan. Some of the medical cases were under Dr. Lees, Dr. Abercrombie, or Dr. Money. Abstracts 82 to 106 were similarly derived from cases occurring at the Children's Hospital, Brighton, being under the care of Dr. Ewart, Dr. Mackey, Dr. Whittle, Mr. Leigh, or the author. I must express my indebtedness to the gentlemen named for kindly allowing me to make use of the reports for the present purpose.

In the above series *all* cases of caseous deposits or tuberculosis are included, only a certain few being discarded on the ground of incompleteness of reports. Case No. 7 has been included on account of its interest, but it does not properly belong to this category.

The table below shows an analysis of seventy of the cases quoted above, with reference to the order in which measles and whooping-cough occurred, but without regard to length of time preceding the onset of symptoms of disease. Direct causal relationship cannot therefore be definitely inferred. Nor is this possible in any case, as we are not acquainted with the state of the glands before the supervention of the measles and whooping-cough.

The remainder of the cases could not be included as the accounts of measles and whooping-cough were not sufficiently clear.

	Measles.	Whooping-cough.	Measles followed by whooping-cough.	Whooping-cough followed by measles.	Neither.	Totals.
Bronchial glands . . .	6	1	7	3	9	26
Mesenteric glands . . .	5	0	0	0	2	7
Bronchial and mesenteric	7	4	6	8	10	35
Neither	0	1*	0	0	1†	2
	18	6	13	11	22	70

* The glands near the trachea were caseous (No. 69).

† Case of tuberculosis of lungs, with some meningitis, ? tubercular (No. 14).

The nature of so-called "Basilar meningitis."

The Rolandic area of the brain must be subject to great functional activity during the early years of child-life, whilst this region of the cortex is developing. Excessive functional activity means excessive waste and proportional tax on the lymphatics of the part. These are presumably contained in the perivascular sheaths of the middle cerebral arteries, whilst a few accompany the branches of the anterior cerebrals. Now it is quite conceivable that the adjustment between physiological cell-action and absorption of waste-product by the lymphatics may be temporarily disturbed in this area, as for instance by a blow on the head. Under these conditions one can readily imagine how a retardation from overloading of lymphatics may arise, and that the bacillus of tubercle would find a congenial habitat. It seems to me that some such explanation, at any rate, accords best with the fact that tubercle is found in greatest abundance usually along the courses of the vessels named in so-called "basilar meningitis." With further regard to the pathology of the latter, I must confess that I have not yet been able to assure myself as to its being an inflammation at all. The morbid changes accord best, in my opinion, with the idea of lymph-effusion induced by weakening of the walls of the smaller arteries, and the blocking caused by the tuberculous granules. So far as I am able to judge, tubercle has no tendency, *per se*, to induce inflammation anywhere. Masses of greyish tubercle, which must have been forming many days, if not weeks, existed in the lungs of many of the cases quoted in the abstracts without any signs of pneumonia; and much grey tubercle was present in the peritoneum, in many cases, without any evidence of inflammation there. In "tubercular meningitis," which should perhaps be called "tubercular lymph-stasis of the pia mater," pus is very rarely seen, though the lymph may acquire a yellowish tinge and assume the character of puro-lymph. "Purulent meningitis" has quite a different pathology, and partakes probably of the nature of a true inflammation. It sometimes complicates inflammation of the serous membranes elsewhere in the body.

The nature of so-called "optic neuritis."

This is presumably not an inflammatory affection, but the result of distension with fluid of the sheath of the optic nerve. In this way the return of lymph from the choroid will be obstructed

and tubercles tend to form, though in some cases of choroidal tubercle no obvious changes in the disc, or meninges of the brain, can be detected, in which case they are comparable to disseminated miliary tubercles arising elsewhere in the last days of tuberculous disease of some organ. One would perhaps be justified in calling it "tubercular choroido-lymph-stasis" rather than "optic neuritis."

Atheroma. It appears to me probable that atheroma may originate in lymph-stasis. Scroll-like buffy markings* are common about the internal lining of the root of the aorta in young children dying from various forms of disease, but they are more markedly developed in diphtheria,† and such diseases as are attended by general enlargement of the mediastinal glands. I have seen this condition well marked in a case of mediastinitis with caseous glands. It will be seen that these are all conditions in which the return of lymph from the heart and great vessels would be hindered. Granulo-fatty changes in the heart-muscle may be one effect, though this is usually attributed to non-oxygenation. Probably both factors are at work.

Mechanical strain has been spoken of by some authors‡ as one of the factors in the causation of atheroma of the aorta, but the question which has arisen in my mind is whether lymph-stasis is not accountable for an initial weakening of the wall of the vessel. At any rate, we find that the scroll-like markings alluded to above occupy almost identical situations with those commonly affected by atheroma; and, as the former appear to be due to lymph-stasis as a predisposing factor, I think we are entitled, on logical grounds, to attribute to lymph-stasis a share in the causation of atheroma also. A careful examination of the mediastinal glands will perhaps decide the point in cases of atheroma, for I am not aware of any investigation of the kind having been made.

Fibroid degeneration of organs. As in the case of the lungs, fibroid changes in various other organs may be found, on careful inquiry, to be the result of lymph-stasis. We know that cirrhosis of the liver follows thickening of its capsule, in which case the superficial network of lymphatics

* Usually designated "simple fatty degeneration."

† *Vide* paper by the author, 'Brit. Med. Journ.,' July 16th, 1887.

‡ Wilks and Moxon, 'Pathological Anatomy;' and Rindfleisch, 'Pathological Histology.'

would be obliterated. No doubt irritating ingesta will often start a fibrosis at the peripheries of the lobules, but I suspect that a *permanent* fibroid change arises either from an inadequacy of the lymph channels, inherited or acquired, or else from the repeated flooding of the lymphatics with waste material which they are unable to remove, and which may, as in the case of the heart-muscle, account for the parenchymatous granulo-fatty changes as well as the interstitial cirrhosis. As the "choking" of the mediastinal glands appears to account in a measure for the former, so it may be found on careful inquiry that the portal glands are diseased in the latter.

Syphilis. The selective action of the syphilitic virus on the elements of the lymphatic system suggests that lymph-stasis may be secondarily engendered and account for some of the subsequent phenomena.

Specific eruptions. The exanthemata, together with syphilis, have seats of election with regard to their eruptions, which I think may be explained by reference to the parts primarily affected. Thus, scarlatina and syphilis attack the fauces early. This means increased work for the deep lymphatics. The lymphatics of the skin of the face meeting with those from the deep parts would be partially blocked in consequence, and a degree of lymph-stasis would result at the surface which would predispose the latter to attacks of the specific virus (probably a microbe). With the subsequent involvement of other deep organs the superficially related parts would be *pari passu* affected. At any rate, this theory accords as well with observed facts as any other I can offer as an explanation. Will it not account for the eruption in typhoid fever appearing usually on the abdomen, and at a time when the deep system of lymph channels would be most charged? Again, the early appearance of the measles eruption on the forehead may be determined by the still earlier ocular and nasal catarrh.

A similar course of reasoning may perhaps explain why a scarlatinal eruption sometimes complicates an attack of diphtheria The former also may predispose to the latter by inducing lymph-stasis. The proneness of whooping-cough to follow measles quickly may be also due to the latter having set up a lymph-stasis, in parts rendered congenial to the specific microbe of whooping-cough.

The action of certain remedies. The mode of action of certain remedies is still a matter of uncertainty. For instance, dry-cupping and blistering for deeply-seated inflammations may afford relief to pain by the effect they would have in withdrawing lymph from the superficial set of lymphatics, and so enabling the deeply-placed and related organs to discharge their waste material more freely. No regurgitation can take place however, as the channels, with the exception of the lacunæ and plexuses of origin, are supplied with numerous valves.

Rubefacients may act by stimulating the superficial blood-capillaries to absorb, and so relieve the lymphatics of some of their work.

Alcohol and other stimulants of the blood-capillary circulation probably exert much of their beneficial influence by similarly relieving the lymphatic system.

II.

As arising out of the foregoing inquiry and directly bearing on certain points discussed therein, I have instituted a second, which demonstrates how lymph-stasis may possibly enter as a factor in the causation of various diseases, according to the order in which measles and whooping-cough have attacked the patient at some previous time; and especially bringing out the fact that "whooping-cough preceding measles" is prone to be associated with "consumption in the family." This last circumstance possibly predisposes the individual to attacks of whooping-cough at an early age, but whooping-cough alone will specially tend to induce caseous deposits when it precedes measles, as it is then usually more severe in type. It is usually slight when it follows in the wake of measles, as is often the case. Nevertheless, measles followed by whooping-cough will probably be more prejudicial than measles alone. In other words, both the fact of "family predisposition to consumption" and the fact of "whooping-cough preceding measles," on account of their connection with lymph-stasis, are circumstances augmenting the liability to certain diseases.

The tables are compiled from reports I made of about 1300 cases admitted into the wards of the Children's Hospital, Great

Ormond Street, London, during the time that I officiated as Medical Registrar. I am particularly indebted to the various members of the staff of that hospital for the very kind way in which they placed the material at my disposal.

The ages of the patients mostly ranged from two to twelve years, but there was a certain proportion of younger children.

I endeavoured to make the histories as accurate as possible with reference to measles and whooping-cough and to the family history of consumption, believing that some diseases differ widely from others in their association with those particulars. No statement was accepted unless made by the parents or life guardian of the child.

It must be understood that it is not my purpose to demonstrate a definite causal relationship between the disease and what preceded so much as to record these circumstances among the antecedents, and to point out the manner in which certain of these antecedents are associated with each other.

For measles or whooping-cough may alone precede, whilst in other cases either may precede or follow the other, and each of these may or may not be associated with consumption in the family; or the patient may have contracted neither of these infectious diseases. The term "consumption in the family" embraces "consumption in the parents or grandparents, uncles or aunts." Cases of consumption in the brothers or sisters of the patients without other evidence of consumption were discarded, as the parents' statements were in many instances indefinite, such terms as "consumptive bowels" being made use of.

The manner in which these antecedents were associated with each other and with the 1303 cases of all kinds is shown in Table I, from which the following, among other points, may be elicited:

1. That 356 out of the 1303 cases were preceded by measles alone, whilst only 121 were preceded by whooping-cough alone.

2. That whooping-cough followed measles closely in 121 cases, whereas measles followed whooping-cough closely in only 12 cases.

3. That a much larger proportion of the cases of measles following whooping-cough was associated with a history of consumption in the family than where the reverse order obtained.

TABLE I.—*Analysis of cases of* **all** *kinds.*

	Consumption in the family.	No consumption in the family.	Totals of cases.
Measles alone	147	209	356
Whooping-cough alone	68	53	121
Measles followed by whooping-cough within one month	65	56	121
Measles followed by whooping-cough at a longer interval	100	87	187
Whooping-cough followed by measles within a month	10	2	12
Whooping-cough followed by measles at a longer interval	118	47	165
Neither measles nor whooping-cough	162	179	341
Totals	670	633	1303

TABLE II.—*Analysis of* **some** *of the more frequently occurring kinds of disease with regard to antecedent measles and whooping-cough.*

	Measles alone or followed by whooping-cough.	Whooping-cough alone, or followed by measles.	Neither measles nor whooping-cough.	Totals of cases.	Percentage of each approximately.		
Chronic peritonitis	26	7	0	33	80	20	0
Chorea	57	22	5	84	70	25	5
Rheumatism	50	18	7	75	65	25	10
Empyema	29	13	4	46	65	25	10
Diphtheria	27	11	13	51	55	20	25
Acute pneumonia	42	17	28	87	50	20	30
Eczema	15	4	13	32	50	10	40
Hip-joint disease	35	21	11	67	50	30	20
? Tuberculosis	21	14	6	41	50	35	15
Diphtheritic paralysis	15	11	7	33	45	35	20
Tuberculosis	39	29	26	94	40	30	30
Typhoid fever	8	8	3	19	40	40	20
Disease of knee-joint	20	20	11	51	40	40	20
Approximate average per cent.					55	25	20

Table II has been arranged to show how certain diseases varied with respect to the order in which measles and whooping-

cough attacked the patient, only those diseases being included that occurred with comparative frequency. Compare, for instance, chronic peritonitis with diphtheritic paralysis, the total number of cases observed being the same, viz. 33; but measles preceded whooping-cough in 80 per cent. of the former and in only 45 per cent. of the latter.

Further, observe under typhoid fever and disease of the knee-joint that the percentage for whooping-cough preceding measles is higher than under any of the other headings. In many cases the percentage of "neither measles nor whooping-cough" is high, probably owing to the early age of the patients, *e. g.* eczema and tuberculosis.

Table III treats of strumous affections. Here the analysis is made so as to particularise the seat of the disease. It has reference to the history of consumption in the parents or grandparents alone.

The total number of strumous affections equal 205. Of these, 76 had a definite history of consumption in the parents or grandparents (31 in the former and 45 in the latter). In more than two-thirds of the grandparents the consumption was on the maternal side. In only one case was there a history of consumption in both grandparents, whilst in no case was there a history of consumption in both parents. Of the remaining, viz. 129, where there was a history of no consumption in the parents or grandparents, a much larger number of cases were preceded by whooping-cough alone as compared with the number where there was consumption. This is probably accounted for by the fact, alluded to above, that whooping-cough occurring previously to measles is usually severe, and therefore presumably more prejudicial to the patient. On this account whooping-cough may be capable of inducing strumous affections, independently of family predisposition, and the number of cases would naturally tend to be raised.

In 24 cases only, out of the total of 205, was there a history of neither measles nor whooping-cough, together with no history of consumption in the parents or grandparents.

In the same table it will be seen, on comparing the numbers under the several headings, hip, knee, &c., that in the whooping-cough division the highest number (10) falls under knee-joint disease, tending to show that this affection is specially apt to

TABLE III.—*Strumous disease of the bones and joints, in relation to antecedent measles and whooping-cough and to family predisposition to consumption.*

	Measles alone.					Whooping-cough alone.					Measles followed by whooping-cough.					Whooping-cough followed by measles.					Neither measles nor whooping-cough.					Totals.		
	Part affected.					Part affected.					Part affected.					Part affected.					Part affected.							
	Hip.	Knee.	Spine.	Ankle.	Other parts.	Hip.	Knee.	Spine.	Ankle.	Other parts.	Hip.	Knee.	Spine.	Ankle.	Other parts.	Hip.	Knee.	Spine.	Ankle.	Other parts.	Hip.	Knee.	Spine.	Ankle.	Other parts.			
I. History of consumption—																											
A. In parents—																											
a. Father . .	...	...	...	...	3	...	...	1	...	...	2	...	...	1	...	1	3	1	...	...	2	2	1	...	1	=18	31	Consumption in parents.
b. Mother . .	...	1	...	...	1	...	...	1	...	...	...	1	1	...	1	3	...	...	...	1	1	1	...	...	1	=13		
c. Both . .	...	...	...	...	...	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	= 0		
B. In grandparents—																											
a. Paternal . .	1	...	...	...	1	1	...	...	...	...	...	...	2	...	1	1	2	...	...	...	...	1	...	...	2	=12	45	Consumption in grandparents.
b. Maternal . .	1	3	1	...	...	...	1	...	...	1	5	2	1	...	5	4	2	1	...	1	1	1	1	1	...	=32		
c. Both . .	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	= 1		
	2	4	1	...	5	1	1	2	...	1	7	3	5	1	7	9	7	2	...	2	4	5	2	1	4			
Totals=	12					5					23					20					16					=76.	Total of consumption.	
II. No history of consumption in parents or grandparents .	14	4	3	5	4	6	9	2	...	6	12	9	8	...	9	5	3	1	...	5	7	6	4	...	7			
Totals=	30					23					38					14					24					=129.	Total of no consumption.	
Totals of strumous affections=	16	8	4	5	9	7	10	4	...	7	19	12	13	1	16	14	10	3	...	7	11	11	6	1	11			
	42				+	28				+	61				+	34				+	40					=205.		

arise after whooping-cough alone; whilst in the measles division the highest number falls under hip disease. Notice also that 5 out of a total of 7 cases of ankle-joint disease were preceded by measles alone, with history of no consumption in parents or grandparents.

A curious fact is also elicited from this table, where it will be seen that the number of cases of whooping-cough preceding measles = 62, and of measles preceding whooping-cough = 103; whilst the number of instances of consumption in the parents or grandparents = 60 (76 — 16), and the number of instances where there was no such history = 105 (129 — 24), so that the ratios very nearly correspond.

In Table IV, which concerns chorea and acute rheumatism, a similar kind of relationship to that just mentioned can be detected, the numbers being closely similar. Moreover, seeing that the figures under corresponding headings of chorea and rheumatism are almost identical, additional evidence is, I think, afforded of the two affections being closely allied to each other.

Table V is an analysis with reference to chronic or recurring bronchial or intestinal catarrh. They occurred either alone or in conjunction with other diseases. In this particular inquiry the catarrh in many cases preceded the measles or whooping-cough. When both bronchial and intestinal catarrh existed the case was placed in one or the other division according as the bronchial or intestinal character predominated.

1. The table serves to illustrate the association of consumption in the parents or grandparents with a susceptibility to such catarrhs in the offspring, but more especially in the case of bronchial catarrh.

2. Consumption occurred in a much larger proportion of cases among the grandparents than among the parents. This may be partly, though I think not wholly, accounted for by the fact that the parents had not reached the age of the grandparents in many cases.

3. Under bronchial catarrh it will be seen that when whooping-cough preceded measles the percentage of consumption was particularly high, compared with Table V, C.

I am aware that much that has been set forth in these pages is speculative and hypothetical, but so are many other explana-

TABLE IV.—*Chorea and acute rheumatism compared.*

	Measles alone.	Whooping-cough alone.	Measles followed by whooping-cough.	Whooping-cough followed by measles.	Neither measles nor whooping-cough.	Totals.
A. Chorea* Consumption: 1. Parents	2	0	5	4	2	13
2. Grandparents	2	0	3	1	0	6
No consumption in parents or grandparents	18	4	27	13	3	65
Totals =	22	4	35	18	5	84

	Measles alone.	Whooping-cough alone.	Measles followed by whooping-cough.	Whooping-cough followed by measles.	Neither measles nor whooping-cough.	Totals.
B. Acute rheumatism† Consumption: 1. Parents	5	0	4	3	1	13
2. Grandparents	1	0	2	0	0	3
No consumption in parents or grandparents	13	5	25	10	6	59
Totals =	19	5	31	13	7	75

* Including cases of chorea with or without rheumatic heart disease.

† Including cases of acute rheumatism with or without heart disease, but excluding cases of chorea.

TABLE V.—*Bronchial and intestinal catarrh in relation to antecedent or subsequent attacks of measles or whooping-cough, and to family predisposition to consumption.**

		Measles alone.	Whooping-cough alone.	Measles followed by whooping-cough.	Whooping-cough followed by measles.	Neither measles nor whooping-cough.	Totals.
A. History of chronic or recurring bronchial catarrh	Consumption—						
	1. Parents	6	2	11	8	7	34
	2. Grandparents	15	6	19	22	23	85
	No consumption in parents or grandparents	44	17	55	21	30	167
		65	25	85	51	60	286
B. History of chronic or recurring intestinal catarrh	Consumption—						
	1. Parents	8	2	4	0	5	19
	2. Grandparents	3	2	6	0	14	25
	No consumption in parents or grandparents	23	11	11	15	19	79
		34	15	21	15	38	123
†C. History of no bronchial or intestinal catarrh	Consumption—						
	1. Parents	0	0	0	2	3	5
	2. Grandparents	4	4	8	4	6	26
	No consumption in parents or grandparents	27	8	20	14	31	100
		31	12	28	20	40	131

* In Tables III, IV, and V, "consumption in parents" includes "consumption in grandparents also, in some instances;" but "consumption in grandparents" does not include cases of consumption in parents.

† Inserted for sake of comparison with A and B. By doubling all the figures in C an approximate comparison may be readily made with those in A.

tions of the phenomena in question. My personal observations, however, lead me to believe that lymph-stasis is a real factor in the production of many common forms of disease.

APPENDIX.

THE following abstracts of twelve consecutive cases have a somewhat different arrangement as regards the grouping of lesions to those already quoted in the Thesis.

Moreover, particular attention has been given to the lymphatic glands related to the liver, spleen, and kidneys, as formerly it was mainly directed to the bronchial and mesenteric sets. The evidence appears to point more conclusively to the view that the occurrence of tubercles in various viscera is largely determined by structural changes in the associated sets of lymphatic glands.

The author finds that in at least 15 per cent. of all cases of tuberculosis there is an absence of true *caseation* of lymphatic glands, whilst many of those that are caseous can scarcely be said to be softening. In many cases the caseous material will be found encased in firm fibrous tissue. The softening process may possibly be the result of imbibition of fluids, which are apt to permeate the tissues when the circulation of blood is failing. Consequently, the author has further reason for thinking that this change in the lymphatic glands is often merely a conjoint effect, not a causative agent in the production of general tuberculosis.

No. and initials.	Age.	Lungs, pleuræ, and lymphatic glands of chest.	Intestines, peritoneum, and mesenteric glands.	Liver and glands.	Spleen and glands.	Kidneys and glands.	Cranial cravity.	Remarks.
1 E. H. Acute tuberculosis; meningitis	4	Left lung slightly adherent externally to chest wall, about its centre; also some old adhesions of inner part of right apex to external aspect of old caseous gland mentioned below. Right apex contained some softening yellow tubercles, whilst its deeper parts presented fibroid changes. Both lungs studded with yellowish-grey grouped and disseminated grey tubercles. The latter were more abundant at right apex than elsewhere. Some recent broncho-pneumonia. Gland adherent to lower end of trachea, on right side, much enlarged, caseous, and softening. That at bifurcation of trachea considerably enlarged, with yellowish specks (? tubercles). All the other bronchial and mediastinal glands enlarged; yellowish specks at peripheries	No peritonitis. No peritoneal tubercles, except a few where spleen adherent. A few roundish, punched-out ulcers of mucous membrane of upper part of ileum, and a well-defined ulcer (=sixpence), thickened base and raised edges, bestudded with minute grey tubercles, about one inch above ileo-cæcal valve. Peyer's patch immediately above valve appeared healthy; 3 small roundish tuberculous ulcers of caput coli. Mesenteric glands all enlarged (pea to hazelnut), especially group related to lowest part of ileum; none softening	Liver slightly enlarged. Numerous greyish tubercles under capsule, especially near portal fissure. Lymphatic glands much enlarged, yellowish material infiltrating them, softening. Pyloric glands in similar condition	Spleen somewhat enlarged; disseminated groups of greyish tubercles. Gland at hilus (=split pea) caseous throughout	Both kidneys somewhat enlarged; little wedge-shaped areæ at peripheries (? tubercles); at hilus of each was a roundish lymphatic gland, caseous throughout (=hempseed)	Much lymph effused at interpeduncular space, and along courses of middle cerebral arteries. In Rolandic areæ it had acquired a yellowish tinge. Caseous deposits, cerebellum and summit of transverse fissures. No disseminated grey tubercle could be discovered (examined microscopically)	Deposit of yellow tubercle and fibroid changes at right apex were probably induced by obstruction to return of lymph, as glands were most diseased on that side. Note recent tubercles in abdominal viscera, in each case associated with caseous glands. The changes in meninges of brain are explicable by the theory of acute lymph-stasis. The caseous deposits may have been induced by local obstructions to return of lymph.
2 C. A. Caseating mesenteric glands;	5	Pleuræ healthy; no excess of fluid. Lungs superficially insufflated; recent pulmonic consolidation, the deeper patches undergoing a grey change. No tubercle or caseation in either lung. Bronchial glands all	No peritonitis. No tubercles of peritoneum. Summits of veboulæ conniventes injected; no ulceration, which was diligently sought for. Mesenteric glands,	Liver pale, enlarged, and very fatty. Portal glands	All healthy	All healthy	Not examined (no cerebral symptoms)	This was a life cut short by an intercurrent disease (whooping-cough). The caseous gland, associated with jejunum, was situate

pertussis; broncho-pneumonia		much enlarged; purplish red, and soft on section; not caseating or fibroid	all somewhat enlarged, especially jejunal set, many of which had buffy deposits at their peripheries, and one (=filbert) was caseous throughout; chyliferous vessels between this gland and bowel were distended and tortuous	seemed healthy				a considerable distance from the gut. The glands associated with lowermost part of ileum were not much altered.
3 E. S. Tuberculosis; cavities in one lung	16 mos.	Fibrous adhesions of right lung to chest wall, about centre of lower lobe posteriorly. A large cavity, with ragged walls, in portion of lung subjacent thereto. It communicated with other cavities, and there were numerous isolated smaller cavities in same lung. Some recent and some chronic broncho-pneumonia in right lung; a few groups of greyish tubercles in lower lobe. Left lung non-adherent; no cavities; numerous groups of tough greyish tubercles scattered throughout. Mediastinal glands all enlarged; one of them, below right main bronchus, wholly transformed into firm yellowish caseous material (=peach-stone); the others contained caseous matter; none softening; one gland adjacent to lower end of trachea, on right side (=filbert), in similar condition. A small, firm, yellow deposit (? gland) at root of right lung	No peritoneal tubercle. No adhesions. Numerous ulcers, with tubercles in their floors, in various parts of small bowel, and a few at commencement of large intestine. Mesenteric glands all enlarged, together with glands in vicinity of pylorus and lumbar set. They all contained firm yellowish deposits; the smaller ones showing the change commencing at their peripheries, immediately beneath their capsules	Liver not fatty; a few scattered greyish-yellow tubercles in its substance and beneath capsule. Portal glands enlarged; firm yellowish deposits	Spleen somewhat enlarged; a few greyish-yellow tubercles in its substance. Glands enlarged; firm yellowish deposits	Kidneys showed a few scattered yellowish tubercles under their capsules. Glands at hilus of each somewhat enlarged, and firmer than usual	Not examined (no cerebral symptoms)	The chronic changes, with excavation in right lung, are probably the result of lymph-stasis induced by the advanced disease in glands, notably present on side of destructive lesions. Note condition of sets of lymphatic glands related to abdominal viscera respectively.

No. and initials.	Age.	Lungs, pleuræ, and lymphatic glands of chest.	Intestines, peritoneum, and mesenteric glands.	Liver and glands.	Spleen and glands.	Kidneys and glands.	Cranial cavity.	Remarks.
4 E. G. Basic meningitis; acute pneumonia; no tubercle	5	Left lung almost universally adherent to chest-wall by firm lymph; numerous areæ of recent broncho-pneumonic consolidation. Right lung non-adherent; no pneumonic consolidation. Gland below right main bronchus (=filbert) infiltrated almost throughout, with firm whitish material (not caseous)	All healthy	All healthy	All healthy	All healthy	Pia mater in both Sylvian fissures thickened; convolutions there glued together rather firmly; increase of fluid in ventricles; commissure softened. Tympanic cavities normal	The case does not properly belong to this category, as there were no tubercles or caseous deposits, though one gland was apparently undergoing a chronic change. Note the changes in pia mater. Death was due to broncho-pneumonia chiefly.
5 R. L. Tubercular peritonitis; ulceration of colon	12	Both lungs somewhat adherent to chest-wall; adhesions old, but easily broken down. Some deposit of yellow tubercles in intercostal spaces, especially in vicinity of adhesions. Firm grey tubercles scattered throughout both lungs. Gland at bifurcation of trachea (= walnut), caseous throughout, and mottled with pigment. Similar condition of glands about lower end of trachea and at primary divisions of bronchi, notably on the right side	Abdominal organs matted together by old adhesions. Their peritoneal surfaces studded with firm grey and yellow tubercles. Dilatation (with fungoid degeneration of walls) of cæcum and sigmoid flexure of colon. Small bowel not altered. Mesenteric glands considerably enlarged with yellowish deposits; none actually caseating	Lobules of liver mapped out by pale greyish lines (? cirrhotic), not amyloid. Capsule thickened. No tubercles in its substance. Glands contained yellowish deposits	Spleen large and rather soft. A few greyish tubercles. Glands enlarged slightly	Kidneys large, their cortices mottled, grey, and red. No tubercles	Not examined (no cerebral symptoms)	The pleuritic and peritoneal adhesions would probably act as predisposing factors in the development of tubercles by inducing lymph-stasis. Note the absence of ulceration of small bowel with well-marked changes in mesenteric glands. The latter, however, had not advanced to caseation, so that probably their functions were not entirely arrested.
6 A. C. Tabes mesenterica;	18 mos.	No pleuritic adhesions; no tubercle under pleuræ attached to parietes. Both lungs studded throughout with recent tubercles; tendency to group-	Some peritoneal adhesions; no general peritoneal tubercle. Numerous ulcers in small bowel; tubercles in	All healthy	All healthy	All healthy	Considerable growth of grey tubercle in pia mater, especially in	The mesenteric glands were presumably the seat of primary lesion. The tuberculosis selected

acute tuberculosis		ing in upper lobes. Patches of recent pneumonia in both lungs, but more advanced in centres of upper lobes than elsewhere. Bronchial and mediastinal glands somewhat enlarged, congested, and rather soft, otherwise they presented nothing abnormal in appearance	their bases. Extensive ulceration of lowermost Peyer's patch in close juxtaposition with a mass of caseous glands; all the other mesenteric glands enlarged, caseous, and many softening. Colon and glands appeared quite healthy				Sylvian fissures, and notably on the right side. The lymph here had acquired a yellowish tinge, and was more abundant than elsewhere. Caseous deposits in Sylvian fissures and under aspect of cerebellum	those organs probably which were most susceptible. Note the absence of tubercles in liver, spleen, and kidneys, the lymphatic glands of which appeared to be quite healthy.
7 A. W. Chronic pneumonia; tuberculosis; hæmoptysis	3½	Left pleural cavity obliterated by old adhesions. Some inspissated lymph in patches under parietal layer of pleura. Upper lobe of left lung solid, fibroid, and showing bodies like tubercles on section. They were quite firm and grey. Lower lobe firmer than normal; contained some air; mottled red on section, chiefly owing to blood in air-vesicles. Small cavity at bifurcation of a bronchus, result of softening gland (?); branch of pulmonary artery ulcerated at this spot, causing fatal hæmoptysis. Right lung non-adherent. This lung and lower lobe of left contained numerous deposits of firm grey tubercles. No pneumonia of right lung. Mediastinal and bronchial glands of left side much enlarged, caseous, and softening. Those on right side and at bifurcation of trachea not caseous, but somewhat enlarged and very firm, evidently fibroid. Glands next lower end of trachea on right side, much enlarged, caseous, and softening	Omentum natural. Liver and spleen adherent to under surface of diaphragm. In this situation were large, flattened, irregularly-shaped, yellow tubercles. A few pedunculated yellow tubercles springing from folds of mesentery. Intestines natural, except one injected Peyer's patch of jejunum with a circular ulcer in which no tubercles viewed. This was in relation with a mesenteric gland (= hazel-nut), firm, pale grey, with one or two yellowish specks. The other mesenteric glands appeared quite healthy	Liver somewhat enlarged; grey and yellow tubercles under its capsule, and numbers of the former throughout its substance. Portal glands (some of them = two peas) firm, pale grey, with yellowish specks	Capsule thickened. The organ was about twice its natural size, and very soft; one or two small yellowish tubercles in its substance. Glands at hilus somewhat enlarged	No tubercles in kidneys. The glands were about the size of hemp-seeds, and appeared quite healthy	Not examined (no cerebral symptoms)	The lymph deposits and fibroid changes in left lung may be attributed to arrest of lymph stream, the result of disease in bronchial glands of that side. Note the distribution of disease in the other viscera in regard to changes in the lymphatic glands. (Case reported by Dr. Mackey, 'Brit. Med. Journ.,' March 29th, 1890.)

No. and initials.	Age.	Lungs, pleuræ, and lymphatic glands of chest.	Intestines, peritoneum, and mesenteric glands.	Liver and glands.	Spleen and glands.	Kidneys and glands.	Cranial cavity.	Remarks.
8 A. F. Caseous mesenteric glands; ulceration of intestine; localised peritonitis	14	Lungs non-adherent. Deposit of softening caseous material in left upper lobe near surface. This caused a local puckering, and extended inwards towards root of lung. The glands in this situation were pigmented and firmer than normal, somewhat enlarged, not caseating. The lung-tissue around them presented some fibroid changes. In vicinity of the caseous deposit were small, firm, grey tubercles, and a few existed in other parts of the lungs. Bronchial glands in other parts were pigmented and somewhat enlarged	Extensive ulceration of lower part of ileum and of caput coli. Coils of bowel firmly coherent at hypogastrium; old perforation at base of vermiform appendix; mesenteric glands in vicinity enlarged, caseous, softening. Lumbar set similar. Other mesenteric glands and parts of bowel healthy. A few firm yellow tubercles in omentum and between coils of bowel. No tubercles seen near the ulcers	Liver much enlarged; amyloid; ? one tubercle. Portal glands somewhat enlarged, otherwise healthy	Spleen large, amyloid; no tubercles. Glands healthy	Kidneys ? amyloid; no tubercles	Not examined (no cerebral symptoms)	The intestinal ulceration may have resulted simply from the interference with return of lymph as there was no evidence of tubercle taking part in the destructive process. Though bronchial glands presented little obvious change there was evidence of their defective power of absorption in the caseous deposit in upper lobe of left lung.
9 G. P. Tuberculosis; tabes mesenterica; ulceration of intestines	15 mos.	Lungs non-adherent, except a rather firm band of fibrous tissue, causing adhesion of outer part of right apex. Much greyish tubercle in both, especially in upper lobes and middle lobe of right. Tubercles mostly grouped. Some fibroid induration of deeper parts, and some patches of recent pneumonia. Bronchial glands all much enlarged; some caseating, but not softening; most of them were	No peritonitis; no general deposit of tubercle only where liver was adherent to diaphragm. They were of the yellow variety and flattened. Small intestines non-adherent; a few well-marked tuberculous ulcers; one just above the ileo-cæcal valve had caused perforation into cellular tissue. Vermi-	Liver adherent to diaphragm; a few bile-stained tubercles in its substance. Glands in portal	All healthy	Caseous, softening deposit (? gland) between pelvis, and a pyramid of right kidney; no other changes	Not examined (no cerebral symptoms)	It was evident from the appearances at the post-mortem that the ulcers had progressed *pari passu* with the disease in the associated lymphatic glands, and it was likewise proved that the glandular affection preceded ulceration, in one in-

		of a yellowish-grey colour on section. Many glands in anterior mediastinum considerably enlarged, but not otherwise changed	form appendix dilated and ulcerated. A few small tuberculous ulcers in ascending colon, their size being proportionate to extent of disease in lymphatic glands, one of the glands, being only slightly affected, corresponded to a little patch of simple injection of mucous membrane. Mesenteric glands all much enlarged, caseating; not softening; most advanced near lower end of ileum, where the ulceration was greatest	fissure somewhat enlarged, not caseating. Group of glands near head of pancreas enlarged and indurated		observed		stance at least, as only a little reddening of the mucous membrane existed whilst the gland was somewhat enlarged, and contained a little yellowish deposit.
10 M. W. Tuberculosis; hydrocephalus	14 mos.	No adhesions of lungs. No tubercles under parietal layer of pleuræ. Some firm, grey, pigmented tubercles scattered through upper lobes of lungs; yellow, mostly discrete, tubercles in that part only of left lung situate between the surface, and a much softened caseous gland at its root. The other bronchial glands, and those next the lower end of trachea, were much enlarged and caseous	No tubercle in great omentum. Some recent tubercle in gastro-splenic omentum. No adhesions of intestines or of liver or spleen to diaphragm. No ulcers of intestines. Mesenteric glands mostly enlarged, not caseous, with yellowish deposits at their peripheries, especially those related to jejunum	In substance of liver, and under its capsule, some greyish and yellow tubercles. Portal glands somewhat enlarged, with yellowish deposits	Considerable deposit of yellowish tubercles. Splenic glands somewhat enlarged and yellowish at their peripheries	All healthy	Recent lymph and minute grey tubercles at commencement of both Sylvian fissures. A deposit of softening yellow tubercle, on summit of transverse fissure, obstructing iter, and no doubt causing much of the dilatation of lateral ventricles	Note the growth of yellow tubercles in area of lung, where there was reason to believe the lymph-stream was very considerably obstructed.

No. and initials.	Age.	Lungs, pleuræ, and lymphatic glands of chest.	Intestines, peritoneum, and mesenteric glands.	Liver and glands.	Spleen and glands.	Kidneys and glands.	Cranial cavity.	Remarks.
11 J. L. Tuberculosis; caseous deposits in brain; meningitis; athetosis	18 mos.	No tubercle under parietal layer of pleura. Lungs non-adherent; no pneumonia; both studded with grey tubercles, especially at right apex, which was considerably puckered, and contained near the surface one or two yellow tubercles (=peas), not softening. Some fibroid changes in neighbouring lung-tissue, and notably around the caseous glands at the inner part of upper lobe. Gland next the lower end of trachea on right side, much enlarged, caseous, and softened. The other bronchial glands were somewhat enlarged, and contained yellowish specks; not caseating	All healthy	All healthy	Spleen somewhat enlarged, firm, studded with very minute grey tubercles. Glands at hilus not obviously affected	All healthy	Basic meningitis with recent tubercles in Sylvian fissures, caseous deposits, softening (= Barcelona nuts) in pons, cerebellum, and right corpus striatum. The last was located in the lenticular nucleus, and abutted on the inner end of internal capsule. It did not appear to invade the brain substance, being merely imbedded in it	Note growth of yellow tubercles in lungs in association with caseating glands. Athetosis was observed a few days before death involving the left upper extremity, especially the hand. It was slight, but fairly persistent.
12 A. D. Tabes mesenterica; ulceration of intestines	18 mos.	No pleuritic adhesions. No tubercle under pleuræ. Lungs normal, except one fine grey tubercle at surface of upper lobe of left. Bronchial and mediastinal glands appeared to be quite healthy, except one, below right main bronchus, which was slightly enlarged,	No general deposit of tubercle in peritoneum; only a few, of chronic yellow variety, at under aspect of diaphragm, on the right side, and between coils of intestine, where coherent. Several contracting ulcers of	Liver firmly adherent to diaphragm; capsule ? thickened; stripped	Spleen rather more firm than usual; otherwise normal; no tuber-	All healthy	Not examined (no cerebral symptoms).	There was no contraction of the mesentery attaching the ileum, so that the glands related to the lowermost portion of the latter were separated from it by a short inter-

	and contained a small yellowish deposit at one end (? tubercle)	jejunum, the mesenteric glands related to which were much enlarged, fibroid, with caseous deposits (none softening); massed together. No ulcers of ileum; the glands related to it being much less changed, and not massed together. Colon presented several small contracting ulcers, which were, in every instance, in close juxtaposition to enlarged and more or less caseous lymphatic glands	off readily. No tubercles in its substance. Glands at hilus healthy	cles. Glands at hilus appeared quite healthy			val. This was not the case with respect to the colon, where the diseased glands were close to the gut. This fact will perhaps explain why there was no ulceration of ileum, but the glands related to the latter were not altered to the degree of those connected with jejunum or colon.

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