ABSTRACT OF

An Address

ON

THE PREVENTION OF PHTHISIS, WITH
SPECIAL REFERENCE TO ITS NOTIFICATION
TO THE MEDICAL OFFICER
OF HEALTH.

*Being an Introduction to a Discussion on the Subject at a
Meeting of the Incorporated Society of Medical
Officers of Health on Jan. 13th, 1899,*

By ARTHUR NEWSHOLME, M.D.,
F.R.C.P. LOND.,

MEDICAL OFFICER OF HEALTH OF BRIGHTON; EXAMINER IN STATE AND
PREVENTIVE MEDICINE TO THE UNIVERSITIES OF LONDON
AND OXFORD.

NATURE OF TUBERCULOSIS.

GENTLEMEN,—Our views as to tuberculosis have been fundamentally changed by the discovery of Koch's bacillus tuberculosis. Tuberculosis having been shown to be an infective disease it is natural to jump to the conclusion that it is spread by direct or indirect personal infection. This is not necessarily the case. Tetanus is an infective disease the contagion of which is widely present in the soil but it is not communicable except under the most unusual conditions. Rheumatic fever, again, is an infective disease which is ordinarily non-communicable. The evidence of such pioneers as Cornet, Niven, and Ransome and the gradually accumulating evidence of other observers makes it quite clear that under certain conditions phthisis is actively infective.

The following cases taken from my annual report for 1894 are illustrations of similar facts which although they may singly be explained as coincidences force one to the conclusion that infection is at work when we remember that similar cases occur time after time in particular houses among members of different families.

A woman, aged 40 years, died from phthisis. She had been married twice, both husbands having died before her from phthisis. The history indicated that she had probably acquired the disease from her first husband and had given it to her second husband, in whom it ran a more rapid course than in herself.

A man, aged 47 years, died from phthisis in October, 1894, after an illness of several years. His daughter who helped to nurse him died in January, 1894, from phthisis.

On Jan. 19th, 1894, a boy, aged eight years, died from phthisis, a sister having succumbed to the same disease in December, 1891. On Jan. 14th, 1894, a lodger's child, aged 12 months, who had lived in the house since his birth, died from tuberculous meningitis.

We need in the next place to differentiate between diseases which are infective to all and diseases which are infective only to a minority. Tuberculosis undoubtedly comes under the latter category. The difference in incidence of infection between tuberculosis and such diseases—such as diphtheria, enteric fever, and scarlet fever—is simply one of degree. In my own family there has been a complete immunity from scarlet fever of every member during three generations notwithstanding frequent exposures to the disease.

It is true, as urged by the late Professor Kanthack, that a preponderant proportion of the population enjoy immunity from phthisis, but an appeal to pathological anatomy shows that a very large proportion of the population dying from other diseases has in the lungs what may be described as the scars resulting from a successful fight against phthisis, while the national statistics show that between the ages of 15 and 55 years more than one-fourth of the total deaths from all causes are due to phthisis, no account being taken of other tuberculous diseases. We must set against the fact that phthisis is infective to a minority of the population only the fact that it is infective for a prolonged period. The lesser intensity of infection is probably more than counterbalanced by its longer duration. The breath of the phthisical patient being free from infection it is evident that in seeking for means of preventing the disease we must have regard to (1) the infectious discharges from the patient, especially his desiccated sputa, and (2) the personal and environmental circumstances which favour the origin of phthisis.

No. 3936.

If we assume for a moment that the contagion of phthisis has no extra-corporeal existence it is evident that we might faintly hope to annihilate the disease by strictly isolating all phthisical patients and destroying their discharges, though our experience of such diseases as small-pox (apart from vaccination) would sober any too sanguine expectations. In practice segregation of the phthisical patient, except where it is voluntarily undertaken in the interest of the patient, is entirely out of the question. Voluntary isolation may be recommended in two directions:—

1. Of the patient himself, when the home conditions are unfavourable to his recovery, with a view to securing his cure in a well-organised sanatorium.

2. The relatives who are particularly prone to fall victims may be removed from the home in which the patient is being treated or has been treated with a great increase of the probability of their escape from the family disease.

It is well to recognise the fact that before phthisis is diagnosed the patient has commonly been expectorating myriads of tubercle bacilli and that consequently attempts to destroy infective material derived from the patient can have only a partial and limited success. This consideration has been urged as the standard argument against notification of cases of phthisis and the precautionary measures which would follow as the result of such notification. Such reasoning is somewhat short-sighted. The healthy occupants of a phthisical home may be compared to a city which is the subject of a protracted siege in which the combined effects of arms, starvation, and depressing emotion are at work. The inhabitants of such a city may escape with but little damage if the siege is raised at a comparatively early period, but they succumb if it is protracted. Similarly the healthy members of a phthisically invaded household may be able to withstand infection if precautionary measures are begun as soon as the nature of the disease is detected and are continued thereafter, but they finally fall victims to the repeated doses of infection if a fatalistic inertia is allowed to prevail and no efficient precautions are taken.

THE SAPROPHYTIC QUESTION.

The question of the possible saprophytism of the tubercle bacillus raises another range of difficulties. Ransome and others have shown that the tubercle bacillus can live on artificial media and even on wall-papers at the ordinary temperature of certain rooms. This being so, and there being presumably a large stock of tubercle bacilli in progress of development in the incubating chambers of nature, why trouble to destroy the tubercle bacilli discharged by each patient? We may, however, reasonably doubt the saprophytism of the tubercle bacillus except to the limited extent that it manages to retain a slender tenure of life under certain extremely favourable extra-corporeal conditions. The evidence of protracted saprophytism in diphtheria and enteric fever (and I believe also in scarlet fever) is much stronger than in the case of tuberculosis. And yet, although the saprophytic stage of life of the contagia of diphtheria and enteric fever indefinitely multiplies their possibilities of infectivity, these diseases remain compulsorily notifiable, nor do I anticipate that the Local Government Board will recommend their removal from the list of diseases thus notifiable.

[Dr. Newsholme then pointed out that the saprophytic bogie idea was likely to do much mischief unless relegated to its proper place. Contagion was really the source of trouble and hygienic measures must be directed towards cleanliness, light, ventilation, and against damp and access of ground air.]

It remains true, however, that the prevention of phthisis is concerned largely if not chiefly with the personal and environmental conditions which favour its origin. Now what are the chief predisposing causes of phthisis? Without attempting an exhaustive enumeration the following are probably the most important: (1) the habitual breathing of re-breathed air; (2) dusty occupations; (3) dampness and darkness of the dwelling; and (4) chronic alcoholism. The prevention of alcoholism is outside the ordinary scope of preventive medicine. Its importance, however, deserves a passing notice.

SANITARY AUTHORITIES AND PREVENTIVE MEASURES.

It will be argued that sanitary authorities (local or central) already have power under existing laws to diminish the operation of respiratory impurities and industrial dust and, possibly to a less extent, of damp and dark houses. That is a plausible opinion which will probably continue to find favour with those who have no practical experience

of local sanitary administration, but it will not bear critical study. Even supposing that there are ample legal enactments against overcrowding and dust it must be admitted that the knowledge of a case of phthisis in connexion with overcrowding or a dusty occupation will enormously strengthen our hands in securing the adoption of the necessary remedies. Many nuisances cannot now in many districts be remedied because support is not obtained from the sanitary authority or the magisterial bench. Would not a medical certificate that a case of phthisis had occurred in the house where the nuisance was found turn the balance in favour of reform?

It is not true, however, that present enactments cover the entire requirements of the case. The knowledge of cases of phthisis would give immense leverage in securing the removal of conditions of defective sanitation which we know to favour phthisis but which cannot at present be reached except by judicious persuasion. Take, for instance, the question of enforcing the provision of a staircase window where none now exists and where its absence means blocking of what ought to be the main channel of air and light to the house. In Brighton we have during 1898 secured the insertion of such staircase windows in 126 houses which were previously without them and 81 are now under notice but it would have been extremely difficult to enforce these notices had they been contested. Similar remarks will apply to the enforcement of damp-preventing structural alterations, of windows which can be opened top and bottom, and other arrangements for ventilation, and of notices to remove and destroy wall-papers in rooms where a case of phthisis has been nursed for a long time. It will be argued that information as to the above and allied defects could be obtained apart from notification of cases of phthisis in the course of the house-to-house inspection which is carried out in the majority of districts. This statement implies deficient knowledge of the conditions under which these visits are made. Even in well-organised districts a house is seldom inspected oftener than once a year and it must be evident that if we knew of a case of phthisis in a house immediate cognisance could be taken of and action adopted in respect of conditions favouring phthisis which under other circumstances would probably be delayed for many months and which might have to be entirely omitted in the present state of the education of the public. Our leverage in sanitary operations would be enormously increased if a considerable proportion of the cases of phthisis were notified. Quite apart from the adoption of special precautionary measures against infection the localisation and remedying of house defects as to cleanliness, crowding, and dampness would amply repay for all attempts at the notification of phthisis.

NOTIFICATION OF PHTHISIS.

It being obvious that a more complete knowledge of cases of phthisis would enable more complete preventive measures to be adopted it is not surprising that a number of local sanitary authorities have written to the Local Government Board for permission to add phthisis to the list of notifiable diseases. They have received the following reply which has already been made public property:—

Local Government Board, Whitehall, S.W.

To the Clerk to the District Council.

SIR,—I am directed by the Local Government Board to advert to your letter of the inquiring whether they would approve an Order extending the provisions of the Infectious Disease (Notification) Act, 1889, to phthisis in the District.

In reply I am to state that the Board have hitherto held the view that phthisis is not a disease to which the provisions of the above-mentioned Act could with advantage be applied and in this connexion I am to remind the District Council that many persons who would be notified to them as suffering from phthisis would be individuals whose phthisis is so little advanced that not a few of them may be expected to have many years of life in prospect, during which it will be imperative on them to gain their livelihood. I am to add that the Board do not find in the medical officer of health's report which accompanied your letter any evidence to cause them to modify that view. They therefore would not be willing to approve of the addition of phthisis to the list of diseases notifiable in the District under the Act.

I am,

Assistant Secretary.

It is evident from this letter that one of the chief arguments against a compulsory notification of phthisis is held to be the risk of interfering with the means of livelihood of phthisical patients. The same argument is stated in Sir Richard Thorne's Harben Lectures.¹ "It was not desirable

that persons suffering from phthisis should occupy the same rooms as the healthy, but the notification of such cases in houses of business would be followed by dismissal." The two halves of this sentence are mutually destructive, but that doubtless is owing to the briefness of the abstract. Notification of disease is confidential and if the Local Government Board are afraid of its misuse they can make regulations bearing on this point. The inquiries resulting from notification would in nearly every instance be made at the patient's home, not at his place of business, and with proper provisions there need be (and would be) no interference with business. In the final analysis, if any must suffer, ought it not to be one rather than many? But I repeat that there is not the slightest necessity for anyone to suffer through notification and the medical officer of health through whose action such suffering arose would speedily find his position so uncomfortable that the indiscretion would not be repeated.²

Then it is stated in the abstract of the lectures above quoted that "notification of phthisis is impracticable and would tend in its results to defeat the end in view." The diseases at present notifiable "were communicable in a high degree and in many ways, but rendered the patient a source of danger for a limited period only. In phthisis not only were these conditions absent, but the patient's position was absolutely the reverse." Thus because the danger in scarlet fever is for a limited period only we must take every possible precaution against it, but the danger of phthisis being protracted we must trust to the casual precautions which the uninstructed patient or the overworked practitioner may carry out on his own initiative. Personally I should be prepared to leave the precautionary measures almost entirely to the medical attendant and his patient, with the stipulation that as medical officer of health I should be informed of each change of address of the patient in order to secure the protection of subsequent tenants of the vacated house. But it is not simply or chiefly a question of personal precautions. The above argument entirely ignores the sanitary aspect of the question. Inspections and control of the home conditions and of the industrial conditions under which phthisis has originated are of the very essence of the means of preventing phthisis. How can we exercise such control when we do not know of a tithe of the total cases and of these only when they prove fatal? The last Factory and Workshops Act contains a clause securing the compulsory notification of anthrax, phosphorus and arsenical poisoning, and of a chronic disease like lead-poisoning occurring in connexion with industries. Each of these has an annual number of victims who could almost be counted on the fingers, while thousands of the artisans of this country annually fall victims to phthisis acquired in connexion with their special work. But lead-poisoning must be notified; phthisis is ignored. The non-communicable disease must be notified; the communicable disease is left to carry out its maleficent work. Then we are told above that fevers are "communicable in a high degree and in many ways." Enteric fever, a notifiable disease, is spread almost solely by infection from the dejecta of previous enteric patients; phthisis by the dried sputa of phthisical patients. But there is the "less degree" of infectivity in the latter case. It would be an interesting arithmetical problem to find the sum total of infectivity (call it a) in the month's course of attack of enteric fever and in the from two to three years' average course of phthisis (call it b) when it pursues a fatal course. It is clear, I think, that if x represented the unknown balance on one side of the equation, probably a very large one, it would stand as follows:—

$$a + x = b.$$

Then it is stated: "A little reflection would show the impracticability of carrying out such a course of repeated visitation of hundreds and thousands of houses in large sanitary districts, where already it was found impossible for the medical officer of health to visit all the cases now notified."

² While writing the above I have heard of the case of a clerk who appears to have been discharged from his post because he was phthisical in connexion with the publicity recently given to the dangers arising from the sputa of such patients. If the admirable propagandism of the Association for the Prevention of Tuberculosis is to continue (and we all hope that it will) a certain amount of alarm among those imperfectly informed is inevitable. In all probability nothing would be more successful in removing this unreasonable fear—unreasonable when proper precautions are taken—than the knowledge that cases of phthisis are notified to the medical officer of health who has official charge of any necessarily precautionary measures.

¹ Summary in Public Health, December, 1898, p. 205.

It may be remarked that personal visits by the medical officer of health are not required in every case to ensure the execution of the necessary sanitary improvements and hygienic precautions. The head of a large firm does not conduct every detailed operation in his business, otherwise he would be his own clerk and messenger. But he has full control of the business; he knows its weak points and its strong points and is able to maintain control over its minutest details. Assuming that in a well-organised district each house is inspected at least once in every twelve months we ask, Is it not very desirable that the visits of a large sanitary staff shall be made once in three or four months to a minority of houses in which remedial measures against dirty rooms, overcrowding, damp, and deficient ventilation are of supreme importance, even though this may necessitate a less frequent inspection than once a year of houses the absence of phthisis from which makes such inspections less urgent? Speaking from fifteen years' experience of local sanitary administration in London and in Brighton I have no hesitation in stating my emphatic opinion that the visitation of phthisical houses in which such visits are desirable is not only perfectly practicable, but is of as great importance to the public weal as similar visits in houses where diphtheria or enteric fever has occurred. I protest against the assumption which appears to be so commonly entertained that the official work of the medical officer of health is confined to the "seven chief zymotic diseases" and that tuberculous diseases which cause 50 per cent. more deaths than the aggregate of these seven zymotic diseases and are much more capable of being prevented than are several of them are outside the sphere of his official action. Then we are informed, I hope under some misapprehension, that a distinguished physician has maintained that "the question revolves itself into that of the disposal of the sputa" and has asked "what the sanitary authority would do with the patient when notified." The answer is that so far as the patient is concerned notification need imply, and ought to imply, until experience has shown that more is really necessary, nothing beyond sending to him a precautionary circular such as the following which is used in Brighton:—

PRECAUTIONS FOR CONSUMPTIVE PERSONS.

Consumption is to a limited extent a contagious disease. It is spread chiefly by inhaling the expectoration (spit) of patients which has been allowed to become dry and float about the room as dust.

Do not spit except into receptacles the contents of which can be destroyed before they become dry.

If this simple precaution is taken there is practically no danger of infection. The breath of consumptive persons is free from infection.

The following detailed rules will be found useful both to the consumptive and to his friends:—

1. Expectoration indoors should be received into small paper bags and afterwards burnt.

2. Expectoration out-of-doors should be received into a suitable bottle, to be afterwards washed out with boiling water, or into a small paper handkerchief which is afterwards burnt.

3. If ordinary handkerchiefs are ever used for expectoration they should be put into boiling water before they have time to become dry or into some disinfectant solution to be ordered by the doctor.

4. Wet cleansing of rooms, particularly of bedrooms occupied by sick persons, should be substituted for "dusting."

5. Sunlight and fresh air are the greatest enemies of infection. Every consumptive should sleep with his bedroom window open top and bottom and during the day should occupy a well-ventilated room. Re-breathed air is the main cause favouring consumption. If the patient is warmly clad he need not fear keeping out-of-doors in any weather. N.B.—The patient himself is the greatest gainer by the above precautions as his recovery is retarded and frequently prevented by renewed infection derived from his own expectoration.

6. Persons in good health have no reason to fear the infection of consumption. Over-fatigue, intemperance, bad air, and dusty occupations favour consumption.

HOW NOTIFICATION MAY BE LIMITED.

This is all so far as the patient is concerned. If there is any fear on this point effectual legal safeguards can be devised, and I may point out that notification may be compulsorily adopted and its operation limited by Section 58 of the Public Health (London) Act, 1891, to special purposes. It is not all so far as the prevention of phthisis is concerned. The weightier matters of the prevention of phthisis deal with the home and industrial evils which have lowered vitality to such an extent that a dose of infective material which to the healthy would be innocuous has been enabled to secure a foothold and multiply in the patient's lungs. It is unfortunate that the Local Government Board is so unacquainted with local requirements that it has hitherto been unable to entertain the idea of modifications of compulsory notification and of fresh legislation if necessary giving notification for certain purposes of a strictly restricted character. I hope that ere long some local authority will

apply to the Local Government Board for permission to enable them to pay practitioners for voluntary notifications of cases of phthisis supplied to them. Such voluntary notification would supply information of the cases of phthisis among the poor which are most important from a preventive standpoint. Nor is there the same objection to paying for a limited notification of phthisis that would hold for such a disease as enteric fever. The absence of complete information in a limited outbreak of enteric fever may prevent one from discovering its origin; but in phthisis every single case notified may be treated alone, and if 25 per cent. of the total cases in a district are notified we can obtain nearly if not quite 25 per cent. of the benefit which would follow in the wake of complete notification. As matters now stand any district or borough other than a county borough which paid fees for such voluntary notification would probably find the accounts disallowed by the Government auditor. It may be asked, why not be contented with the voluntary notification of phthisis? Personally I am at present satisfied with such voluntary notification, which is being made to me by medical officers of public hospitals and dispensaries and by parochial medical officers. It is, however, a hardship that they apparently cannot be paid a fee as in the case of notification of other diseases. I draw attention in this connexion to the resolution passed unanimously at the annual provincial meeting of the Society of Medical Officers of Health at Newcastle-on-Tyne in 1893:—

That the Society of Medical Officers of Health, while accepting the view that phthisis is an infective disease, in the prevention of which active hygienic measures should be taken, think it premature to recommend the compulsory notification of a chronic disease like phthisis. They are, however, of opinion that it is incumbent on medical officers of health to take such steps as may secure (a) the voluntary notification of cases of phthisis by medical officers of public institutions and such medical practitioners as agree that precautionary measures are desirable; (b) the adoption of such precautionary measures, including the disinfection of rooms, as can be arranged in conjunction with the family practitioner. For this purpose the memorandum prepared by the North-West Branch of the Incorporated Society of Medical Officers of Health would give an excellent basis of action.

I was responsible for drafting and proposing the above resolution and am contented to continue to act upon it for the present subject to phthisis being placed in the same category as other infective diseases so far as payment for certification is concerned. I venture, however, to protest against the obstructive action of the Local Government Board in not allowing such local authorities as wish for it to adopt the compulsory notification of phthisis. There should be complete local option in this respect and it is only by experiment that progress can be secured. This is not the only respect in which the Local Government Board has effectively obstructed local authorities, especially the local authorities of great towns, in their attempts to improve their sanitary enactments and administration. In former years they were content to stand neutral while the great towns secured special enactments of their own, and they subsequently adopted many of these enactments permissively in the Infectious Disease Prevention Act and the Public Health Amendment Act. Latterly they not only refuse to move themselves, but insist on everyone else sitting still. Their action is unfortunate, as the prospects of local sanitary progress at present depend upon the assent if not the coöperation of the Local Government Board. I would heartily increase the present powers of the Local Government Board, which they allow to a very large extent to remain in abeyance, for compelling local authorities to do their duty, but at the same time their power of veto on local authorities who are laudably anxious to extend their responsibilities and their utility should be removed.

It may be inquired, in conclusion, what can be done apart from compulsory notification of phthisis? Dr. Niven and Mr. C. E. Paget (and others) have made serious attempts with the machinery already available and I take this opportunity of acknowledging the magnificent pioneer work of an educational and actively preventive character which they and Dr. Ransome have done. Mr. Paget informs me, however, that during the five years 1893–97 in which voluntary disinfection after phthisis was offered in Salford only 32 houses were thus purified. We are told that one item of the programme of the Association for the Prevention of Consumption is to secure the disinfection of houses in which deaths from phthisis have occurred. The association is apparently unaware in how many towns this is already carried out. The number of rooms cleansed and purified in Brighton after deaths from phthisis has been as follows:—

Year.	No. of rooms.	Year.	No. of rooms.
1893... ..	56	1897... ..	138
1894... ..	64	1898... ..	108
1895... ..	57		—
1896... ..	150	Total in six years ...	573

The procedure is that a copy of a circular is sent by post as soon as the weekly death returns come in to the head of the household in which the death has occurred and a visit is made during the week to ensure that the work has been carried out. This has been recently supplemented by a system of voluntary notification of all cases of phthisis removed to the workhouse, the house vacated by the patient being similarly purified. The recommendations of this circular are shortly as follows:—

1. Strip the wall paper off the wall. The paper should afterwards be burnt in the fireplace of the same room.

N.B.—The chief danger is from dust. Hence all articles should be thoroughly wetted before cleansing them. A supply of disinfectant for mixing with the water can be obtained free of cost at the office at the town hall, but a disinfectant is not essential if everything is thoroughly wetted.

2. Thoroughly wash the ceilings and floors and walls of the room.

3. Wash all bed-linen and other articles in the room and expose all bedding, pillows, &c., out of doors for several hours in bright sunshine.

For the last five years every death from any form of tuberculous disease has been made the subject of an inquiry under the following heads:—

Deaths from tubercular diseases.—Sex, age, disease, address, name of doctor, date of death, duration of illness, source of milk supply, places of residence during illness, nature of occupation during the last ten years, other cases of allied disease in the family, previous history of the house.

Condition of the house as regards (1) overcrowding, number of occupants (over 10, under 10), number of living rooms and bedrooms; (2) whether animals kept; (3) condition as to dampness, condition as to cleanliness; (4) ventilation; (5) lighting; (6) drainage arrangements; (7) dustbin; (8) size of yard, condition of paving.

I have omitted from my purview tuberculosis derived from the ingesta. The growth of public opinion as to the tuberculin test for cows and as to the provision of public abattoirs is so satisfactory that there is little doubt that valid progress will be made in these respects. I am anxious to confine our attention to the one question of notification of phthisis. I trust that we shall not allow small difficulties of detail to embarrass us. (The question of multiple notifications, for instance, is a very minor matter which can be safeguarded if necessary. Dr. Niven has shown, however, that there is practically no need for this.) If notification is desirable in the interests of the public health it should be adopted and a desirable principle is never impracticable. If limits of official action after notification are desirable there will be no difficulty in devising the scope of these limitations. We have heard so much about the reduction in the mortality from phthisis that the unthinking may lose sight of the enormous mortality still caused by it. Had time permitted I should like to have drawn attention to the erroneous inferences which have been drawn or suggested as arising out of the reduction of tuberculous diseases in adults along with the increased consumption of meat and the stationary mortality from *tabes mesenterica* along with the infantile use of cow's milk as food, but that must be reserved for another opportunity. I beg finally to recommend to your consideration the desirability of making representations to the Local Government Board urging upon the Board the importance of: 1. Allowing the same local option in respect of the notification of phthisis as of diseases which they at present allow to be added to the schedule of notifiable diseases. 2. Giving powers to local authorities to pay fees for voluntary notification of cases of phthisis. 3. Bringing up to date and codifying other sanitary legislation which has an important bearing on the prevention of phthisis—e.g., further precautions against encroachment on open spaces at the rear of dwellings,³ enactments compelling local authorities to adopt proper by-laws for the erection of new buildings, improvements of the Housing of the Working Classes Act, &c.

³ Among the most serious defects of the present law are the following: (a) In accordance with the model building by-laws a certain amount of free air space must be allowed at the rear of every dwelling-house. If, however, a person erects a building in his back yard encroaching on this air space and the encroachment is not discovered within six (or under certain possible but exceptional conditions twelve) months from the time of its erection the encroaching building cannot be compelled to be removed. (b) In the case of dwellings erected prior to the adoption of any building by-laws it is no offence to erect other buildings upon the open space attached to the old buildings, subject to the new buildings themselves fulfilling the requirements of the by-laws as to open space. The result of the defects of the law in the above respects is that insanitary areas, the fit breeding place for phthisis, are being produced in nearly every town, particularly in their more central parts.

A Clinical Lecture AND DEMONSTRATION ON LOCAL INFILTRATION ANALGESIA.

*Delivered at University College Hospital on
Jan. 19th, 1899.*

By ARTHUR E. BARKER, F.R.C.S. ENG.,
PROFESSOR OF THE PRINCIPLES AND PRACTICE OF SURGERY AND PRO-
FESSOR OF CLINICAL SURGERY AT UNIVERSITY COLLEGE, AND
SURGEON TO UNIVERSITY COLLEGE HOSPITAL.

GENTLEMEN,—For the last eight or nine months I have occasionally been operating on patients for various surgical conditions without using either chloroform or ether, trusting rather to one or other form of "local infiltration analgesia." Several of these cases have, as some of you have seen quite lately, shown such remarkable results as to afford much food for reflection. During all this period I have been endeavouring to make myself familiar with the whole subject of infiltration analgesia by every means in my power. Having seen the method employed abroad where it is largely used and having been much impressed by it it was only rational to get hold of the best and most recent of the now very numerous monographs on the subject and to study them carefully both as regards the physiological and physical theories advanced and the details of the practical application of the latter advocated in them. I confess for myself that I have only recently felt the full importance of the whole subject, though the study of it has been long. This is probably due to the fact that the mere manipulative details of the procedure, without the proper accomplishment of which analgesia is not produced, require considerable practice for their mastery and that at the outset one naturally only employs a new method in carefully selected cases. But of late these have increased in number and I can now claim to have familiarised myself with the procedure sufficiently to have approached the results in even long and serious operations which have already been achieved on a larger scale abroad, and the results I propose now to put before you. If you are at all like myself you will feel for a time a certain amount of distrust of the method and incredulity as to the results claimed for it here and there, but equally if you study the matter fairly you will be forced in the end to the conclusion, as I myself have been, that there is a great deal in "local infiltration analgesia" when properly carried out and that the results claimed for it by those who have employed it in hundreds of cases have not been exaggerated. But that to utilise it safely and extensively demands close study of the procedure on the widest basis is every day more and more clear to me and I hope will become so to you if you listen to my remarks and watch the operations to follow in which I hope to demonstrate the method in question.

To anyone who gives close attention to the practical details of local analgesia induced by the endermic injection of cocaine or eucaine it must soon become abundantly evident that the procedure does not consist in the mere injection of a certain amount of one or other drug, so to speak, at haphazard into the field of operation. Many factors require to be taken into very careful consideration if we are to approach at all near to the end which we have in view—namely, the safe abolition of pain without the use of general anaesthetics such as chloroform, ether, &c.

When cocaine was first brought to the notice of surgeons many years ago great expectations were entertained as to its application to minor surgery. But experience with the stronger solutions of the drug (which were then considered necessary) soon proved, first, that it was dangerous and, next, that its action as then used in strong solutions was too local for anything but the most limited employment. It was therefore reserved for superficial parts, such as the eye, the mouth, and the anus almost exclusively. And I can well remember how disappointed I was myself in using it 12 or 15 years ago in cases of piles and on the gums and nose. Since then, however, important modifications have been made in the manner of employing these drugs which have led to their widespread use even for some of the greatest operations in surgery.

The primal fact which we have to keep in mind is that cocaine and its salts applied to the trunk of a sensory nerve