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LANCASHIRE

COUNTY COUNCIL.

PREVENTION AND TREATMENT OF TUBERCULOSIS IN THE ADMINISTRATIVE COUNTY OF LANCASTER.

Report of the Central Tuberculosis Officer
of the Lancashire County Council
for the Year 1935.

C. Tinling & Co. Ltd., Liverpool, London and Prescot.
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COUNTY TUBERCULOSIS COMMITTEE

(1936).

The Chairman of the County Council :

†Sir James T. Travis-Clegg, J.P., D.L.

The Vice-Chairman of the County Council :

*†Sir William Hodgson, J.P.

Chairman of Committee :

*†E. Boothman, Esq., J.P.

Vice-Chairman :

*Sir Thomas S. Tomlinson, J.P.

COUNTY ALDERMEN—

J. C. Beckitt, Esq., M.R.C.S., L.R.C.P., D.P.H.
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H. F. Jeffery, Esq., M.B., Ch.B., J.P.
*C. J. Trimble, C.B., C.M.G., L.R.C.P., D.P.H., J.P., D.L.

COUNTY COUNCILLORS—

L. Allen, Esq., J.P.
H. Bright, Esq.
*E. Clegg, Esq.
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T. E. Jesson, Esq.
*Canon A. Kershaw, M.A.
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*P. F. Mannix, Esq., M.D., M.Ch., B.A.O., J.P.
W. T. Miller, Esq., J.P.
R. S. Robson, Esq., J.P.
*E. Tye, Esq.

* Members of the Sanatorium and Hospital Sub-Committee.
† County Aldermen.

MEDICAL AND NURSING STAFF OF THE TUBERCULOSIS DEPARTMENT, Oct. 1936.

Central Tuberculosis Officer—G. Lissant Cox, M.A., M.D. (Camb.).

Staff of the Dispensary Areas and County Sanatoria and Hospitals.

Area No. 1. (Population 249,893).

(Lancaster, Morecambe and Heysham, Garstang Rural (part), Preston Rural, Walton-le-Dale, Chorley, and Horwich districts).

Consultant Tuberculosis Officer and Visiting Physician, Lancaster Pulmonary Hospital (36 beds)—G. H. Leigh, M.D., Ch.B., D.P.H. (Manch.).

Assistant Tuberculosis Officer—F. C. S. Bradbury, M.D., B.Ch. (Belf.), B.Hy., D.P.H. (Durh.).

Area No. 2. (Population 330,906).

(Clitheroe, Colne, Nelson, Burnley Rural, Blackburn Rural, Accrington, Darwen, Haslingden, Rawtenstall, and Bacup Districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent, Withnell Pulmonary Hospital (52 beds)—B. MacPhee, M.B., Ch.B. (Glas.), D.P.H. (Camb.).

Assistant Tuberculosis Officers—S. C. Adam, M.B., Ch.B. (Glas.), D.P.H. (Lond.); and J. N. Whyte, M.D., B.Ch., B.A.O., D.P.H. (Belf.) (2 days per week).

Area No. 3. (Population 371,246).

(Ramsbottom, Littleborough, Radcliffe, Heywood, Crompton, Prestwich, Middleton, Chadderton, Failsworth, Ashton-under-Lyne, Mossley, and Denton districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent, Wolstenholme Pulmonary Hospital (55 beds)—G. Fletcher, M.A., M.D. (Glas.), M.R.C.P. (Lond.), D.P.H. (Camb.).

Assistant Tuberculosis Officers—J. L. Armour, M.B., Ch.B. (Liverp.), M.R.C.S. (Eng.), L.R.C.P. (Lond.); and W. Fettes, M.B., Ch.B., D.P.H. (Aberd.).

Area No. 4. (Population 364,632).

(Westhoughton, Atherton, Farnworth, Leigh, Swinton and Pendlebury, Eccles, and Stretford districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent, Peel Hall Pulmonary Hospital (56 beds)—G. Jessel, M.A., M.D. (Oxon.), D.P.H. (Manch.).

Assistant Tuberculosis Officers—A. B. Jamieson, M.B., Ch.B. (Edin.); and H. J. Villers, L.R.C.P.I., L.R.C.S.I.

Area No. 5. (Population 269,595).

(West Lancashire Rural, Great Crosby, Waterloo-with-Seaforth, Newton-in-Makerfield, Whiston Rural, Warrington Rural, and Widnes districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent, Rufford Pulmonary Hospital (52 beds)—C. W. Laird, B.A., M.D. (Dublin), D.P.H. (Liverp.).

Assistant Tuberculosis Officers—C. Berry, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glas.), D.P.H. (R.C.P.S.I.); and J. N. Whyte, M.D., B.Ch., B.A.O., D.P.H. (Belf.) (2 days per week).

High Carley Sanatorium (*118 beds*), *Oubas House Children's Sanatorium* (*21 beds*), *and Furness Dispensary Area* (Population 38,066).

(Dalton-in-Furness, Grange-over-Sands, Ulverston, and Ulverston Rural districts).

Medical Superintendent and Consultant Tuberculosis Officer—G. Leggat, M.B., Ch.B., D.P.H. (Aberd.).

Assistant Medical Superintendent—D. O. Hughes, M.B., Ch.B., D.P.H. (Liverp.).

Elswick Sanatorium (*70 beds*) *and Fylde Dispensary Area* (Population 87,256).

(Fleetwood, Thornton Cleveleys, Lytham St. Annes, Fylde Rural, Garstang Rural (part), and Kirkham districts).

Medical Superintendent and Consultant Tuberculosis Officer—G. B. Charnock, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glas.), D.P.H. (Liverp.).

Assistant Tuberculosis Officer—J. N. Whyte, M.D., B.Ch., B.A.O., D.P.H. (Belf.) (1½ days per week).

Wrightington Hospital (*226 beds*) *and Wigan County Dispensary Area* (Population 109,506).

(Ashton-in-Makerfield, Hindley, Ince-in-Makerfield, and Wigan Rural districts).

Medical Superintendent and Consultant Tuberculosis Officer—E. H. A. Pask, M.D. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.).

Assistant Tuberculosis Officer—E. H. W. Deane, M.B., B.S. (Melbourne).

Assistant Medical Superintendent—J. Dobson, M.R.C.S. (Eng.), L.R.C.P. (Lond.).

Junior Assistant Medical Officer—W. G. Timmis, M.B., Ch.B. (Liverp.).

Chadderton Pulmonary Hospital (*44 beds*).

Visiting Medical Superintendent—E. T. Holden, M.B., Ch.B. (Birm.), M.R.C.S. (Eng.), L.R.C.P., D.P.H. (Lond.).

Heath Charnock Pulmonary Hospital (*34 beds*).

Visiting Medical Superintendent and Medical Officer to the Chorley Joint Hospital Board—J. Rigby, M.B., Ch.B., D.P.H. (Manch.).

Lancaster, Withnell, Wolstenholme, Peel Hall, and Rufford Pulmonary Hospitals.

The Consultant Tuberculosis Officers of Dispensary Areas Nos. 1, 2, 3, 4 and 5, respectively, are the visiting Medical Superintendents of these Hospitals, as mentioned in the foregoing list of staff.

CONSULTING SURGICAL STAFF.

T. P. McMurray, M.Ch., F.R.C.S. (Edin.), and

Harry Platt, M.D. (Manch.), M.S. (Lond.), F.R.C.S. (Eng.), *Visiting Consulting Orthopædic Surgeons, Wrightington Hospital.*

H. H. Bywater, M.D. (Manch.), D.Ch.O. (Liverp.), F.R.C.S. (Edin.), *Visiting Consulting Ophthalmic Surgeon, Wrightington Hospital.*

Consulting Surgical Staff—contd.

C. A. Wells, M.B., Ch.B. (Liverp.), F.R.C.S. (Eng.), L.R.C.P. (Lond.), *Visiting Consulting Urological Surgeon, Wrightington Hospital.*

H. Morriston Davies, M.D., M.Ch. (Camb.), F.R.C.S. (Eng.), *Visiting Consulting Chest Surgeon, Elswick and High Carley Sanatoria, and Peel Hall Pulmonary Hospital.*

F. R. Edwards, M.B., Ch.B. (Liverp.), F.R.C.S. (Eng.), L.R.C.P. (Lond.), *Junior Visiting Consulting Chest Surgeon, Elswick and High Carley Sanatoria, and Peel Hall Pulmonary Hospital.*

J. Halton, M.B., Ch.B. (Liverp.), *Visiting Anæsthetist, High Carley Sanatorium.*

Visiting Dental Surgeons.

High Carley and Oubas House Sanatoria—A. Miller, L.D.S. (R.C.S., Eng.).

Elswick Sanatorium—R. D. Allison, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glas.), L.D.S. (R.C.S., Edin.).

Wrightington Hospital—J. J. Ward, L.D.S. (R.C.S., Eng.).

Matrons.

High Carley and Oubas House Sanatoria	E. Woosey.
Elswick Sanatorium	A. Jones.
Chadderton Pulmonary Hospital	I. Felstead.
Heath Charnock Pulmonary Hospital	H. Sinclair.
Lancaster Pulmonary Hospital	L. Clark.
Peel Hall Pulmonary Hospital	E. Simmons.
Rufford Pulmonary Hospital	S. Holmes.
Withnell Pulmonary Hospital	D. Willman.
Wolstenholme Pulmonary Hospital	E. G. Glass.
Wrightington Hospital	E. Moseley.

Tuberculosis Health Visitors.

Area No. 1.—L. Walker*, J. Skelcher, F. D. Abbott*, G. M. Hunter.

Area No. 2.—R. Lambert*, A. Munro*, M. Duggan*, L. F. Norwood, E. Watterson, H. M. Alcock*.

Area No. 3.—M. A. Potter, H. Dewsnap*, I. F. Macdonald*, C. Guilfoy*, A. Flynn*, W. Swift, M. Sherwen.

Area No. 4.—M. B. Jones, H. M. Shakespeare*, F. G. Smith, A. Dickinson, I. M. Corfield, K. Blakemore, M. Gibson*.

Area No. 5.—E. Walch, M. J. Wilson*, A. Duncan, L. Farquhar*, M. J. McKeown*.

Furness Area.—E. A. Duston.

Fylde Area.—A. Tweedy*.

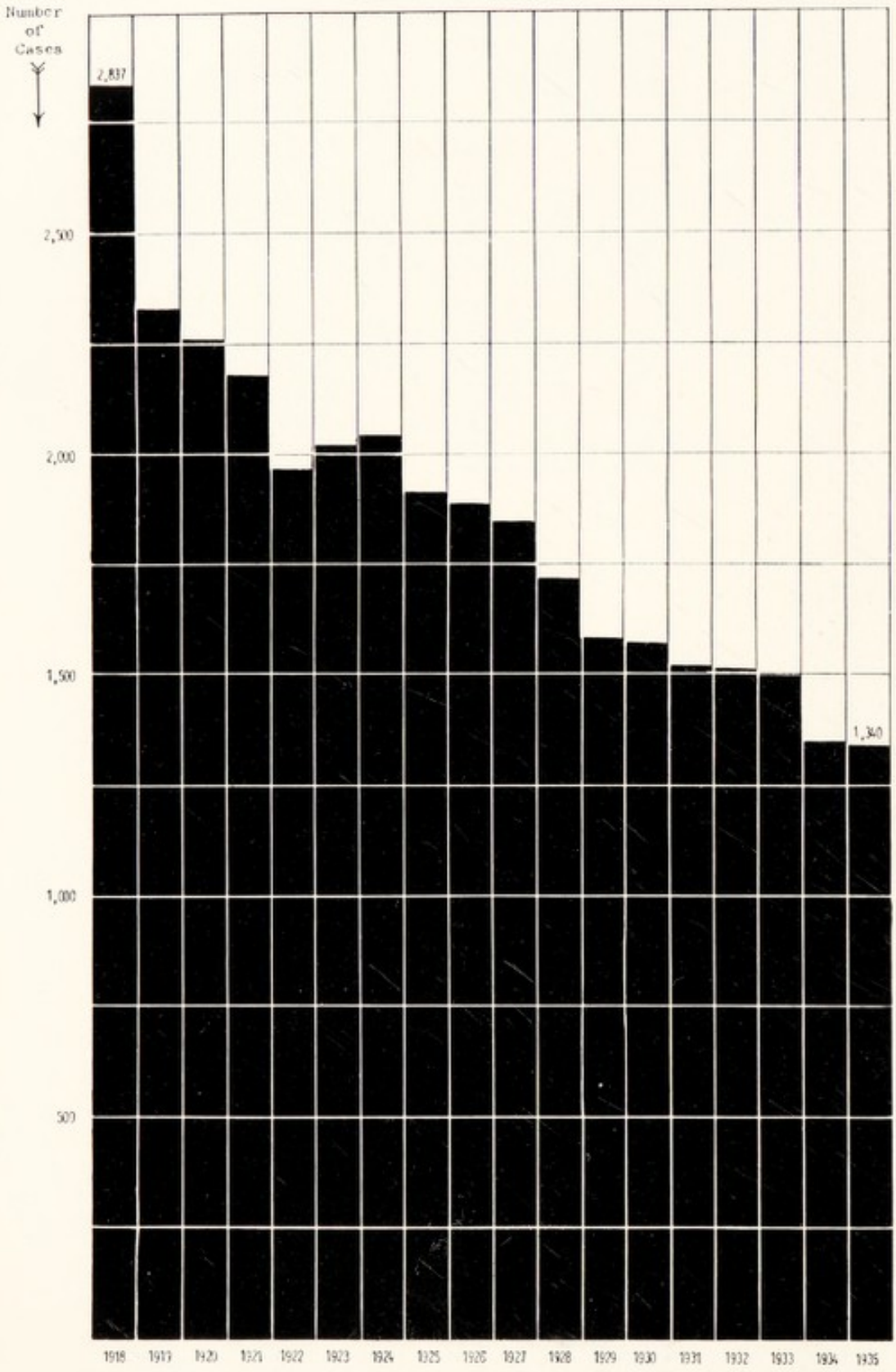
Wigan County Area.—E. Walters*, M. J. Evans.

* Possesses a health visitor's or sanitary certificate.

ADMINISTRATIVE COUNTY OF LANCASTER.

(Population 1,821,100).

Reduction in the number of New Cases of Pulmonary Tuberculosis (Consumption) reported during the years 1918–1935.



This chart shows: (*a*) that the number of cases of pulmonary tuberculosis reported in the Administrative County has fallen from 2,837 in 1918 (the last of the war years) to 1,340 in 1935; and (*b*) that a continuous decline has taken place since 1924. [For further particulars, see Table 1 on page 2.]

REPORT

OF THE

CENTRAL TUBERCULOSIS OFFICER

FOR THE YEAR 1935.

To the Chairman and Members of the
Lancashire County Council.

LADIES AND GENTLEMEN,

I have the honour to submit the twenty-second annual report on the work of the tuberculosis department, and in this introductory portion will give briefly some of the principal features of the work in 1935.

Tuberculosis incidence and mortality.

The death-rate from pulmonary tuberculosis in 1935 (0·46) is the same as in the previous year, when it was the lowest recorded in the County. The number of new cases of pulmonary tuberculosis reported in 1935 is again the lowest on record; in fact since 1924 each year has shown a reduction varying from 6 to 148 cases. The chart opposite shows the reduction in the number of new cases of pulmonary tuberculosis reported from all sources during the years 1918 to 1935. Actually the number of new cases fell in 18 years 52 per cent.

With regard to non-pulmonary tuberculosis, the death-rate of 0·10 per 1,000 of the population is the lowest ever recorded, being exactly half of what it was in 1925 and less than one-third of the rate in 1915. Correspondingly the new cases of non-pulmonary tuberculosis reported during the year were also the lowest on record.

Taking pulmonary and non-pulmonary tuberculosis together, the death-rate for 1935 is less than one half of that in 1915, being in fact 43 per cent. of the rate for that year.

The following are the death-rates in 1935 from tuberculosis (all forms) per 1,000 of the population in the Administrative County; in counties with a population in the region of 1,000,000; and in England and Wales:—Lancashire, 0·57; Durham, 0·81; Essex, 0·54; Kent, 0·66; Middlesex, 0·63; Surrey, 0·52; West Riding of Yorkshire, 0·58; and England and Wales, 0·71.

The tuberculosis scheme.

The Lancashire County Council scheme covers the whole of the Administrative County (population 1,821,100, area 1,038,130 acres). A special feature of the scheme, and of fundamental importance, is the method whereby the dispensary work is combined with the hospital or sanatorium work. The County has been divided into (i) five large dispensary areas or units, average population 317,000, each with a small sanatorium-hospital; and (ii) three small dispensary areas surrounding the three largest institutions, the area and the institution together forming a unit. By this organisation the whole County is served by team work, each tuberculosis officer has beds like any private consultant, and the divorce so common between the dispensary unit and the institutional unit does not occur.

Each area is in the charge of a consultant tuberculosis officer with medical assistants, nursing staff, and clerical staff. Ordinary symptomatic treatment is not undertaken at the dispensaries, the tuberculosis officers being concerned with the diagnosis and special treatment of patients, and measures for the prevention of the disease. The County Council own or lease 24 tuberculosis dispensaries situated in convenient centres in the County, and own or rent accommodation at sanatoria and hospitals for 980 beds, of which 734 are at eleven County sanatoria and hospitals. Diagnosis and treatment is, and always has been, provided free of cost. The number of cases of tuberculosis on the dispensary registers on the 1st January, 1936, was 7,404.

The net expenditure on tuberculosis services for 1935–36 was £193,882, equal to a rate of 4·88d. in the £. Towards the expenditure there is now an amount included in the General Exchequer Grant receivable under the Local Government Act, 1929; it is not specifically allocated to the tuberculosis service, but is a general credit to the County

Fund. Previous to the passing of the Act the Government made an annual grant based upon 50 per cent. of the net approved expenditure; for 1928–29 their grant amounted to £74,105.

Surgical treatment of pulmonary tuberculosis.

The outlook for many patients suffering from pulmonary tuberculosis has been changed in recent years by the application of major and minor surgical methods of treatment. The principal operations are:—Artificial pneumothorax, phrenicectomy or phrenic crushing, and thoracoplasty. For those who consider thoracoplasty a very mutilating operation, attention may be drawn to the illustrations inserted between pages 94 and 95.

Mr. Morriston Davies is the consulting chest surgeon, and pays periodical visits to the High Carley Sanatorium, the Elswick Sanatorium, and the Peel Hall Pulmonary Hospital.

The following statement shows the number of living patients on the 31st December, 1935, who had undergone surgical treatment for their chest condition:—Artificial pneumothorax, 457; artificial pneumothorax with division of adhesions, 6; phrenicectomy or phrenic crush (with, in some cases, artificial pneumothorax), 176; thoracoplasty, 11.

X-ray examinations.

The provision of x-ray plants for the diagnosis and treatment of cases of tuberculosis is as essential as the provision of the stethoscope and thermometer. The use made of x-rays in this County in 1935 is shown by the following figures:—At County dispensaries, 10,024 x-ray examinations were made, and 9,228 at County sanatoria and hospitals. The x-ray examinations of dispensary patients represent 960 per 100 deaths from tuberculosis.

After-history of 2,734 new cases of tuberculosis reported from all sources in 1930.

A chapter is introduced this year on pages 12 and 13 which shows the after-history for five years of 2,734 new cases of tuberculosis reported in 1930. This survey emphasises the importance of prevention. While methods of diagnosis have improved, while new methods of treatment are tried and not without success on individuals, it still remains that the best results in anti-tuberculosis work obtain by detailed, unobtrusive and continually-applied measures for the *prevention* of this disease. Put in another and perhaps more practical way, the

survey emphasises still further the importance of dealing with the adult positive sputum case. In Lancashire we have made the basis of our scheme: Find, isolate, educate, and treat the adult positive sputum case.

Special contributions by medical staff.

The following special contributions by members of the medical staff are printed in this report:—

Infra-red Radiation in the Treatment of Pulmonary Tuberculosis, by Dr. G. Barker Charnock (pages 41 to 45).

Standardisation of the Sedimentation Test, by Dr. F. C. S. Bradbury (pages 46 to 56).

Mantoux Tests, by Dr. A. B. Jamieson and Dr. H. J. Villiers (pages 75 and 76).

Culture of Tubercle Bacilli, by Dr. J. Dobson (pages 117 and 118).

Medical staff changes.

I have to report the following changes in the medical staff:—

Dr. James Wood, who was visiting medical superintendent of the Chadderton Pulmonary Hospital from October, 1919, until invalided from the service on the 31st October, 1934, died on the 3rd January, 1936. An appreciation of his services was contained in last year's report when referring to his retirement.

Dr. C. H. Lilley, assistant tuberculosis officer in Dispensary Area No. 5, was invalided from the service on the 5th February, 1936. Dr. Lilley had given conscientious and entirely satisfactory service since his appointment in June, 1914, and the County Tuberculosis Committee have recorded to the County Council their regret at his premature retirement, and their appreciation of his services.

Dr. J. E. Wallace resigned his post of assistant tuberculosis officer for the Wigan County Dispensary Area on the 31st March, 1936, on securing the appointment of assistant tuberculosis officer and assistant medical officer under the West Sussex County Council. Dr. Wallace commenced duty under the County Council as temporary assistant medical officer at the High Carley Sanatorium in November, 1930, and was appointed assistant tuberculosis officer on the 4th January, 1932. His services have been most satisfactory, and the Tuberculosis Committee recorded to the County Council their regret at his resignation, and have conveyed to him their appreciation of his work.

Progress and future requirements in the tuberculosis scheme.

Below is a statement of the progress made and the requirements at dispensaries, sanatoria and pulmonary hospitals :—

Widnes Dispensary. As reported in previous years, the existing dispensary accommodation is insufficient for present requirements. Negotiations are in progress for the purchase of a site upon which to erect a new dispensary.

Ashton-under-Lyne Dispensary. Tenders have been invited for the erection of new premises in Lees Street to replace the existing dispensary at Boston House, Warrington Street. The approved estimated capital cost is £6,790 (buildings alone, £6,500).

Chadderton Dispensary. The new branch dispensary in Brook Street was opened on the 28th September, 1936, to replace the premises in Barker Street, Oldham, held jointly with the Oldham Corporation.

Aitken Sanatorium. The reorganisation of the Aitken Sanatorium by the Bury and District Joint Hospital Board was completed in September, 1936. The cost of the new scheme was £19,438.

High Carley Sanatorium. A scheme is in hand for the provision of a new nurses' home, concert hall, chapel, and two consulting rooms for male and female blocks, extra accommodation in the treatment block, and the reorganisation of the administrative block.

Heath Charnock Pulmonary Hospital. An extension of accommodation and certain re-arrangements of existing rooms have improved the staff quarters and also provided accommodation for an x-ray apparatus (electricity having now been installed), treatment room, and dark room. The x-ray plant will shortly be installed, and then all the County sanatoria and hospitals will be so equipped.

Royal Sanitary Institute Congress at Southport. Visit of delegates to County hospitals.

The annual congress of the Royal Sanitary Institute was held at Southport on the 6th to the 11th July, 1936. The County Council co-operated with the Southport Corporation by arranging tours for a limited number of delegates to the Rufford Pulmonary Hospital on the 7th July, and to the Wrightington Hospital on the 8th July. The delegates consisted mostly of medical men from the British Isles and abroad. We were honoured by the following number of visitors to the institutions named :—Rufford Pulmonary Hospital, 53 ; Wrightington Hospital, 52.

Co-operation with medical practitioners, sanitary authorities, and health officials.

The results of the tuberculosis scheme would be very different if the relations with the medical practitioners in the County, together with the sanitary authorities and their medical officers and sanitary inspectors, had not been of the most cordial and satisfactory character.

I take this opportunity of acknowledging such co-operation from these sources. It is very satisfactory that 91 per cent. of new cases (excluding contacts) were sent *before notification* to the tuberculosis officers for an opinion as to diagnosis or treatment.

I have again to thank my medical colleagues and the nursing and clerical staffs for continued help. I have had very valuable help from my principal clerk, Mr. H. F. Hughes, especially in preparing this report, and have, in addition, to thank the public health department for furnishing certain statistics on notifications and deaths.

I am,

Your obedient Servant,

G. LISSANT COX,

Central Tuberculosis Officer.

County Offices, Preston.

16*th October*, 1936.

I.—TUBERCULOSIS INCIDENCE AND MORTALITY IN 1935.

The principal features of tuberculosis incidence and mortality in 1935 in the Administrative County, which contains an estimated population of 1,821,100, are as follow :—

1. The death-rate (0·46 per 1,000 of the population) from pulmonary tuberculosis in the County remains the same as in 1934 ; it continues below the pulmonary rate (0·60) for England and Wales.

2. The number of new pulmonary cases reported in 1935 is again the lowest on record ; each year since 1924 has shown a reduction, varying from 6 to 148, in the number of new cases. Comparing 1924 and 1935, the total reduction in the new pulmonary cases is 696 or 34·1 per cent.

3. The death-rate (0·10 per 1,000 of the population) from non-pulmonary tuberculosis is the lowest on record. It is now only one-third of the rate recorded in 1914. The rate for England and Wales is 0·11 in 1935.

4. The number of new cases of non-pulmonary tuberculosis reported in 1935 is the lowest on record, and compared with 1934 shows a reduction of 117.

5. The saving in human life by the reduction in the County death-rate from all forms of tuberculosis is considerable ; for example, if the death-rate for 1935 had been the same as in 1914 there would have been 2,167 deaths instead of the actual number of 1,044—a difference of 1,123.

6. Pulmonary tuberculosis is again more prevalent among males than females in regard to both cases and deaths. Allowing for the difference in the population of the sexes, for every 100 deaths of females in 1935 there were 138 deaths of males.

7. For females, for the second occasion since 1921, the age-group 25–35 years has the largest number of deaths from pulmonary tuberculosis (see Table 3, page 4). For many years the greatest mortality had occurred in the age-group 15–25, but the deaths among these young females have happily been declining ; this is the age-group which has shown the least response to treatment.

8. The greatest mortality among males in 1935 occurs in age-group 55–65, followed closely by age-group 45–55, and 35–45.

9. With regard to non-pulmonary tuberculosis, the most striking decline has occurred in the age-group 0–5 years ; in 1914 the deaths in this group totalled 286, whereas in 1935 there were only 50.

New Cases of Tuberculosis.

The following Table 1 shows since 1918 the total number of new cases of pulmonary and non-pulmonary tuberculosis reported in each year; the case-rate for pulmonary tuberculosis is also given :—

Year	Pulmonary tuberculosis				Non-pulmonary tuberculosis		
	Cases notified (*i.e.*, during life)	Cases reported at time of death only	Total known cases	Case-rate per 1,000 of population	Cases notified (*i.e.*, during life)	Cases reported at time of death only	Total known cases
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1918	2,534	303	2,837	1·64	885	137	1,022
1919	2,105	221	2,326	1·34	847	104	951
1920	2,084	177	2,261	1·30	968	122	1,090
1921	2,044	135	2,179	1·23	899	96	995
1922	1,863	105	1,968	1·11	956	83	1,039
1923	1,937	85	2,022	1·13	1,188	74	1,262
1924	1,972	64	2,036	1·14	1,120	65	1,185
1925	1,846	67	1,913	1·07	1,027	57	1,084
1926	1,828	58	1,886	1·05	953	32	985
1927	1,794	54	1,848	1·02	1,045	42	1,087
1928	1,660	56	1,716	0·94	956	51	1,007
1929	1,517	62	1,579	0·87	913	61	974
1930	1,527	46	1,573	0·87	982	61	1,043
1931	1,460	61	1,521	0·84	862	51	913
1932	1,477	37	1,514	0·83	825	28	853
1933	1,453	45	1,498	0·82	780	31	811
1934	1,315	35	1,350	0·74	774	46	820
1935	**1,305**	**35**	**1,340**	**0·73**	**672**	**31**	**703**

The decline—continuous since 1924—in the new cases of pulmonary tuberculosis is seen in column (4) of the above table.

Comparing 1935 with 1924, the improvement has taken place in the age-groups as follows :—

Males—0–5, 77·7 per cent.; 5–15, 75·2 per cent.; 15–25, 26·5 per cent.; 25–35, 25·1 per cent.; 35–45, 27·1 per cent.; 45–55, 38·0 per cent; 55·65, 16·4 per cent.

Females—0–5, 60·0 per cent.; 5–15, 67·8 per cent.; 15–25, 36·3 per cent.; 25–35, 20·6 per cent.; 35–45, 46·1 per cent.; 45–55, 44·6 per cent.; 55–65, 8·1 per cent.; 65 and over, 30·0 per cent.

Only one age-group—males, 65 and over—shows an increase, and that from 18 in 1924 to 34 in 1935, equal to 88·8 per cent.

With regard to non-pulmonary tuberculosis, the number of cases notified are now showing a downward trend, but it must be remembered that notification was undoubtedly influenced by the developments in the County scheme between 1922 and 1927, such as the establishment of artificial light centres at the dispensaries. Furthermore, in the earlier years it is known that notification of non-pulmonary cases was not uniformly carried out by the practitioners, as in those years the treatment provided under the County scheme was not so extensive as at the present time.

The notifications referred to in columns (2) and (6) are dealt with further in Appendix II, where folding Tables B, C, and D are inserted.

Deaths and Death-Rates from Tuberculosis.

Table 2 below shows the number of deaths registered and the death-rates recorded during the years 1913 to 1935 in the Administrative County :—

Year	Population.	Deaths.			Death-rate per 1,000 of population.		
		Pulmonary tuberculosis	Non-pulmonary tuberculosis	Tuberculosis (all forms)	Pulmonary tuberculosis	Non-pulmonary tuberculosis	Tuberculosis (all forms)
1913	1,749,659	1,441	527	1,968	0·82	0·30	1·12
1914	1,748,289	1,523	572	2,095	0·87	0·32	1·19
1915	1,666,488	1,614	555	2,169	0·96	0·34	1·30
1916	1,620,062	1,685	471	2,156	1·04	0·29	1·33
1917	1,568,656	1,584	466	2,050	1·00	0·30	1·30
1918	1,537,951	1,652	435	2,087	1·07	0·28	1·35
1919	1,662,716	1,339	358	1,697	0·80	0·22	1·02
1920	1,728,967	1,323	396	1,719	0·76	0·23	0·99
1921	1,758,738	1,301	376	1,677	0·73	0·21	0·95
1922	1,766,027	1,362	389	1,751	0·77	0·22	0·99
1923	1,772,658	1,250	412	1,662	0·70	0·23	0·93
1924	1,782,800	1,215	339	1,554	0·68	0·19	0·87
1925	1,785,500	1,205	361	1,566	0·67	0·20	0·87
1926	1,788,500	1,158	286	1,444	0·64	0·16	0·80
1927	1,800,300	1,105	296	1,401	0·61	0·16	0·77
1928	1,811,000	1,066	287	1,353	0·58	0·15	0·74
1929	1,811,700	1,102	279	1,381	0·60	0·15	0·67
1930	1,806,960	1,046	253	1,299	0·57	0·14	0·71
1931	1,804,400	1,021	266	1,287	0·56	0·14	0·71
1932	1,802,700	975	238	1,213	0·54	0·13	0·67
1933	1,802,730*	1,010	232	1,242	0·55	0·12	0·68
1934	1,807,090*	848	231	1,079	0·46	0·12	0·59
1935	**1,821,100**	**855**	**189**	**1,044**	**0·46**	**0·10**	**0·57**

*Consequent on the alteration of boundaries, the death-rates have been calculated on the following adjusted populations :—1933, 1,807,800 ; 1934, 1,809,597.

In Appendix I are given the tuberculosis deaths and death-rates in the urban and rural sanitary districts in the Administrative County, and in the dispensary areas.

The following Table 3 shows the deaths recorded from pulmonary tuberculosis in 1935 and the preceding 14 years analysed according to sex and age :—

Period	Estimated sex population	Pulmonary deaths in various age-groups									Death-rate per 1,000 of sex population
		0 to 5	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total	
Males.											
1921–25 (average)	841,030	9	15	120	131	151	153	83	26	688	0·81
1926–30 (average)	856,920	4	9	107	111	133	130	79	27	600	0·70
1931	858,023	6	11	99	126	120	142	80	29	613	0·71
1932	856,733	4	6	95	111	99	119	90	16	540	0·63
1933	859,156	1	8	90	108	119	125	92	30	573	0·66
1934	860,010	4	3	54	100	90	114	81	33	479	0·55
1935	865,477	—	4	53	86	97	98	100	37	475	0·54
Females.											
1921–25 (average)	929,614	8	26	172	145	104	69	37	17	578	0·62
1926–30 (average)	946,771	4	18	155	133	81	49	37	18	495	0·52
1931	946,377	2	10	129	95	75	49	31	17	408	0·43
1932	945,967	1	18	121	113	98	34	35	15	435	0·45
1933	948,644	—	16	126	125	69	49	29	23	437	0·46
1934	949,587	4	10	107	121	57	27	30	13	369	0·38
1935	955,623	1	11	109	114	61	44	31	9	380	0·39

Deaths from Non-Pulmonary Tuberculosis.

The mortality from non-pulmonary tuberculosis in 1935 is greatest among young children aged 0–5, followed by the age-groups 15–25 and 5–15. The actual numbers of children dying each year from this form of the disease have greatly diminished. This decline is due to segregation and supervision of the adult pulmonary cases, social measures, the safeguarding of the milk supply, and the successful modern methods of treatment of children with non-pulmonary disease.

The classification of the deaths in 1935 from non-pulmonary tuberculosis, according to part affected, is as follows :—Vertebral

column, 18; other bones and joints, 10; intestines and peritoneum, 34; central nervous system, 74; disseminated, 32; genito-urinary, 13; lymphatic system, 3; skin and subcutaneous tissue, 3; adrenals, 1; other organs, 1; total 189 (adults: males 58, females 51; children: males 40, females 40).

II.—NOTIFICATION AND NON-NOTIFICATION OF TUBERCULOSIS CASES.

It is the statutory duty of every medical practitioner to notify within 48 hours to the local medical officer of health any case of tuberculosis occurring in his practice, and the medical officer of health is charged with the duty of keeping a corrected register of such cases reported in his sanitary district.

The statutory notifications are made under the Public Health (Tuberculosis) Regulations, 1930, which came into force on 1st January, 1931. These regulations consolidate the regulations issued in 1912, 1921 and 1924, and they also include several minor amendments of an administrative nature.

For measures dealing with tuberculosis to be successful, it will be generally agreed that an accurate and complete knowledge of all the existing cases is required. If cases only become known through the death certificate, control of the spread of infection cannot be effective.

I have continued to direct special attention to the notification of cases of tuberculosis, and have engaged in correspondence with medical practitioners, medical officers of health, and medical superintendents, over many individual cases.

The extent of non-notification of pulmonary cases in the Administrative County is shown in the following Table 4 :—

Year.	Number of deaths from pulmonary tuberculosis recorded.	Deaths not notified under Regulations during life.	
		Number.	Percentage to pulmonary deaths.
1918	1652	303	18·3
1919	1339	221	16·5
1920	1323	177	13·3
1921	1301	135	10·3
1922	1362	105	7·7
1923	1250	85	6·8
1924	1215	64	5·2
1925	1205	67	5·5
1926	1158	58	5·0
1927	1105	54	4·8
1928	1066	56	5·2
1929	1102	62	5·6
1930	1046	46	4·3
1931	1021	61	5·9
1932	975	37	3·8
1933	1010	45	4·4
1934	848	35	4·1
1935	855	35*	4·1*

* Of the 35 deaths which, in 1935, escaped statutory notification

as tuberculous cases during life, it should be stated that 8 were known to the tuberculosis officer and 6 died in public institutions. If these 14 deaths which were known otherwise than by the official primary notification under the Regulations be deducted, then the percentage of 4·1 *non-notified fatal cases would be reduced to* 2·5, *which figure may be taken as the real extent of missed notifications resulting in cases escaping supervision by the health authorities.*

The improvement which has been secured in recent years in the notification of cases of pulmonary tuberculosis before death would not have been practicable without the cordial co-operation of the local medical officers of health and, of course, the general practitioners who make the notifications.

There is no doubt that in this Administrative County a much smaller proportion of cases of tuberculosis escapes notification than is frequently the experience in other parts of the country. Thus, we have a smaller proportion of unknown cases or unknown sources of infection remaining outside the measures for the control of tuberculosis.

For non-pulmonary tuberculosis, there were 31 non-notified fatal cases in 1935, which on the total deaths from this form of the disease equalled 16·4 per cent. The percentage in the previous year was 19·9.

Special Enquiry into Non-Notified Fatal Cases.

Commencing in October 1920, special investigations have been carried out in regard to every individual death recorded which had not been previously notified. The procedure followed has been to examine the names of persons dying from tuberculosis given in the weekly returns of deaths sent, by arrangement, to the tuberculosis department by the district registrars. The names are compared with the notification register, and the death of every person not previously reported as a case under the Public Health (Tuberculosis) Regulations is enquired into; information as to the circumstances attending non-notification is obtained from the tuberculosis officer and, if necessary, the medical attendant.

In 1935, there were 66 such deaths, and the enquiry for that year gave the following important results :—

(1) That 21 (6 pulmonary, 15 non-pulmonary) of the 66 deaths in 1935 occurred in public institutions.

(2) That of the remaining 45 deaths, the circumstances of non-notification were as stated in the following table :—

TABLE 5. *Circumstances of non-notification of fatal cases.*

	Period 1st January to 31st December, 1935.		
	Pulmonary	Non-pulmonary	Total
Doctor in attendance shortly before death—			
1 week or less	3	—	3
1 to 2 weeks	—	3	3
Complicated cases, presenting difficulty in diagnosis	5	3	8
Misinterpretation of Tuberculosis Regulations and notification believed to be unnecessary—			
Cases previously notified in another area ..	4	1	5
Cases known to tuberculosis officers—considerable doubt as to diagnosis in some of these cases	7	2	9
No doctor in attendance	5	—	5
Disease of long duration	—	2	2
Attended by more than one doctor, and notification believed to have been made by first practitioner	4	1	5
Notified after death	1	1	2
No apparent reason for non-notification	—	1	1
	29	14	43
Tuberculosis not primary cause of death	—	2	2
TOTAL	29	16	45

(3) *This table shows that in only* 1 *of the* 45 *deaths was there no reasonable excuse for non-notification.*

The efficiency of notification in England varies directly with the efficiency of the county council or county borough scheme dealing with tuberculosis. If there is no really comprehensive scheme, if there are poor and newly qualified, part-time, and badly paid tuberculosis officers, if there are insufficient means for expert diagnosis, and too few beds for treatment, then a high proportion of non-notified fatal cases will be the rule and not the exception.

TOTAL "KNOWN SOURCES OF POSSIBLE INFECTION."

One effect of the better notification of cases by practitioners has been to add to the number of new cases in recent years and statistically to make the figures disadvantageously comparable with the earlier years when a larger number of cases escaped notification.

It is, however, possible to obtain a truer record of the number of new cases of pulmonary tuberculosis occurring year by year by adding together (*a*) the notifications and (*b*) the deaths which occurred without notification being made during life ; this total gives clearly the number of known sources of possible infection as Table 1 on page 2 shows.

III.—APPLICATIONS FOR TREATMENT.

All statutorily notified cases do not come under the tuberculosis scheme. For instance, tuberculosis patients in mental hospitals are treated in such hospitals, and are not on the dispensary register. The tuberculosis officer assists occasionally in diagnosis at mental hospitals; it may be that even more co-operation between the two services would be beneficial. Again, a small proportion of cases are in very good financial circumstances, and prefer to arrange and pay for their own treatment. Another small proportion consists of persons who have delayed consulting their doctors until they are in the last stage of the disease and for whom treatment under the scheme for the few days before death is of no use.

During 1935, there were 1,977 cases notified under the Public Health (Tuberculosis) Regulations as suffering from tuberculosis (all forms), whereas the number of persons who applied for treatment to the County Council was 1,725, equal to 87 per cent. of the notifications.

Application is in the simplest form, consisting of a declaration as to residential qualification, particulars of membership in approved society (if any) under the National Health Insurance, name, age, and address. Treatment under the scheme, therefore, is not compulsory on a patient, and is provided without charge.

Table 6 below shows the number of "new" patients (1,725) who applied for treatment under the County scheme during the year 1935 :—

	Number of applications received during 1935.	Diagnosis of new applicants for treatment.			
		Pulmonary cases.	Pulmonary and non-pulmonary.	Non-pulmonary cases.	Diagnosis not confirmed (non-tuberculous).
Men	713	564	17	127	5
Women ...	658	482	6	165	5
Boys	179	18	1	159	1
Girls	175	30	3	141	1
TOTAL ...	1,725	1,094	27	592	12

Applications received in previous years were :—1918–22 average, 2,255; 1923–27 average, 2,258; 1928–32 average, 1,989; 1933, 1,920; 1934, 1,820; compared with 1935, 1,725. Thus there were 95 fewer applications than in 1934.

Classification of New Patients.

(*a*) *Pulmonary tuberculosis.*

During 1935, applications for treatment were received from 1,121 new patients, and these were reported by the tuberculosis officers to be in the undermentioned stages of the disease on the first examination :—

T.B. minus (Sputum negative or absent)	409 or 36·5	per cent.
T.B. plus 1 (Early cases, sputum positive)	99 or 8·8	,, ,,
T.B. plus 2 (Intermediate cases, sputum positive)	486 or 43·4	,, ,,
T.B. plus 3 (Advanced cases, sputum positive)	127 or 11·3	,, ,,

It is well known that, throughout the country, tuberculosis officers do not see many of the new cases in the early stage of the disease. Some patients through ignorance, others on account of economic reasons, neglect to consult a doctor when in the early stage, and so lessen their chance of recovery. In the Administrative County we have for several years made special investigations into the reasons underlying such disastrous delay on the part of patients. These investigations have been continued in 1935, yielding the following conclusions which correspond closely with those published in previous reports :—

1.—Altogether 70·0 per cent. of the 127 advanced cases either had no doctor or had only been attending their doctor for less than two months when first examined by the tuberculosis officer or notified. The corresponding percentage in 1934 was 75·9.

2.—After making allowance for a percentage of fulminating cases ("galloping consumption") a large proportion—three fourths—of patients had felt ill for one or more months before consulting a doctor.

3.—The reason for late notification and patients delaying their application until in an advanced stage of the disease is chiefly the disinclination or unwillingness of the patients to report themselves to their doctor when feeling ill. This is due mainly to the insidious onset of the disease, the discomfort being only slight at first.

4.—There does not appear to be evidence in any large number of cases of unreasonable delay on the part of family doctors referring cases to the tuberculosis officer.

5.—The initiative to seek treatment when ill rests with the patient himself, and the only feasible remedy lies in the education of the public as to symptoms and common dangers of tuberculosis and the need for securing prompt treatment. This cannot be too strongly or too often emphasised.

In previous reports I have mentioned the teaching of hygiene to the older children at school, a matter which has been brought to the notice of the Director of Education for the County.

The tuberculosis medical staff have to depend very largely on the general practitioners throughout the County for bringing forward tuberculous patients, and it is satisfactory to note that 91 per cent. of new cases (excluding contacts) are sent *before notification* to the tuberculosis officers for an opinion as to diagnosis. Too much importance is still laid by some doctors on sputum examinations alone, and occasionally too long a time is allowed to elapse in order

that the sputum may be tested; or steps are not taken to report the case until it is returned as "positive."

(*b*) *Non-pulmonary tuberculosis.*

There were 592 new cases diagnosed by the tuberculosis officers as suffering from non-pulmonary tuberculosis in the following forms :—

Bones, joints and spine	139	
Abdomen	61	
Other organs	42	592
Peripheral glands	316	
Skin	34	

In 1934 the number of applications from non-pulmonary cases was 651.

IV.—AFTER-HISTORY FOR FIVE YEARS OF 2,734 NEW CASES OF TUBERCULOSIS REPORTED FROM ALL SOURCES IN 1930

From time to time in the past the after-histories of patients treated under the County scheme have been published. This year, by way of change, I have taken the after-histories of the 2,734 new patients who were reported from all sources, during 1930, to be suffering from tuberculosis. The difference between the two sets of data may be explained as follows :

(i) The after-histories previously dealt with were of patients who had been examined by the tuberculosis officers, accepted as tuberculous, and afforded some form of treatment under the County scheme ;

(ii) The after-histories here presented relate to all known cases of tuberculosis occurring in the Administrative County during 1930, whether they eventually came under the County scheme or not. All these patients had a residential qualification in the Administrative County.

It will be realised that the 2,734 patients were not all straightforward notified cases suitable for treatment under the scheme ; some were in mental hospitals, others were reported for the first time at death, and so on.

An analysis of the cases to show how they fared during the five years succeeding 1930—that is, to 1935—is easier to follow in the form of a chart than in the form of a table ; consequently a chart has been constructed and is reproduced on the folded sheet here inserted.

The observation of each living case has been carried to a period of five years after the date when first reported to us as tuberculous. For instance, a case first coming to our notice in May, 1930, has been followed up (if living and still tuberculous) until May, 1935.

Attention is directed to the following points which arise from the chart :—

1. That 75·2 per cent. of the gross number of new tuberculosis cases coming to knowledge in the Administrative County of Lancaster during 1930 were dealt with under the tuberculosis scheme of the County Council. A further 4·3 per cent. of the gross number related to cases in which the statutory notification was cancelled, on the advice of the tuberculosis officer, after several months' observation.

CHART

SHOWING THE

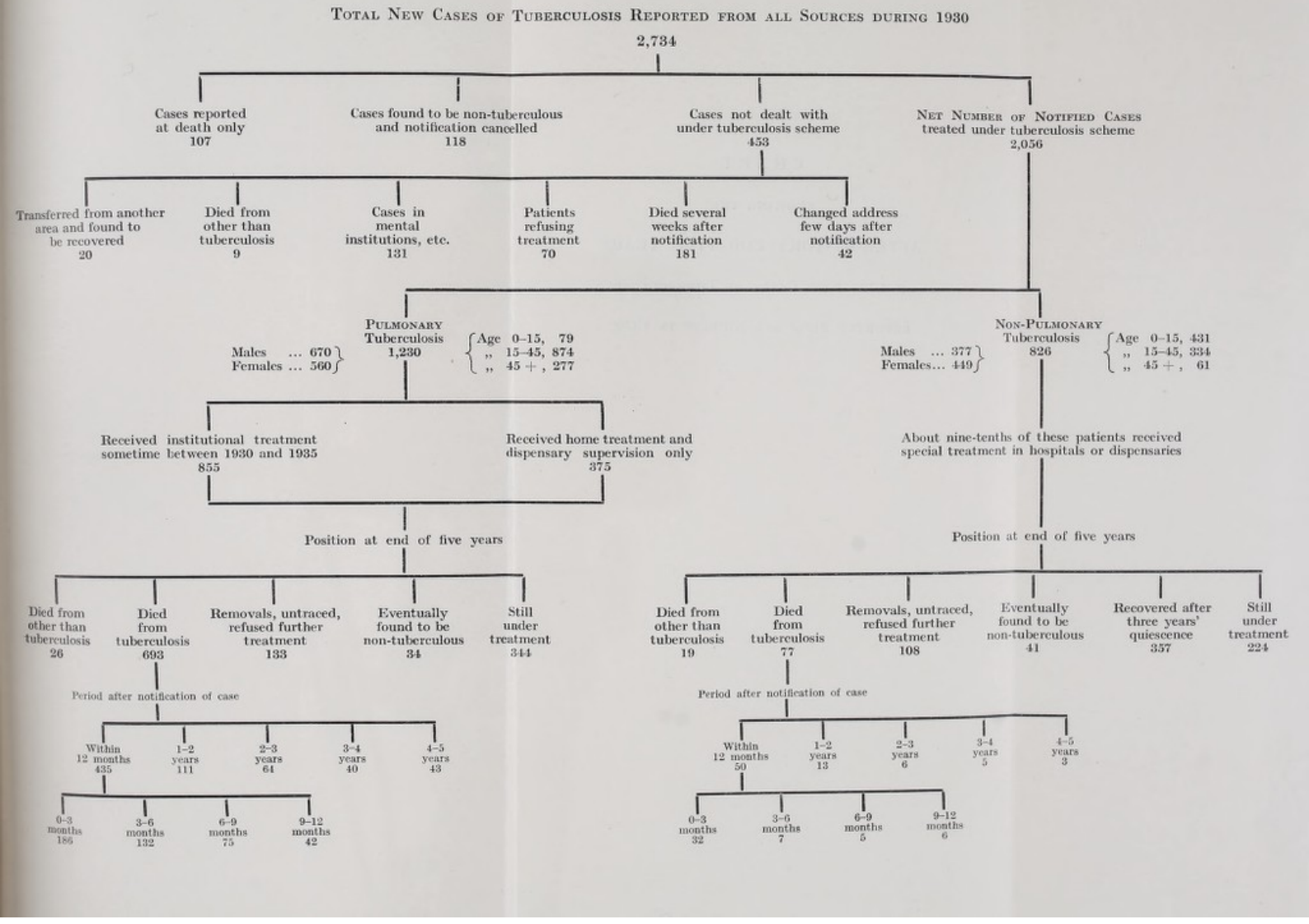
AFTER-HISTORY FOR FIVE YEARS

OF 2,734 NEW CASES OF TUBERCULOSIS

REPORTED FROM ALL SOURCES IN 1930.

ADMINISTRATIVE COUNTY OF LANCASTER.

CHART SHOWING THE AFTER-HISTORY FOR FIVE YEARS OF 2,734 NEW CASES OF TUBERCULOSIS REPORTED FROM ALL SOURCES IN 1930.



2. The reasons why 20·5 per cent. of the gross number did not come directly under the County scheme were: (*a*) Cases reported at death only, 3·9 per cent.; (*b*) cases in mental hospitals, 4·8 per cent.; (*c*) cases dying within several weeks (average three weeks) of notification, 6·6 per cent.; (*d*) cases transferred from another area and found to be recovered, cases dying from a disease other than tuberculosis, and cases removing from the County several days after notification, 2·6 per cent.; and (*e*) patients declining to have treatment under the official County scheme, 2·6 per cent.

3. In view of the fact that treatment is voluntary, the percentage of 2·6 declining treatment is low. The majority of the 70 patients forming this category have special facilities for proper means of prevention and treatment; the minority do not wish to submit to the tuberculosis officers' examination, and it is possible that a few of them would not be accepted as tuberculous.

4. Of the 1,230 pulmonary cases, 69·5 per cent. received one or more periods of sanatorium or hospital treatment; of the 826 non-pulmonary cases, about nine-tenths received special treatment at a hospital (*e.g.*, orthopædic) or at a dispensary (*e.g.*, artificial light).

5. Of the *net* number (1,097) of definite pulmonary cases (removals from area excluded), 63·1 per cent. died from tuberculosis within the five years (39·7 per cent. dying in the first year, 10·1 per cent. in the second year, 5·8 per cent. in the third, 3·6 per cent. in the fourth, and 3·9 per cent. in the fifth).

6. The *net* number of definite non-pulmonary cases (removals excluded) was 718; of these, 10·7 per cent. died from tuberculosis within the five years (6·9 per cent. succumbing within the first year). This low percentage bears out the satisfactory results now being obtained in the treatment of non-pulmonary tuberculosis.

Comment

This survey emphasises the importance of prevention. While methods of diagnosis have improved, while new methods of treatment are tried and not without success on individuals, it still remains that the best results in anti-tuberculosis work obtain by detailed, unobtrusive and continually-applied measures for the *prevention* of this disease.

V.—THE DISPENSARY ORGANISATION.

A tuberculosis dispensary should be the centre of activity, for a town or district, in regard to measures for the prevention of the disease, the expert examination and diagnosis of cases, together with the supervision, special treatment, and care of all known tuberculous persons.

For dispensary purposes, the Administrative County is divided into five large areas, average population 317,000, and three small areas (see folding Table A, page 27).

Each large area is in the charge of a consultant tuberculosis officer, and to help the consultant there are two assistant tuberculosis officers, four to seven tuberculosis health visitors, and a clerical staff of two. In each area there is a chief dispensary, and two or more branch dispensaries; at the chief dispensary is co-ordinated the whole of the work required in that particular area. The County Council have provided in each of these large areas a sanatorium-hospital containing up to 56 beds for the treatment and isolation of patients near their homes. The consultant tuberculosis officer of the particular dispensary area acts as the visiting medical superintendent.

The three small dispensary areas—Furness, Fylde, and Wigan County—are in the charge respectively of the medical superintendent of the High Carley Sanatorium (118 beds for pulmonary tuberculosis), the Elswick Sanatorium (70 beds for pulmonary tuberculosis), and the Wrightington Hospital (226 beds for non-pulmonary tuberculosis and combined cases). These small areas are each equipped with one dispensary, and have one or two tuberculosis health visitors; the clerical work is done in the office of the institution.

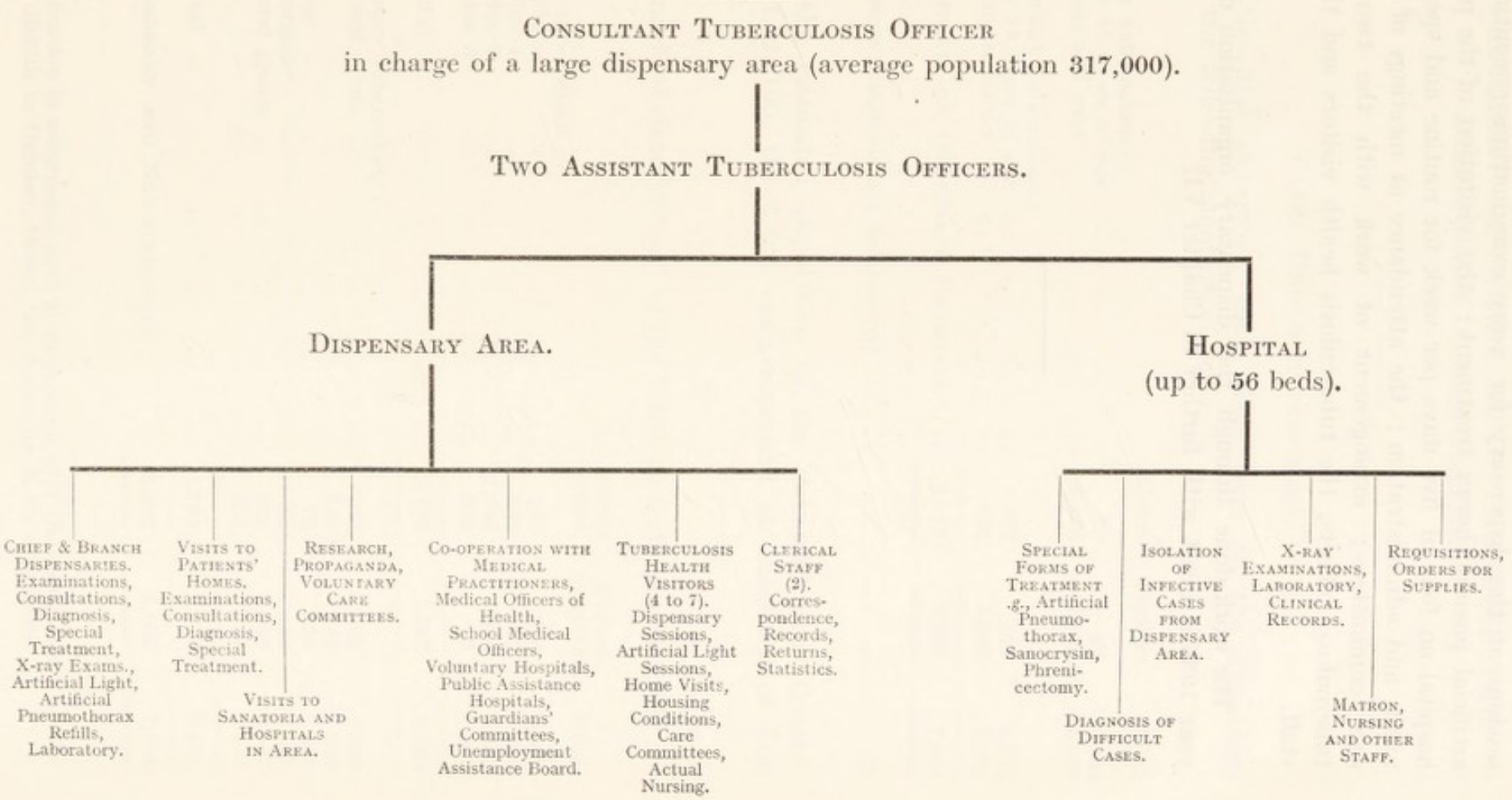
Thus, the dispensary side of the work is not divorced from the institutional side, or *vice versa*.

The chart opposite illustrates the organisation and work of one of the five large dispensary areas in the Administrative County.

The duties of a consultant tuberculosis officer will, therefore, include in any week the holding of dispensary sessions for diagnosis and advice as to treatment; the visitation in consultation with the medical attendant of patients in their homes for diagnosis and advice as to treatment; the examination of patients undergoing artificial light treatment at the dispensary centre; the holding of

Administrative County of Lancaster.

Chart illustrating the organisation and work of one of the five large dispensary areas in the County. The scheme generally is under the control of the Central Tuberculosis Officer acting for the County Tuberculosis Committee.



sessions at the dispensary for x-ray examinations ; continuation of artificial pneumothorax treatment ; the visitation of the pulmonary hospital on four or five days per week for routine and special treatment, and administration ; the attendance at meetings of voluntary care committees ; arrangement of work with the two assistant tuberculosis officers, the tuberculosis health visitors and the clerical staff.

The work done through the dispensary organisation during the year 1935 is dealt with further in Chapter VI.

VI.—SUMMARY OF WORK DONE THROUGH THE DISPENSARY ORGANISATION.

Cases Under Supervision.

On the 31st December, 1935, there were on the dispensary registers the following numbers of cases :—

	Males.	Females.	Total.
Pulmonary tuberculosis :			
Under 15 years of age	75	87	162
15 years and over	2,253	1,810	4,063
Non-pulmonary tuberculosis :			
Under 15 years of age	665	610	1,275
15 years and over	822	1,082	1,904
Total Patients on Dispensary Registers ...	3,815	3,589	7,404
Doubtful cases (diagnosis not determined)			18

On the estimated population of the Administrative County, namely, 1,821,100, the 7,404 cases represent an incidence of 4·06 per 1,000.

The medical classification* of the 7,404 patients was as under :—

	Disease active.	Disease quiescent.	Total.
Pulmonary tuberculosis :			
T.B. minus	555	956	1,511
T.B. plus 1	332	295	627
T.B. plus 2	1,348	484	1,832
T.B. plus 3	203	52	255
Total	2,438	1,787	4,225
Non-pulmonary tuberculosis :			
Bones and joints	303	363	666
Spine	141	142	283
Abdomen	75	219	294
Other organs	58	83	141
Peripheral glands	363	1,084	1,447
Skin	224	124	348
Total	1,164	2,015	3,179
Total Pulmonary and Non-pulmonary ...	3,602	3,802	7,404

* Classification in accordance with Memorandum 37/T (Revised) issued by the Ministry of Health in October, 1930. See Appendix X for definitions.

The following table shows the dispensary work done in the Administrative County of Lancaster during 1935, compared with all counties in England, and England (all areas) :—

TABLE 7.—*Dispensary Work done during 1935 in Lancashire, all Counties in England, and England (All Areas) calculated per 100 Deaths from Tuberculosis.*

		Ratio per 100 deaths from Tuberculosis.		
		Lancashire.	All counties in England.*	England (all areas).
Number of new cases examined ...	Children	90	89	90
	Adults	321	231	243
Number of new contacts examined..	Children	43	84	99
	Adults	45	54	74
Total new cases and new contacts examined		499	458	506
Number of new cases and new contacts diagnosed as suffering from				
Pulmonary tuberculosis ...	Children	4	7	10
	Adults	98	96	102
Non-pulmonary tuberculosis ...	Children	27	20	18
	Adults	28	15	14
Total new cases and new contacts diagnosed as suffering from tuberculosis		157	138	144
Number of sputum examinations		497	337	419
Number of x-ray examinations		960	321	367
Number of consultations :—				
Personal		59	98	72
Other		518	404	425
Number of home visits by tuberculosis officers		460	423	293
Number of home visits by tuberculosis health visitors ...		3,815	2,505	2,827
Number of patients' dispensary attendances		2,282	2,041	2,854
Number of patients on the dispensary register at the end of the year:				
Pulmonary tuberculosis ...	Children	16	55	69
	Adults	389	415	426
Non-pulmonary tuberculosis ...	Children	122	110	103
	Adults	182	85	77
Total		709	665	675
Number of T.B. plus cases on the dispensary registers at the end of the year		260	229	241
Number of cases remaining undiagnosed at the end of the year...		2	22	39
Number of cases removed from the dispensary registers as recovered		69	54	49
Number of recovered cases restored to the dispensary registers...		6	2	2

* Excluding London.

A further detailed analysis (including age-groups) of the number of tuberculous cases on the dispensary registers is given in Appendix III, from which the following proportions have been calculated :—

	Per 1,000 of child population (0 to 15).	Per 1,000 of adult population (15 and over).
(*a*) PULMONARY TUBERCULOSIS.		
Total number of cases of pulmonary tuberculosis per 1,000 of the population		2·32
Number of *active* cases per 1,000 of the population ...		1·33
Number of *quiescent* cases per 1,000 of the population ...		0·98
Number of *T.B. plus* cases—children	0·04	
adults		1·89
Number of *T.B. minus* cases—children	0·36	
adults		0·95
Of the total cases of pulmonary tuberculosis 3·83 per cent. were children under 15 years of age.		
(*b*) NON-PULMONARY TUBERCULOSIS.		
Total number of cases of non-pulmonary tuberculosis per 1,000 of the population		1·74
Number of *active* cases—children	1·10	
adults		0·50
Number of *quiescent* cases—children	2·11	
adults		0·82
Number of cases, divided according to the part affected :—		
Bones, joints, and spine—children	0·87	
adults		0·42
Abdomen— children	0·29	
adults		0·12
Peripheral glands— children	1·90	
adults		0·48
Skin— children	0·10	
adults		0·21
Other organs— children	0·03	
adults		0·08

The foregoing proportions show the main factors in the incidence of tuberculosis, and if other authorities published similar information valuable comparisons could be made.

X-RAY EXAMINATIONS.

An x-ray plant for the use of the consultant tuberculosis officer is provided at one of the dispensaries in each of the five large areas. In the small areas, namely, Furness, Fylde, and Wigan County, the x-ray work is carried out at the respective institutions of which the consultant tuberculosis officer is also medical superintendent—High Carley, Elswick and Wrightington.

New plants were installed at the Wolstenholme Pulmonary Hospital in January, 1935, and at the Lancaster Pulmonary Hospital in March, 1935. The apparatus at the Lancaster Dispensary was transferred to the Chorley Dispensary in April, 1935, and is available for patients in the southern portion of Area No. 1.

The following statement shows the x-ray work done at County dispensaries, sanatoria and hospitals during 1935 compared with several previous years :—

TABLE 8.

	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.
Dispensary patients:								
Skiagrams ...	5,519	5,364	5,676	6,045	6,336	6,457	6,729	6,560
Screenings ...	672	519	854	1,417	2,163	2,638	3,408	3,464
Institutional patients:								
Skiagrams ...	774	1,320	2,162	2,458	3,763	3,779	3,914	4,371
Screenings ...	470	840	2,012	2,988	3,418	4,147	4,426	4,857
Total	7,435	8,043	10,704	12,908	15,680	17,021	18,477	19,252

The greater amount of artificial pneumothorax treatment for which radiological control is necessary accounts mainly for the increasing number of x-ray examinations.

The policy of placing an apparatus in each dispensary area for use by the consultant tuberculosis officer and his staff is, from experience, found to be the best method, because the tuberculosis officer, with his knowledge of the patient's history and clinical signs, is most fitted to make a correct interpretation of the skiagrams.

HOUSING.

The following table shows the housing conditions of all patients under treatment or supervision at the end of 1935. Whilst every effort is made to secure that infectious cases occupy a separate room, or at least a separate bed, no useful purpose is served by making the same insistence in regard to patients with the disease quiescent or arrested. The non-pulmonary cases are given separately, and only a very small number indeed may be considered infectious.

TABLE 9.—*Housing statistics of 7,404 County patients.*

	Pulmonary cases considered *infectious.*		Pulmonary cases considered *not infectious.*		Non-pulmonary cases.	
	Under 15 years.	15 years & over.	Under 15 years.	15 years & over.	Under 15 years.	15 years & over.
Patients occupying a separate bedroom ...	9	1,319	32	1,062	239	544
Patients occupying a separate bed but not a separate bedroom ...	7	479	65	420	542	412
Patients not occupying a separate bed	—	93*	49	690	494	948
TOTAL	16	1,891	146	2,172	1,275	1,904

* 30 of these 93 cases were isolated in sanatoria or pulmonary hospitals at the end of 1935.

It will be seen that 93 patients suffering from pulmonary tuberculosis and considered to be infectious were not occupying a separate bed when at home at the time the census of the housing conditions was taken at the end of 1935. Of this number, 30 were away from home and isolated in pulmonary hospitals or sanatoria, leaving (from a total of 1,907 infectious cases) 63, or 3·3 per cent., infectious cases at home not occupying a separate bed. The percentage in 1934 was 4·5.

Appendix IV of this report shows the housing conditions of the patients in each dispensary area.

By Section 62 of the Public Health Act, 1925,* a county council or a local sanitary authority now have power to secure the compulsory isolation of infectious cases on the order of the magistrates. So far it has only been necessary for one patient to be so dealt with.

The powers contained in Section 62 read as follows :—

(1) Where it is proved to the satisfaction of a court of summary jurisdiction :—

(*a*) that any person suffering from pulmonary tuberculosis is in an infectious state ; and

(*b*) that the lodging or accommodation provided for that person is such that proper precautions to prevent the spread of infection cannot be taken, or that such precautions are not being taken ; and

(*c*) that serious risk of infection is thereby caused to other persons ; and

(*d*) that a suitable hospital or institution exists for the reception and accommodation of that person ;

the court, upon the application of the county council or of the local authority, may, with the consent of the superintending body of the hospital or institution, make an order for the removal of that person to that hospital or institution and for his detention and maintenance therein for such period not exceeding three months as the court think fit.

(2) Before making application for an order under this section, the county council or local authority shall give to the person to whom the application is to relate, or to some person having the care of that person, not less than three clear days' notice of the time and place at which the application will be made.

(3) Upon application being made for an order under this section the court may in any case in which they think it necessary to do so require the person to whom the application relates to be examined by such duly qualified medical practitioner as the court may direct.

(4) The cost of the removal of any person to a hospital or institution, and of his detention and maintenance therein in pursuance of an order made under this section, shall be borne by the county council or local authority upon whose application the order was made, and during any period for which a person is so detained the county council or local authority may and, if so required by the court, shall make towards the maintenance of any dependants of that person such contributions as the county council or local authority think fit, or as may be directed by the court, as the case may be.

(5) Where before the expiration of any period for which a person has been ordered to be detained under this section, the court is satisfied upon the application of the county council or local authority that the conditions which led the court to

* To be superseded on the 1st October, 1937, by Section 172 of the Public Health Act, 1936.

order his detention will again exist if he is not detained for a further period, the court may, subject to the like consent, order the detention of that person for a further period, not exceeding three months.

(6) Upon not less than three clear days' notice being given to the clerk of the county council or local authority upon whose application an order under this section was made, application for the rescission of the order may be made by or on behalf of the person to whom the order relates at any time after the expiration of six weeks from the date of the order, and upon the hearing of any such application the court may, if they think fit, rescind the order.

(7) An order under this section may be addressed to such constable or officer of the county council or local authority as the court may think expedient, and any person who wilfully disobeys or obstructs the execution of such order shall be liable to a penalty not exceeding ten pounds.

(8) Any expenses incurred under this section by a county council shall be defrayed as expenses for general county purposes, or, if the Minister of Health by order so directs, as expenses for special county purposes charged on such part of the county as may be provided by the order.

Examination of House Contacts.

By the systematic examination of house contacts, particularly the contacts of patients with positive sputum, many early or unsuspected cases of tuberculosis are detected. Owing to indifference or unwillingness, considerable difficulty—which, however, is gradually being overcome—is experienced in persuading contacts to come to the dispensary for examination, or even to submit themselves for examination at all.

By direction of the Ministry of Health, Memo. 37/T (Revised), cases are regarded as contacts only if the cause of their being examined is the fact that they have recently been, or still are, living in contact with some dispensary patient or other notified case; many persons suffering, or suspected to be suffering, from tuberculosis who attend at the dispensary of their own accord, or who are referred by a private medical practitioner, may give a history of previous contact with a known case of tuberculosis, but this does not bring them within the definition of "contacts."

The following Table 10 shows the number of new contacts which have been examined in the Administrative County during 1935:—

	Diagnosed as tuberculous.		Doubtful.	Non-tuberculous.	Total.
	Pulmonary.	Non-pulmonary.			
Examined at home ...	4	—	—	62	66
Examined at dispensary	44	3	2	802	851
Total	48	3	2	864	917
	51				

Of the 917 new contacts examined during the year, 51 were ultimately diagnosed as definite cases of tuberculosis—pulmonary 48, and non-pulmonary 3. These cases are equal to 55·61 per 1,000 of contacts examined, as against the proportion of 4·06 tuberculous persons, per 1,000 of the population, known to the dispensary staff in the County. Thus, the examination of selected contacts revealed many more tuberculous cases proportionately than would be found in the ordinary population.

It may be stated that of the 48 pulmonary cases, 35 per cent. were found to have a positive sputum.

Co-operation takes place between the tuberculosis medical staff and the school medical officers. The latter refer doubtful or suspicious cases to the tuberculosis officer; on the other hand the tuberculosis officer reports confidentially to the school medical officer the name of any school child who was or is actually in contact (*i.e.*, living in the same house) with an adult infectious case of pulmonary tuberculosis. The school medical officer is then able to take what action he considers desirable in regard to supervising the child or children so exposed to infection.

Examination of Sputum.

As an aid to diagnosis, arrangements are in existence for the examination, free of cost, of specimens of sputum sent by medical attendants. At the chief dispensary in each of the five large areas a small laboratory is installed for this work; in the three small areas the examination of sputum is carried out at the institution in the area. In addition, an arrangement exists with the Director of the Public Health Laboratory, Manchester, for the examination of specimens including inoculation tests.

The following statement shows the results of the examinations made at the dispensary laboratories in 1935, compared with the previous year :—

	1934.	1935.
Positive (*i.e.*, tubercle bacilli present)	1,423	1,374
Negative (*i.e.*, tubercle bacilli not found)	5,313	5,393
Total	6,736	6,767

In addition to the 6,767 examinations made at the dispensary laboratories, the following work was done during 1935 at the Public Health Laboratory, Manchester :—

Inoculation tests...	80
Inoculation tests and cultivation on Jensen medium ...	42
Cultivation tests alone	7
Typing for bovine or human strain	3
Microscopical examinations	9

Tuberculosis and the Milk Supply.

The tuberculosis officers co-operate with the local medical officers of health in regard to any case of tuberculosis in a child in which the milk supply is suspected of being the source of infection. The initial procedure is for the tuberculosis officer to inform the medical officer of health, to ask if he is willing to have a bacteriological examination made of the suspected milk, and to take action, if necessary, on the farm. If the milk is designated, *e.g.*, accredited, then the matter is dealt with by the County Medical Officer of Health.

Tuberculosis Officers' Visits to Sanatoria and Hospitals.

Periodical visits (mostly monthly) have continued to be paid by one or other of the consultant tuberculosis officers to the majority of the pulmonary hospitals, non-County sanatoria, and special hospitals treating County patients. These visits are of mutual help, inasmuch as they keep in touch the medical superintendent and the tuberculosis officer, who are able to confer on the patients' future treatment, the home circumstances, the provisions of the County scheme, and so on.

The following is the rota of visits for 1936 :—

Dr. G. H. Leigh	... Wilkinson Sanatorium and Heath Charnock Pulmonary Hospital.
Dr. B. MacPhee	... Eastby and Halifax Sanatoria, Burnley Pulmonary Hospital and East Lancashire Tuberculosis Colony.
Dr. G. Fletcher	... Aitken and Springfield Sanatoria, and Chadderton Pulmonary Hospital.
Dr. G. Jessel ...	... Derwen Cripples' College and Robert Jones and Agnes Hunt Orthopædic Hospital.
Dr. C. W. Laird	... Eccleston Hall and Hefferston Grange Sanatoria.
Dr. G. Leggat	... Westmorland Sanatorium.
Dr. G. B. Charnock...	Liverpool Open-Air Hospital for Children, Leasowe, and Royal Liverpool Children's Hospital, Heswall and Thingwall Branches.
Dr. E. H. A. Pask	... Pemberton Pulmonary Hospital and Warwickshire Orthopædic Hospital.

Provision of Special Nourishment.

Special nourishment is granted to tuberculous persons on the following conditions, which have been approved by the Ministry of Health :—

(1) That special nourishment be in no case ordered for a period of more than three months, and if in any case a continuance of the treatment is considered from a medical point of view desirable, the Central Tuberculosis Officer to report the case specially to the County Tuberculosis Committee.

(2) That special nourishment be granted to persons who are waiting for admission to sanatoria or hospitals, or have returned therefrom, when it is thought to be medically essential as part of the cure of the disease.

(3) That special nourishment may be allowed to cases not included in the foregoing, provided that particulars of the cases are laid before the Tuberculosis Committee for consideration.

(4) That each grant of special nourishment will only be allowed by the Tuberculosis Committee subject to the patient carrying out, in a satisfactory way, the medical treatment and such general hygienic measures as may be advised by the medical practitioner and tuberculosis officer.

(5) That special nourishment be limited to orders for new milk and cream, unless on special report other nourishment be found desirable.

(6) That the limit of expenditure be 7/- per week, unless an amount in excess of this sum is specially recommended on medical grounds by the Central Tuberculosis Officer and sanctioned by the Tuberculosis Committee.

During the year, 2,092 grants of special nourishment for varying periods were made to 867 individual patients as part of their medical treatment. The figures in 1934 were 1,953 grants to 851 patients.

Special Surgical Appliances.

During 1935 the following surgical appliances were supplied to patients on the recommendation of the tuberculosis officers :—

Abdominal belt, 1 ; abduction frames, 3 ; artificial limbs, 7 ; back splint, 1 ; caliper splints, 19 ; celluloid splints, 19 ; crutches, 4 pairs ; elbow splint, 1 ; hip splints, 5 ; hip support, 1 ; jean jackets, 2 ; knee splints, 4 ; leather anklets, 2 ; leather collar, 1 ; pattens, 3 ; sacro-iliac belts, 2 ; shoulder splint, 1 ; spinal brace, 1 ; spinal collar, 1 ; spinal jackets, 2 ; spinal supports, 41 ; surgical boots, 34 ; Taylor's brace, 1 ; truss, 1 ; urinals, 7 ; wrist supports, 2.

Provision of Bedsteads, Mattresses, and Nursing Requisites.

In each County dispensary area a small stock of bedsteads, mattresses (but not bedding), and nursing requisites belonging to the County Council is available for loan to necessitous patients undergoing home treatment.

The bedsteads and mattresses, which are held at the disposal of the consultant tuberculosis officers, have proved of valuable assistance in securing the better sleeping accommodation at home of persons with pulmonary tuberculosis considered to be infectious.

The table following shows the number of these articles owned by the County Council, and also the number of patients who have been granted the use of the articles :—

TABLE 11.

Articles.	Quantity owned by County Council, 31/12/35.	Number of patients to whom articles have been loaned during 1935.	Articles in possession of patients on 31/12/35.
Bedsteads	226	51	191
Mattresses	219	50	189
Mattress covers	152	36	133
Air beds	4	2	1
Air cushions	149	133	91
Air pumps	3	1	—
Bath chairs	9	2	1
Bed cradles	7	—	—
Bed pans	93	85	52
Bed rests	53	32	28
Bed slippers	73	24	13
Extension apparatus	14	—	—
Fracture boards	2	—	—
Ground sheets	29	1	12
Hot water bottles	6	2	—
Ice bags	1	—	—
Rest chairs	4	—	1
Rubber sheets	20	2	2
Spinal boxes	16	1	—
Spinal carriages	16	5	6
Sponge beds	1	—	—
Urinals...	100	50	42
Water beds	10	7	1

SLEEPING SHELTERS.

There were, at the end of the year, 48 shelters in use by patients at their homes.

The loan of sleeping shelters is made to suitable cases on the recommendation of the tuberculosis officer, after careful consideration of the following points : (1) The condition of the patient and his ability to use the shelter properly ; (2) the position of the shelter ; (3) the home conditions of the patient ; and (4) the means of communication with the nearest inhabited building in case of a sudden relapse.

The number of persons in 1935 who were allowed the use of the shelters was 58.

I have to thank medical officers of health and sanitary inspectors throughout the County for much valuable help in connection with the removal, disinfection, and re-erection of shelters used by County patients.

TABLE A.

Dispensary Organisation.

Areas, Medical Staff, Nursing Staff, Dispensaries, and Times of Dispensary Sessions.

October, 1936.

Table A.—List of Tuberculosis Dispensaries in use in October, 1936, and the Tuberculosis Officers for the Dispensary Areas.

Dispensary Area	SANITARY DISTRICTS.			Estimated Civilian Population 1935.	MEDICAL STAFF October, 1936.	NURSING STAFF.	DISPENSARIES	Days and Hours of DISPENSARY SESSIONS (Distinct from Home Visiting, attending Sanatoria, Hospitals and Care Committees, etc.).
1	Adlington Blackrod Carnforth Chorley (B.) Chorley (R.) Fulwood Garstang (R.), Part of, consisting of parishes of— Barnacre-with-Bonds Bilsborrow	Garstang (R.) *cont.* Bleasdale Cabus Catterall Claughton Forton Garstang Kirkland Myerscough Nateby Nether Wyresdale Winmarleigh	Horwich Lancaster (B.) Lancaster (R.) Leyland Longridge Lunesdale (R.) Morecambe & Heysham (B.) Preston (R.) Walton-le-Dale Withnell Acreage 296,020	249,893	Dr. G. H. Leigh, Tuberculosis Dispensary, 8 Middle Street, Lancaster. Assistant Tuberculosis Officer— Dr. F. C. S. Bradbury	Nurse L. Walker Nurse F. D. Abbott Nurse G. M. Hunter Nurse J. Skelcher	LANCASTER (Chief), 8 Middle Street (Tel. No. 568). (Artificial Light Apparatus). CHORLEY (Branch), 34 St. Thomas's Road (Tel. No. 2763). (X-ray and Artificial Light Apparatus). PRESTON (Branch), 12 Walton's Parade (Tel. Nos. 2910, and 4868 Ext. 226). (Artificial Light Apparatus).	Monday, 12 noon. Other days and evenings by appointment. Tuesday morning by appointment. Thursday, 11 a.m. 2nd Tuesday evening of month by appointment. Wednesday, 11 a.m. Monday evening before 2nd Tues. of month by appointment.
2	Accrington (B.) Bacup (B.) Barrowford Blackburn (R.) Brierfield Burnley (R.) Church	Clayton-le-Moors Clitheroe (B.) Clitheroe (R.) Colne (B.) Darwen (B.) Great Harwood Haslingden (B.)	Nelson (B.) Oswaldtwistle Padiham Rawtenstall (B.) Rishton Trawden Turton Acreage 177,025	330,906	Dr. B. MacPhee, Tuberculosis Dispensary, High Lea, 108a Whalley Road, Accrington. Assistant Tuberculosis Officers— Dr. S. C. Adam Dr. J. N. Whyte (2 days per week)	Nurse L. F. Norwood Nurse E. Watterson Nurse M. Duggan Nurse A. Munro Nurse H. M. Alcock Nurse R. Lambert	ACCRINGTON (Chief), High Lea, 108a Whalley Road (Tel. No. 2443). (X-ray and Artificial Light Apparatus). DARWEN (Branch), 20 Railway Road (Tel. No. 408). NELSON (Branch), 64 Carr Road (Tel. No. 507). (Artificial Light Apparatus). STACKSTEADS (Branch), Knott Hill House (Tel. No. Bacup 201). (Artificial Light Apparatus).	Tuesday, 2 p.m. Wednesday, 2 p.m. Thursday, 10 a.m. x-ray exams. 2nd Tuesday of month, 5-30 p.m. Monday, 10 a.m. Tuesday, 2 p.m. Friday by appointment. 1st Friday of month, 5-30 p.m. Monday, 2 p.m. 1st Monday of month, 5-30 p.m.
3	Ashton-under-Lyne (B.) Audenshaw Chadderton Crompton Denton Droylsden Failsworth Heywood (B.)	Lees Limehurst (R.) Littleborough Middleton (B.) Milnrow Mossley (B.) Prestwich Radcliffe (B.)	Ramsbottom Royton Tottington Wardle Whitefield Whitworth Acreage 81,801	371,246	Dr. G. Fletcher, Tuberculosis Dispensary, Boston House, Warrington Street, Ashton-under-Lyne. Assistant Tuberculosis Officers— Dr. J. L. Armour Dr. W. Fettes	Nurse C. Guilfoy Nurse H. Dewsnap Nurse M. Sherwen Nurse W. Swift Nurse I. F. Macdonald Nurse M. A. Potter Nurse M. A. Potter Nurse A. Flynn Nurse M. Sherwen Nurse W. Swift Nurse W. Swift Nurse H. Dewsnap	ASHTON-UNDER-LYNE (Chief), Boston House, Warrington Street (Tel. No. 1775). (X-ray and Artificial Light Apparatus). CHADDERTON (Branch), Brook Street (Tel. No. Main 1671). MIDDLETON (Branch), 71 Manchester Old Road (Tel. No. 2706). RADCLIFFE (Branch), 41 Darbyshire Street (Tel. No. 2323). (Artificial Light Apparatus). ROCHDALE (Branch), 168 Drake Street (Tel. No. 3892).	Monday, 10-30 a.m. x-ray exams. Tuesday, 2-30 p.m. Friday, 10 a.m. 1st Tuesday of month, 6-30 p.m. Mossley cases at Ashton: Tuesday, 11 a.m. Monday, 2 p.m. Wednesday, 10 a.m. 2nd Monday of month, 6-30 p.m. Friday, 2-30 p.m. 2nd Friday of month, 6-30 p.m. Wednesday, 2 p.m. 3rd Wed. of month, 6-30 p.m. Thursday, 10-30 a.m. 2nd Thurs. of month, 6-30 p.m.
4	Atherton Eccles (B.) Farnworth Golborne Irlam	Kearsley Leigh (B.) Little Lever Stretford (B.) Swinton & Pendlebury (B.)	Tyldesley Urmston Westhoughton Worsley Acreage 58,029	364,632	Dr. G. Jessel, Tuberculosis Dispensary, 13 Church Street, Leigh. Assistant Tuberculosis Officers— Dr. A. B. Jamieson Dr. H. J. Villiers	Nurse I. M. Corfield Nurse M. B. Jones Nurse M. Gibson Nurse H. M. Shakespeare Nurse F. G. Smith Nurse A. Dickinson Nurse K. Blakemore	LEIGH (Chief), 13 Church Street (Tel. No. 258). ECCLES (Branch), 28 and 30 Gilda Brook Road (Tel. No. 3533). (X-ray and Artificial Light Apparatus). FARNWORTH (Branch), 19-23 Darley Street (Tel. No. 63). PENDLEBURY (Branch), 121 Station Road (Tel. No. Swinton 1895). STRETFORD (Branch), 14 Derbyshire Lane (Tel. No. Longford 2010).	Wednesday, 9-30 a.m. Friday, 9-30 a.m. 2nd Thurs. of month, 6-30 p.m. Tuesday, 2 p.m.: 2-30 p.m. for x-ray examinations. Thurs., 2-30 p.m. x-ray exams. Friday, 9-30 a.m. 1st Wed. of month, 6-30 p.m. Tuesday, 9-30 a.m. Friday, 2 p.m. 3rd Thurs. of month, 6-30 p.m. Monday, 2 p.m. Last Thurs. of month, 6-30 p.m. Tuesday, 9-30 a.m. Thursday, 9-30 a.m. Last Monday of month, 6-30 p.m.
5	Formby Great Crosby Haydock Huyton-with-Roby Litherland	Newton-in-Makerfield Ormskirk Prescot Rainford Skelmersdale	Warrington (R.) Waterloo-with-Seaforth West Lancashire (R.) Whiston (R.) Widnes (B.) Acreage 169,315	269,595	Dr. C. W. Laird, Tuberculosis Dispensary, 7 Claremont Road, Seaforth. Assistant Tuberculosis Officers— Dr. C. Berry Dr. J. N. Whyte (2 days per week)	Nurse A. Duncan Nurse M. J. McKeown Nurse E. Walch Nurse L. Farquhar Nurse M. J. Wilson	SEAFORTH (Chief), 7 Claremont Road (Tel. No. Waterloo 688). (X-ray Apparatus). ST. HELENS (Branch), 90 Hardshaw Street (Tel. No. 3916). (Artificial Light Apparatus). WIDNES (Branch), Brendan House, Widnes Road (Tel. No. 156).	Monday, 2-30 to 4-30 p.m. Wed. afternoon by appointment. Thurs., 10 a.m. x-ray exams. Friday, 10 to 11-30 a.m. 3rd Thursday of month, 6 p.m. Tuesday, 2-30 to 4-30 p.m. Last Tues. of month, 6 to 7 p.m. Monday, 10 to 11-30 a.m. Friday, 2 to 4 p.m. 1st Wed. of month, 6 to 7 p.m.
Furness	Dalton-in-Furness Grange-over-Sands	Ulverston	Ulverston (R.) Acreage 140,549	38,066	Dr. G. Leggat, High Carley Sanatorium, near Ulverston (Tel. No. Ulverston 110).	Nurse E. A. Duston	ULVERSTON, 69 Albion Place, Lightburn Avenue (Tel. No. 145). (Artificial Light Apparatus). (X-ray Apparatus at High Carley Sanatorium).	Tuesday, 10 a.m. Thursday, 10 a.m.
Fylde	Fleetwood (B.) Fylde (R.) Garstang (R.), Part of, consisting of parishes of— Great Eccleston Hambleton	Garstang (R.) *cont.* Inskip-with-Sowerby Out Rawcliffe Pilling Stalmine-with-Stainall Upper Rawcliffe	Kirkham Lytham St. Annes (B.) Poulton-le-Fylde Preesall Thornton Cleveleys Acreage 74,441	87,256	Dr. G. B. Charnock, Elswick Sanatorium, near Kirkham. Assistant Tuberculosis Officer— Dr. J. N. Whyte (1½ days per week)	Nurse A. Tweedy	FLEETWOOD, 23 Poulton Road (Tel. No. 282). (Artificial Light Apparatus). ELSWICK Sanatorium, near Kirkham (Tel. No. Great Eccleston 22). (X-ray Apparatus).	Tuesday, 9 a.m. Wednesday, 10 a.m.
Wigan County	Abram Ashton-in-Makerfield Aspull Billinge and Winstanley	Hindley Ince-in-Makerfield Orrell Standish-with-Langtree	Upholland Wigan (R.) Acreage, 40,950	109,506	Dr. E. H. Allon Pask, Wrightington Hospital, Appley Bridge, near Wigan (Tel. No. Appley Bridge 338). Assistant Tuberculosis Officer— Dr. E. H. W. Deane	Nurse E. Walters Nurse M. J. Evans	WIGAN, 3 Mesnes Park Terrace (Tel. No. 3172). (Artificial Light Apparatus). (X-ray Apparatus at Wrightington Hospital).	Monday, 9-30 a.m. Thursday, 9-30 a.m. 4th Thurs. of month, 6-30 p.m.
			Total acreage of Admin. County 1,038,130	1,821,100				

Tuberculous Ex-Servicemen.

Of the 7,404 patients under supervision of the dispensary staff at the end of 1935, 127 were discharged sailors, soldiers or airmen whose disease was held by the Ministry of Pensions to be attributable to or aggravated by service in the Great War, a pension being granted for the disability. The number of these tuberculous pensioners is declining, falling from 1,017 at the end of 1922 to the figure of 127 mentioned above.

Tuberculosis Dispensaries and Staff.

Table A, here inserted, shows the dispensary areas with the populations, present staffs, the addresses of the 24 dispensaries at present in use, and the days and times on which they are open.

Evening Sessions at Dispensaries.

As in previous years, evening sessions have been regularly held at most of the dispensaries for the convenience of patients who are at work during the day.

Artificial Light Treatment.

A report on the work done at the artificial light centres established at thirteen of the dispensaries is given in Chapter VII.

Statistics Required by Ministry of Health.

By Memorandum 37/T (Revised), issued in October, 1930, the Ministry require certain information concerning the work done at tuberculosis dispensaries. These statistics, in the compulsory Table A of the Memorandum, are given in Appendix V of this report.

A comparison with the English counties and England (all areas) is contained in Table 7, page 18.

Recovered Cases.

Since 1926 the Ministry of Health have allowed cases of pulmonary tuberculosis to be written off the dispensary registers as recovered, provided the disease has been quiescent for two years and arrested for a further three years. During 1935, 169 pulmonary cases were written off the registers as recovered; of these, 21 were classified as T.B. plus 1, 18 as T.B. plus 2, and 1 as T.B. plus 3.

In regard to non-pulmonary tuberculosis, cases may be written off the registers as recovered if arrest of the disease has been maintained for at least three years. During 1935, 556 non-pulmonary cases were so written off.

On the other hand, in 1935, 58 cases were restored to the registers after having been written off as recovered in previous years; 20 of these were pulmonary cases when originally on the register (5 being classified as T.B. plus), and 38 were non-pulmonary.

Summary of Dispensary Work done by Tuberculosis Officers in 1935, showing comparison with 1934.

Visits by Tuberculosis Officers to Patients' Homes—	1934	1935
(*a*) Number of new persons (including new contacts) examined for diagnosis or expert opinion	1,215	1,105
(*b*) Number of re-examinations of "old" cases and "old" contacts—		
1. Respecting continued general supervision or dispensary treatment	3,386	3,167
2. Contacts respecting diagnosis	25	9
3. Other cases respecting diagnosis	142	206
4. For special forms of treatment or examinations resulting therefrom—		
Aspirations...	8	12
Adjustment of splints and surgical appliances ...	270	239
Lupus cases	38	53
Pneumothorax (refills)	—	1
Mantoux tests	7	10
Blood sedimentation tests	—	1
Other forms	—	1
	5,091	4,804

Dispensary Attendances by Patients—		
(*a*) Number of new persons (including new contacts) examined for diagnosis or expert opinion	4,111	4,103
(*b*) Number of re-examinations of "old" cases and "old" contacts—		
1. Respecting continued general supervision or dispensary treatment	12,531	12,176
2. Contacts respecting diagnosis	288	279
3. Other cases respecting diagnosis	2,168	2,207
4. For special forms of treatment or examinations resulting therefrom—		
Artificial light (Lancaster, Chorley, Preston, Accrington, Nelson, Stacksteads, Ashton-under-Lyne, Radcliffe, Eccles, St. Helens, Wigan, Ulverston and Fleetwood Dispensaries)	29,465	26,323
Aspirations	104	107
Adjustment of splints and surgical appliances ...	882	834
Lupus cases	470	568
Pneumothorax (refills)	2,012	2,233
Tuberculin	331	487
Moogrol	272	213
Mantoux tests	132	208
Blood sedimentation tests	239	360
Other forms	35	38
	53,040	50,136

	1934	1935
X-RAY EXAMINATIONS MADE AT COUNTY DISPENSARIES AND INSTITUTIONS—		
(*a*) Dispensary patients	10,137	10,024
(*b*) Institutional patients...	8,340	9,228
	18,477	19,252
EXAMINATIONS OF SPUTUM AT COUNTY DISPENSARIES	6,736	6,767
NUMBER OF RECOMMENDATIONS BY TUBERCULOSIS OFFICERS—		
1. Sanatorium or hospital treatment	1,680	1,558
2. Dispensary treatment or general supervision	9,312	9,086
3. Provision of special nourishment	1,953	2,092
4. Provision of surgical appliances	151	152
5. Loan of shelters	15	18
6. Diagnosis not confirmed—		
(*a*) Notified cases	130	106
(*b*) Non-notified cases	2	2
7. Cases written off the register as refusing treatment ...	25	17
8. Pulmonary cases written off the register as recovered ...	222	169
9. Non-pulmonary cases written off the register as recovered	481	556
CARE COMMITTEE MEETINGS ATTENDED BY—		
(*a*) Tuberculosis officers	77	75
(*b*) Tuberculosis health visitors	142	135
LECTURES OR ADDRESSES GIVEN ON TUBERCULOSIS	9	10
CONSULTATIONS WITH MEDICAL PRACTITIONERS—		
Personal	700	618
Other	5,547	5,404
VISITS BY TUBERCULOSIS OFFICERS TO SANATORIA, AND PULMONARY, SPECIAL, AND PUBLIC ASSISTANCE HOSPITALS	357	309
SPECIAL VISITS BY TUBERCULOSIS OFFICERS (*i.e.*, interviews with medical officers of health, general hospital officials, &c.) ...	84	48
EXAMINATIONS OF ENTRANTS TO INDUSTRY UNDER SANDSTONE INDUSTRY (SILICOSIS) SCHEME, 1929	30	38
VISITS BY DISPENSARY NURSES TO PATIENTS' HOMES—		
Routine visits	37,467	35,606
Application of surgical dressings...	1,083	1,692
Adjustment of splints and surgical appliances	1,498	1,588
Other actual nursing	1,119	937
	41,167	39,823
PATIENTS' DISPENSARY ATTENDANCES FOR ATTENTION BY NURSES—		
Application of surgical dressings...	2,768	2,499
Adjustment of splints and surgical appliances	567	264
	3,335	2,763
Percentage of new cases referred by medical practitioners, etc., to tuberculosis officers for an opinion as to diagnosis or treatment *before statutory notification*	90%	91%

VII.—TREATMENT OF TUBERCULOSIS BY ARTIFICIAL LIGHT.

Present Position of the County Scheme.

Commencing with two experimental light centres in 1925, the County scheme has been extended, and the following table shows the 13 centres which have been established at County tuberculosis dispensaries, the date opened, and the lamp equipment :—

Table 12.

Dispensary area.	Dispensary at which light centre established.	Date light centre opened.	Lamp equipment.
No. 1	Lancaster	15/7/25	1 " Sunrae " carbon arc. 1 Kromayer mercury vapour. 1 Hanovia mercury vapour.
	Chorley	14/10/26	2 " Sunrae " carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.
	Preston	29/11/27	2 " Sunrae " carbon arcs. 1 " Alpine Sun " carbon arc. 1 Tungsten arc. 1 Kromayer mercury vapour. 1 Jesionek mercury vapour.
No. 2	Accrington	26/1/32	2 " Sunrae " carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.
	Nelson	20/11/28	2 " Sunrae " carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.
	Stacksteads ...	9/1/28	2 Jesionek mercury vapour. 1 Kromayer mercury vapour. 1 " Sunic " mercury vapour.
No. 3	Ashton-under-Lyne	11/9/25	2 " Sunrae " carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour. 1 Sollux luminous heat ray.
	Radcliffe	20/7/28	2 " Sunrae " carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour. 1 Sollux luminous heat ray.
No. 4	Eccles	1/12/27	2 " Sunrae " carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour. 1 Murray-Levick infra-red.
No 5	St. Helens	16/1/28	2 " Sunrae " carbon arcs. 1 Kromayer mercury vapour.
Furness ...	Ulverston	5/6/28	2 " Sunrae " carbon arcs. 1 Kromayer mercury vapour.
Fylde	Fleetwood	25/6/28	2 " Sunrae " carbon arcs. 1 Kromayer mercury vapour.
Wigan County	Wigan	31/5/29	2 " Sunrae " carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.

The treatment of the patients has been carried out under the direct supervision of the consultant tuberculosis officer of each dispensary area and by the medical and nursing staffs under him.

Results of Treatment.

Tables, showing the results of treatment at each light centre, have been received from the consultant tuberculosis officers of the dispensary areas and summarised in the following form, which represents the work done at the 13 centres during the year 1935 :—

Table 13.

Form of tuberculosis or part of body affected.	Number of cases on treatment on 1-1-35.	Number of cases commencing treatment in 1935.	Condition of patients whose treatment concluded in 1935.				Ceased treatment for other reasons. *	Still under treatment at end of 1935.
			Quiescent and apparently well.§	Improved.	Stationary.	Worse.		
Skin	108	41	19	10	—	2	20	98
Adenitis with abscess formation and skin involvement ...	77	152	101	10	1	—	17	100
Adenitis without softening ...	84	119	91	6	7	1	26	72
Bones, joints, and spine ...	11	8	9	1	—	—	2	7
Abdomen	7	9	4	3	1	—	5	3
Other non-pulmonary conditions	7	4	1	2	2	—	3	3
Bronchial glands	—	2	—	—	1	—	—	1
Pulmonary and non-pulmonary combined	1	—	—	—	—	—	—	1
Total for 1935	295	335 (630 †)	225	32	12	3	73	285
For comparison, the total in 1934 was	376	410 (786 ‡)	295	70	11	1	114	295

* Includes : (1) Patients who did not receive two months' treatment ; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.

† Adults, 303 ; children, 327. ‡ Adults, 409 ; children, 377.

§ The term "quiescent and apparently well" has been chosen to express the condition of a lesion which has been healed by artificial light treatment. By direction of the Ministry of Health no case of non-pulmonary tuberculosis is written off the tuberculosis register as "recovered" until three years have elapsed without any signs or symptoms of active disease.

The results of treatment of cases of non-pulmonary tuberculosis in 1935 may be considered satisfactory, particularly for three groups of cases, namely : (i) Adenitis with abscess formation and skin involvement, (ii) adenitis without softening, and (iii) skin. Conditions (i) and (iii) are usually refractory to other forms of treatment.

The average gain in weight of the 225 patients who became "quiescent and apparently well" was as follows :—Adults 4·04 lbs. ; children 5·19 lbs.

The degree of pigmentation attained in these 225 patients was : Deep 51, medium 44, light 67, none 63.

During 1935, 36 patients, who had ceased treatment in a previous year with the disease quiescent and apparently well, relapsed and returned for further treatment; the classification of these cases was as follows:—Skin, 6; adenitis with abscess formation and skin involvement, 19; and adenitis without softening, 11.

In addition to the 630 active cases dealt with in Table 13, there were 16 non-pulmonary cases whose condition was quiescent on commencing light treatment. The object of treatment was to prevent a possible recurrence of active disease.

Average Duration of Treatment.

The duration of treatment has varied widely according to the type of non-pulmonary disease. Taking several groups of cases in which the disease has become quiescent and apparently well the average duration is as given in the following Table 14:—

Form of tuberculosis or part of body affected.	Number of cases (active on commencing light treatment) who became "quiescent and apparently well."	Average duration of light treatment.	*For comparison*: Average duration of disease *before* commencing light treatment.
		Months.	Months.
Skin	19	30·36	91·84
Adenitis with abscess formation and skin involvement ...	101	7·64	13·59
Adenitis without softening ...	91	9·88	14·34
Bones, joints, and spine ...	9	11·27	55·63
Abdomen...	4	6·81	20·00
Other non-pulmonary conditions	1	19·00	4·00

Attendance of Patients.

The frequency of attendance of patients depends on several factors, but at seven of the centres the great majority of patients attend twice per week, and at the other six centres thrice per week. Evening sessions are held for the convenience of those patients who are at work and unable to attend the centres during the day.

Of the total patients attending during the year, 85 per cent. were able to continue their normal occupation during the course of treatment; 34 per cent. were assisted by the payment of railway, bus or tram fares to and from the centres.

A.L. 1(*a*) and 1(*b*).—J.H., male, aged 27 years. Lupus of face 7 years. Previously had treatment at a skin hospital. Photographs taken April, 1935.

A.L. 2(*a*) and 2(*b*).—Same patient. Photographs taken in November, 1935, after seven months' treatment at the Eccles Dispensary with general carbon arc and Kromayer.

[*Photographs taken at Eccles Dispensary.*

During 1935, the attendances of patients at the 13 dispensary light centres numbered 26,323.

Photographic Records.

In order to record the progress made by patients, photographs have been taken of a number of cases treated by light—at commencement, during the course of treatment, and on termination. Several photographs are here inserted.

VIII.—THE TREATMENT OF PULMONARY TUBERCULOSIS IN RESIDENTIAL INSTITUTIONS.

The most expensive part of a tuberculosis scheme is the cost of maintaining patients in sanatoria or hospitals. The practice of the tuberculosis medical staff has always been conservative in regard to diagnosis, particularly in children, and every opportunity has been taken to adopt up-to-date methods of diagnosis. For this purpose the County Council have allowed their senior medical staff to attend post-graduate courses and to undertake research.

A very thorough examination at the dispensary, and especially the use there of a good x-ray plant ensures that only cases with definite tuberculosis are taken on the register and afforded treatment. This saves a considerable amount of public money by reducing the number of beds required for the treatment of patients.

As regards pulmonary adults, should tuberculosis institutions treat separately or on the same site the observation, the early, the chronic, and the acute case ? The problem of dealing with the tuberculous—and more particularly the chronic tuberculous—patient cannot be decided on the basis of a separation of what may be called good and bad cases. The superintendent of an isolated sanatorium is always wishing to have his institution cleared of chronic and advanced cases. While very understandable, this does not help in the prevention and treatment of tuberculosis as a whole. Experience has shown that, by the use of x-rays and minor collapse therapy in tuberculosis institutions—not too big, situated near the patients' homes, superintended or attended by the tuberculosis officer, and taking all types of pulmonary cases—prevention and treatment go hand in hand, and the title given to the institution—hospital or sanatorium—is of little importance.

I believe then that tuberculosis institutions for pulmonary disease should treat on one and the same site the good, the bad, and the intermediate case, and treatment will often have to be of long duration.

Arrangements for the institutional treatment of pulmonary children (up to 15 years of age) require careful consideration, and such patients should be divided into three categories and dealt with in institutions as follows :—

Class 1. Children with positive sputum (indicating the adult type of pulmonary tuberculosis): should be provided with separate accommodation at institutions for adult pulmonary cases.

Class 2. Children with negative or no sputum: should be treated at sanatorium schools.

Class 3. Children with indefinite symptoms, generally known as the pre-tuberculous type: should attend open-air schools provided by the local education authority.

A conservative attitude has been adopted in diagnosing adults and children suspected to be suffering from pulmonary tuberculosis, as may be noted from the proportion (35·8 per cent.) of pulmonary cases on the register classified as T.B. minus. In contrast six large counties, with a population in the region of a million, show an average percentage of 50·5 T.B. minus cases; for the whole of England, the proportion was 51·2.

A further factor seriously affecting the number of beds required is the duration of treatment allowed to a patient. Here again every case has to be carefully weighed on its merits, but generally the following principles have been adopted:—

(*a*) Patients who are responding to institutional treatment are given a prolonged stay (6 months and over) so long as there is a likelihood of the disease becoming quiescent. To return such cases to their homes and to work before attaining quiescence is uneconomical because of the danger of the patient breaking down and all the good of institutional treatment being wasted.

(*b*) Patients, particularly the young adult group (aged 15–25), who have been given special forms of treatment (*e.g.*, artificial pneumothorax, phrenicectomy, thoracoplasty, sanocrysin) are allowed a sufficient stay (say, up to 6 months) to show progress from their treatment and are retained up to 12 months or more if their condition warrants it; cases treated by artificial pneumothorax attend at the dispensaries for a continuation of their treatment.

(*c*) Patients whose sputum has never been positive and who are not likely to make further progress or to require special treatment are allowed to return home at the end of two or three months' treatment. Many sputum examinations are made in this type of case and the usual practice is to make three tests of consecutive daily specimens.

(*d*) Patients with positive sputum who are not likely to make further progress and whose home conditions are reasonably satisfactory are allowed to return home at the end of two or three months' treatment.

The tuberculosis officers when making recommendations for institutional treatment bear in mind the following questions: (1) Is institutional treatment required to improve the patient's health? (2) Is institutional treatment desirable to secure nursing care which cannot be otherwise obtained at home? (3) Is institutional treatment necessary to prevent the spread of infection?

All the patients in sanatoria and hospitals receive the benefit of and training in hygiene which is advantageous to themselves and a protection to others when they return home.

Immediate Results of Institutional Treatment.

The following Table 15 summarises the *immediate* results of treatment of patients discharged in 1935 from sanatoria and pulmonary hospitals :—

Classification on admission to the institution.	Condition at time of discharge.	Duration of residential treatment in the institution.															Total patients discharged.	
		Under 28 days.			1—3 months.			3—6 months.			6—12 months.			More than 12 months.				
		M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	No.	%
T.B. minus.	Quiescent	—	—	1	5	1	—	18	11	2	11	13	10	2	5	11	90	34·1
	Improved	5	3	1	11	13	2	43	19	1	8	10	—	1	2	2	121	45·8
	N.M.I. ...	8	4	1	4	2	—	5	1	1	2	1	—	2	2	—	33	12·5
	Died ...	1	3	1	5	4	1	—	1	—	3	—	—	1	—	—	20	7·6
T.B. plus 1 (early).	Quiescent	—	—	—	1	—	—	3	1	—	8	5	1	3	7	—	29	23·4
	Improved	1	1	—	10	7	—	11	6	—	14	9	—	7	1	—	67	54·0
	N.M.I. ...	1	3	—	2	4	—	1	2	—	3	1	—	1	—	—	18	14·5
	Died ...	2	—	—	1	1	—	1	—	—	1	2	—	1	1	—	10	8·1
T.B. plus 2 (intermediate).	Quiescent	3	—	—	1	—	—	5	6	—	7	9	—	4	5	1	41	6·1
	Improved	10	4	—	28	13	—	69	44	—	74	68	—	29	24	1	364	54·2
	N.M.I. ...	9	3	—	24	17	1	13	15	—	11	13	—	11	8	—	125	18·6
	Died ...	17	11	—	22	21	1	13	14	—	8	19	—	8	6	1	141	21·0
T.B. plus 3 (advanced).	Quiescent	2	—	—	—	—	—	1	1	—	1	3	—	—	—	—	8	4·8
	Improved	1	—	—	8	2	—	20	7	1	8	5	1	6	3	—	62	37·1
	N.M.I. ...	9	2	—	8	4	—	2	4	—	—	2	1	4	1	—	37	22·2
	Died ...	12	5	—	5	7	—	6	10	—	6	2	—	6	1	—	60	35·9
	Total ...	81	39	4	135	96	5	211	142	5	165	162	13	86	66	16	1226	—

Diagnosis on discharge from observation.	Stay under 4 weeks.			Stay over 4 weeks.				
Tuberculous	6	5	—	8	7	—	26	43·3
Non-tuberculous	4	—	—	15	6	4	29	48·3
Doubtful	—	—	2	1	—	—	3	5·0
Died	2*	—	—	—	—	—	2	3·3
Grand Total							1,286	

N.M.I. = No material improvement. "Died" comprises deaths in the institution only.

* Diagnosis: (1) Cancer of lung; (2) Acute endocarditis.

The table illustrates that better results are achieved when institutional treatment is given before the sputum becomes positive; further, the more advanced the disease the less satisfactory are the results.

The following Table 16 shows the names of the sanatoria and pulmonary hospitals and the number of patients suffering from pulmonary tuberculosis admitted and discharged during 1935 :—

Institution.	Definite cases			Observation cases		
	Admissions	Discharges	Deaths	Admissions	Discharges	Deaths
Aitken Sanatorium, near Bury	80	68	14	1	1	—
Chadderton Pulmonary Hospital, near Oldham	63	38	25	3	3	—
Eastby Sanatorium, near Skipton	9	8	—	2	4	—
East Lancashire Tuberculosis Colony, Barrowmore Hall, near Chester	66	60	15	3	3	—
Eccleston Hall Sanatorium, St. Helens	16	14	2	—	—	—
Elswick Sanatorium, near Kirkham	136	128	8	13	13	—
Halifax Sanatorium, Shelf	30	34	2	—	—	—
Heath Charnock Pulmonary Hospital, near Chorley	45	30	16	—	—	—
Hefferston Grange Sanatorium, Weaverham, Cheshire	5	4	1	—	—	—
High Carley Sanatorium, near Ulverston	155	154	6	21	16	1
Lancaster Pulmonary Hospital	79	27	18	2	2	—
Oubas House Children's Sanatorium, Ulverston	14	20	—	5	3	—
Peel Hall Pulmonary Hospital, Little Hulton	87	81	8	2	1	—
Pemberton Pulmonary Hospital, Wigan	5	3	1	—	—	—
Rufford Pulmonary Hospital, near Ormskirk	100	71	28	—	—	—
Springfield Sanatorium, Rochdale	49	31	15	1	1	—
Westmorland Sanatorium, Meathop, Grange-over-Sands	8	15	2	—	—	—
Wilkinson Sanatorium, near Bolton	14	14	—	—	—	—
Withnell Pulmonary Hospital, near Chorley	88	64	26	6	8	—
Wolstenholme Pulmonary Hospital, Norden, Rochdale	89	61	21	4	3	1
Wrightington Hospital, near Wigan	55	33	22	—	—	—
Other sanatoria and hospitals	39	37	1	1	—	—
TOTAL	1,232	995	231	64	58	2

In each of the five large dispensary areas, there is a pulmonary hospital in the charge of the consultant tuberculosis officer, an arrangement of the highest importance because patients come to these hospitals from the area administered by the tuberculosis officer, who is, therefore, conversant with the home conditions. Further, it is of great advantage to the tuberculosis officer, because he can himself apply certain forms of treatment and carry out valuable clinical and research work.

A number of patients are also accommodated in pulmonary hospitals belonging to other bodies situated in or near the area. Arrangements have been made (with minor exceptions) for the tuberculosis officers to visit periodically these institutions and confer with the medical superintendents on the following matters :—

1. The question of extension of patients' treatment or their return home, having special regard to the home conditions which are known to the tuberculosis officers.

2. The special consideration of any patient who is not responding to treatment at the institution.

3. The question of the patients' future treatment, including the facilities for treatment at home.

4. Applications from patients for transfer to other institutions, or for their discharge home, and to settle, where possible, any difficulties or complaints by patients.

5. The question of ancillary treatment, *e.g.*, dental.

The foregoing working arrangements have enabled the highly infectious cases with unsatisfactory home conditions to remain at the pulmonary hospitals for long periods for the purpose of isolation, and it is always possible for patients who have made good progress and are capable of light work to be transferred to sanatoria for the continuation of their treatment.

After-histories of Adult Patients Suffering from Pulmonary Tuberculosis.

In my report for 1933, the after-histories of adult pulmonary patients who came on the dispensary registers during the years 1920, 1925, and 1930 were recorded. As there will be very little change in the results, the after-histories have not been worked out again this year.

IX.—THE TREATMENT OF NON-PULMONARY TUBERCULOSIS.

Immediate Results of Institutional Treatment at General and Special Hospitals.

A summary of the condition on discharge of patients treated during 1935 in approved general and special hospitals is given in the following Table 17 :—

Classification on admission to the institution.	Condition at time of discharge.	Duration of residential treatment in the institution.															Total patients discharged.	
		Under 28 days.			1—3 months.			3—6 months.			6—12 months.			More than 12 months.				
		M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	No.	%
Bones and joints.	Quiescent ..	3	1	—	2	—	1	3	2	7	6	6	7	8	7	25	78	40·6
	Improved ...	7	8	1	8	2	2	5	2	3	6	2	1	2	3	4	56	29·2
	N.M.I. ..	7	5	2	3	4	3	1	1	—	1	—	2	2	2	—	33	17·2
	Died ...	1	—	1	2	2	2	2	1	—	2	1	—	5	1	5	25	13·0
Abdominal.	Quiescent ...	1	1	—	2	2	6	2	3	4	3	3	4	—	—	3	34	50·0
	Improved ...	1	2	—	—	1	3	—	—	2	—	3	—	—	3	—	15	22·1
	N.M.I. ...	2	1	—	—	1	1	—	—	—	—	1	1	—	2	—	9	13·2
	Died ..	1	2	1	—	2	—	1	—	—	1	2	—	—	—	—	10	14·7
Other organs.	Quiescent ...	3	1	—	1	1	1	—	2	1	1	1	2	1	—	2	17	22·9
	Improved ..	5	7	1	6	11	3	3	1	—	2	4	1	—	—	—	44	59·4
	N.M.I. ...	1	3	—	2	3	—	—	—	—	—	—	—	—	—	—	9	12·2
	Died ...	1	1	—	1	—	—	1	—	—	—	—	—	—	—	—	4	5·4
Peripheral glands.	Quiescent ..	2	7	5	2	1	11	—	—	6	—	—	2	—	1	—	37	39·4
	Improved ..	5	17	9	3	1	6	1	—	4	1	2	2	—	—	1	52	55·3
	N.M.I. ..	—	1	1	—	—	2	—	—	—	—	—	—	—	—	—	4	4·2
	Died ...	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	1·1
	Total ..	40	57	21	32	31	41	19	12	27	24	25	22	18	19	40	428	—

Diagnosis on discharge from observation.	Stay under 4 weeks.			Stay over 4 weeks.				
Tuberculous	2	4	4	4	1	8	23	48·9
Non-tuberculous	1	3	1	5	3	7	20	42·5
Doubtful	—	—	—	—	1	2	3	6·4
Died	1*	—	—	—	—	—	1	2·1

Grand Total ... 475

N.M.I. = No material improvement. "Died" comprises deaths in the institution only.
* Diagnosis: Retro-pharyngeal abscess (P.M.).

The following Table 18 shows the names of the general and special hospitals, and the number of patients suffering from non-pulmonary tuberculosis admitted and discharged during 1935 :—

Institution.	Definite cases			Observation cases		
	Admissions	Discharges	Deaths	Admissions	Discharges	Deaths
Ashton-under-Lyne District Infirmary	4	4	—	1	1	—
Blackburn and East Lancashire Royal Infirmary	17	18	—	2	1	1
David Lewis Northern Hospital, Liverpool	8	7	1	—	—	—
Liverpool Open-Air Hospital, Leasowe	34	25	7	5	5	—
Liverpool Royal Infirmary	10	10	—	—	—	—
Liverpool Stanley Hospital	6	6	—	—	—	—
Manchester Royal Infirmary	23	25	—	2	2	—
Manchester & Salford Hospital for Skin Diseases, Manchester	11	10	—	—	—	—
Preston Royal Infirmary	24	22	2	1	1	—
Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry	16	16	—	3	3	—
Royal Albert Edward Infirmary, Wigan	7	6	1	—	—	—
Royal Liverpool Children's Hospital—						
Heswall, Cheshire	15	10	1	4	3	—
Myrtle Street, Liverpool	4	4	—	1	1	—
Thingwall, Cheshire	—	1	—	—	—	—
Royal Manchester Children's Hospital, Pendlebury	4	5	—	—	—	—
Royal Southern Hospital, Liverpool	2	3	—	—	—	—
Salford Royal Hospital	4	4	—	—	—	—
Warrington Infirmary	3	2	—	—	—	—
Wrightington Hospital	206	183	28	27	28	—
Other general and special hospitals	23	27	—	1	1	—
TOTAL	421	388	40	47	46	1

After-histories of Patients Suffering from Non-pulmonary Tuberculosis.

In my report for 1933, the after-histories of adults and children first treated during the years 1920, 1925, and 1930 were recorded. It was found that roughly three-quarters of the adults and children had recovered from their non-pulmonary condition or arrived at a stage with the disease arrested or quiescent. As there will be very little change in the results, the after-histories have not been investigated again in detail this year.

X.—INFRA-RED RADIATION IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

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It has long been proved by physical research that ordinary light is a combination of various colours. When sunlight or white light is passed through a regular prism it is split up into its component parts of seven primary colours, *viz.*, red, orange, yellow, green, blue, indigo and violet. The term " spectrum " is given to this display of colours. As early as 1800 Herschel, whilst experimenting with the spectrum with the object of ascertaining if heat could be detected in the different colours, discovered that by using a delicate thermometer he could demonstrate a rise of temperature not only at the visible red end of the spectrum, but further below where no red colour could be seen by the naked eye. The invisible rays were termed " infra-red " rays, and the isolation of the visible red from the invisible red became a recognised fact. When delicate thermometers were placed in the paths of the other colours no change was registered. The conclusion reached was that the red and infra-red rays were the only ones capable of producing heat. It was Ampère, however, who in 1885 deduced the true explanation that the effect was due to rays of the same nature as the visible rays, differing only in their wave length. In 1883 Finsen used the infra-red rays therapeutically for the treatment of lupus. It is only during the last 10 years that infra-red rays have been made use of in their isolated form.

Infra-red radiation is energy in the form of ether waves. The waves are electro-magnetic in character and travel at a uniform rate of 186,000 miles a second. They have wave-lengths varying between 7,700 and 500,000 angstroms, an angstrom unit being one ten-millionth of a millimetre in length. The length of the wave is measured from crest to crest. The most useful therapeutically are the radiations possessing 7,700 to 150,000 units.

When the infra-red rays are arrested suddenly their energy is converted into another form, and one of the commonest is heat, or to put it another way, the radiant energy is transformed into a kind of

energy capable of giving the sensation of heat and producing the effects attributed to heat. Heat is a form of energy which manifests itself in one direction as a sensation perceived by the human body, due to exciting the nerve ends in the skin. It is a physiological experience.

Irradiation means the act of exposing material, *e.g.*, the human body, to radiation, and subsequent remarks apply to the effects of infra-red on persons suffering from pulmonary tuberculosis as seen in the ordinary course of sanatorium or pulmonary hospital routine.

Sun rays contain about 80 per cent. of infra-red, the carbon arc and mercury arc 85 per cent. and 52 per cent. respectively. These are mixed with visible red and ultra-violet. The chief concern in these notes is to confine any remarks to the near infra-red rays in particular, that is to say, to the infra-red of shorter wave-length.

In the past, just as efforts were made to produce ultra-violet rays in strong concentration by artificial means, so to-day experimentation has evolved apparatus which can produce infra-red in pure and concentrated form.

There are three types of apparatus now used for generating the latter rays : (a) the incandescent filament lamp, giving visible red and infra-red ; (b) the glowing resistor, giving only red and infra-red ; and (c) the non-luminous emitter, which will be considered in these remarks.

For purposes of investigation, a " Sunic " infra-red lamp, type 200, was obtained. This lamp is mounted in a parabolic reflector, attached to an adjustable stand. A focussing device incorporated in the reflector enables the distribution of the radiation to be adjusted in accordance with the area to be covered. The makers supply a very useful chart showing the adjustment for narrow and wide fields at a uniform distance of 36 inches from the object irradiated. The lamp can be used on the stand, or free in the hand by screwing in a light handle. The lamp is very light and can be easily transported from bed to bed and ward to ward as required. The current is 230 a.c. and the lamp has a wattage of 200. It will burn about five hours for one unit of electricity. The burner is of nickel alloy, to withstand oxidation. The wave-lengths extend from 8,000 to 12,000 angstroms, the maximum power being about 10,000. This is one of the smaller and cheaper types of infra-red generator, but, nevertheless, efficient

and ideally suited to selective irradiation, which is the trend of modern methods in ray therapy. The rays are projected parallel on to the part. It is stated that rays so arranged have greater power of penetration and exert more powerful action locally in the tissues. Larger lamps for the irradiation of the whole body can be readily obtained from any of the leading electro-magnetic instrument makers.

Method of use. The method of treatment is quite simple and consists of placing the patient on a couch or bed so that the part about to be treated is relaxed and at rest. The apparatus is switched on and is allowed to become well warmed up for approximately five minutes. The patient wears goggles fitted with Pfund lenses, since these are impermeable to infra-red rays, and his face is shielded from the rays. The preliminary exposure is usually made for 15 minutes at a distance of 18 inches. The second and subsequent treatments can usually be tolerated at 12 inches, and exposures of 30 minutes have been given satisfactorily. The distance which gives the patient the comforting sensation of warmth is noted for further exposures. The treatments have been purely local, and no attempt has been made to radiate the whole body surface. The law of inverse squares holds good in infra-red irradiation. The amount of rays from a point source falling on a unit of plane surface varies inversely as the square of the distance.

Action of infra-red rays. Infra-red rays are absorbed by the part and converted into heat after penetration. Briefly stated, their action is threefold : (a) analgesic, (b) revulsive, and (c) stimulating. That is to say, they relieve pain, have the power to withdraw blood from a part which is diseased, and relieve congestion. They increase the local circulation and hasten metabolism. Their analgesic power is, however, most appreciated by the patient[1].

Irradiations of infra-red rays have given relief from pain in acute and chronic pleurisy, and in painful lesions of the chest wall, *e.g.*, ruptures, strains, spasms of muscles and fibrous tissue after severe coughing. Also in tuberculous laryngitis, tuberculous sinusitis, tuberculous ulceration of the skin, and in rheumatic pain secondary to tuberculous disease in the joints. Amongst incidental lesions where benefit is marked can be included traumata, lumbago, sciatica, local chills, rheumatism, angio-neurotic oedema, and chilblains. Post-operative pain, *e.g.*, after phrenic operations, has been relieved. It seems that infra-red is one of the simplest yet most effective analgesics for post-operative treatment. The dangers are very few. Burning

through actual contact with the lamp is possible, but in careful routine treatment is never seen. There does not seem any doubt that the lack of surface irritation with the rays makes it possible to give far greater doses of radiant heat than could be given with the ordinary incandescent lamps. There have been no temperature reactions, or complaints of any kind from the local exposures. Patients find the baths soothing and sleep well after them. Only two cases complained that no relief was received. These were found on further investigation to have definite central neuritis. In cases of true neuritis, as distinct from neuralgia, which is a term applied to pain of a diffused nature in an area of a cutaneous nerve supply, infra-red will not cure pain, and scarcely ever relieve; in fact it may even aggravate it.

The complaint of stuffiness of the nose due to a relex congestion of the nasal mucous membrane resulting from the action of the rays on the cutaneous nerves, or the dyspnoea sometimes described during irradiation, have not been observed, presumably owing to the screening of the face of the patient[2]. The protection of the eyes is important. It is said of infra-red that after an exposure of even half an hour on the uncovered eyes a fibrinous exudate may occur into the aquous humour, that iridocyclitis with hyaline degeneration of the iris stroma, and rarefaction of the posterior pigment layer may also be seen. Vacuolation of the lens, with destruction of fibres in the anterior and posterior parts of the sclerotic, are other probable disadvantages[3 & 4]. The foregoing lesions are stressed as being, in the writer's opinion, the most important danger in infra-red therapy. By rigid insistence on the use of goggles and screening, these troubles are not likely to present themselves.

The foregoing notes are based upon 400 treatments of patients undergoing ordinary routine treatment at the Elswick Sanatorium. This is a small number on which to base an opinion, but the impression received is that the use of infra-red rays is safe, easy to administer, and satisfying to the patient. The psychological factor has not been lost sight of. Any new treatment introduced into sanatoria will automatically be taken up with avidity, particularly if supported by suitable suggestion. With this in mind, however, a large number of patients have received obvious relief and in some cases a cure. The relief of distress obtained is well worth the little extra trouble to administer a ray, whose use therapeutically for the ease of pain may rightly be included as one of the most important "Advances in Physical Treatment "[5].

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XI.—STANDARDISATION OF THE SEDIMENTATION TEST.

By F. C. S. Bradbury, M.D.,

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Clinical practice has so amply proved the value of the sedimentation test that there now exists a considerable demand for some form of standardisation of the test.

There are three possible lines of approach to a standardised result : (1) For all workers to adopt in its entirety some agreed method of performing the test ; (2) to endeavour to discover mathematical corrections by which the result of any technique could be expressed in terms of a standard technique ; or (3) for all workers to adopt certain parts of a standard technique, and to apply to their results a mathematical correction in respect of the other parts.

Method (1) has the merit of simplicity, but it seems unlikely to prove a successful approach to standardisation as it leaves no margin for exceptional cases (*e.g.*, where only less than the standard quantity of blood can be obtained) or for the convenience of the operator. Moreover, there are several standard techniques already available, and the fact that none of them is universally used is a discouragement to add to their number. It must be noted, however, that most of these standard techniques require the use of special apparatus, some of which is expensive and difficult to obtain. The failure of these methods to establish themselves as standards does not therefore exclude the possibility of a satisfactory standard technique being devised, provided it requires no specialised apparatus.

Method (2) may be ruled out as impracticable, because (a) the necessary mathematical corrections are not known, and (b) in order to apply them, the statement of a sedimentation result would have to be accompanied by information regarding all the variables for which it is proposed to apply corrections.

Method (3) sounds a little complicated, but in practice is very simple, and could be made to approach very close to method (1). For example, if workers agreed to use a fixed strength of sodium citrate solution, a fixed ratio of citrate to blood, and tubes having a diameter within specified limits, the chief remaining variable would be the length of the column of blood used. They could carry their

standardisation further and use a fixed length, or a correction could be applied to their result to show what it would have been if this fixed length had been used. In practice it will be found easier to use the standard length than to bother applying a correction for a non-standard length. The correction would be available, however, for use in exceptional cases.

I therefore suggest that the problem of standardisation is capable of solution, both as a practical technique and as a mathematical process applicable to modifications of this standard. The details of the suggested standard procedure will be given after a discussion of the effect of the variable factors in methods of sedimentation testing. These are as follows :—

Nature and strength of anti-coagulant used.
Ratio of anti-coagulant to blood.
Length of column of blood.
Diameter of tube used.
Slope of tube.
Cleanliness of tube.
Time of sedimentation.
Temperature at which test conducted.
State of blood as regards anæmia.
Delay in carrying out the test.
Limits of normality.
Method of expressing result.

1. *Anti-coagulant.* In order to perform a sedimentation test it is necessary to prevent the specimen of blood from clotting. A variety of substances might be used for this purpose, but perhaps the commonest are potassium oxalate and sodium citrate. As a constant ratio of blood to anti-coagulant is desirable, it is necessary to use the anti-coagulant in the form of a solution of known strength. Hence the standard anti-coagulant should be one which keeps well in solution. It should also be easily obtainable. There is little to choose between the usual anti-coagulants in these respects, but perhaps sodium citrate is preferable. There appears to be no reason why sodium citrate should not be universally used, and in a solution of fixed strength; 3·8 per cent. sodium citrate is said to be isotonic with the blood, thus having no tendency either to shrivel or burst the red cells. This is the strength of citrate solution generally employed, but some workers use a slightly different strength.

Whether the variation in the result introduced by using other strengths of citrate solution is considerable or not is uncertain, in the absence of comparative figures; but in view of the fact that dilutions other than 3·8 per cent. are not isotonic with the blood their use is definitely contra-indicated.

2. *Ratio of citrate to blood.* Among the methods of sedimentation testing in common use, the ratio of citrate to blood varies from 1 : 4 to 1 : 9. Thus Westergren's technique specifies 1 part of citrate to 4 of blood, while Cutler's specifies 1 part of citrate to 9 of blood. Apparently this ratio is regarded as of little consequence, for many workers who use Cutler's method and tubes use 1 part of citrate to 4 of blood instead of the specified ratio, and return their results as those of Cutler's method. There are three points to consider in deciding on an optimum ratio: (1) The necessity of ensuring that the blood does not clot; (2) the alteration in the red cell count brought about by diluting the blood with citrate; and (3) the alteration of the specific gravity of the blood by adding citrate.

From the fact that one of the widely used methods (Cutler's) specifies 1 part of citrate to 9 of blood, it may be assumed that this proportion is satisfactory for avoiding coagulation of the blood. The majority of techniques, however, use 1 part of citrate to 4 of blood.

The objection to the greater amount of citrate is that the greater dilution of the red cells and the diminished specific gravity of the blood so produced both tend to accelerate sedimentation.

It is a matter for decision whether these objectionable features should be accepted, for the sake of making doubly sure that coagulation of blood does not occur, or whether it may safely be assumed that 1 part of citrate to 9 of blood will certainly prevent coagulation. I personally feel safer with 1 part of citrate to 4 of blood, and if this were adopted as a standard, any acceleration of the sedimentation rate so caused would be common to the results of all workers and so would not be noticed. In any case it would be compensated by a suitable choice of the limits within which the sedimentation rate could be regarded as normal.

3. *Length of the column of blood.* This is one of the major features which distinguish the various methods of sedimentation testing. It is a little unexpected to find that while a 100 mm. column of blood may show 15 mms. of plasma at the end of an hour, a 200 mm. column of the same blood will not show 30 mms. of plasma after an hour, but only about 20 mms. In other words, the distance sedimented per hour is greater in long tubes than in short ones of the same bore,

although not proportionately greater, with the result that the percentage sedimentation rate (*i.e.*, plasma as percentage of total column) is less in long tubes than in short ones. As the differences in the absolute results are always in the opposite direction to those of the percentage results, it seemed possible that the average of these measures might be a more constant index of the sedimentation rate than either of the component figures. For example, in one hour suppose the distance sedimented is 10 mms. in a 50 mm. tube (*i.e.*, 20 per cent.) and 15 mms. in a 100 mm. tube (*i.e.*, 15 per cent.). It is seen that the absolute results are 10 and 15 mms. for the two tubes, showing a want of agreement. Likewise the percentage results are 20 and 15 per cent.—again a want of agreement. But the average of the absolute and percentage results is the same in both cases, *viz.*, 15, and I find that this method of expressing a sedimentation result is a reasonably satisfactory method of standardisation for methods in which the blood is allowed to sediment for one hour at room temperature.

It does not follow, however, that because this method of standardisation is available it is immaterial what length of tube is used for the test. Evidently in a very short tube it might be possible for rapid sedimentation to carry the red cells a greater distance in one hour than the length of the tube, were it not for the obstruction offered by the bottom of the tube and the " packing " of the red cells towards the bottom. This state of " packing " is reached in a time which increases with the length of the tube, and may even be approached in one hour in a short tube, *e.g.*, 50 mms. Hence short tubes tend to give low results (*i.e.*, insufficiently removed from the normal) with rapidly sedimenting bloods.

Where the sedimentation rate is normal or moderately rapid, however, tubes of 50 mms. length are satisfactory.

Unduly long tubes have the objection that any deviation from the perpendicular increases the rate of sedimentation to a greater extent than in a short tube. With a 200 mm. tube a barely perceptible deviation from the vertical will cause a marked increase in the sedimentation rate, and since such deviation is almost unavoidable it is advisable to minimise its effects by using tubes as short as possible. The effect of slope in increasing the rate of sedimentation is insufficiently realised, but is an error which has to be carefully guarded against.

For these reasons I find a tube of 100 mms. length satisfactory, and this has the advantage of giving a standardised result at sight, without calculation, since the average of the actual and percentage results is the same as both of these.

Several workers have adopted 100 mms. as a suitable length for the column of blood, and I recommend its general adoption.

4. *Diameter of tube.* Within limits this is not an important factor in sedimentation testing, by which it is meant that the result is practically the same for all tubes from 2 to 10 mms. in diameter. Tubes narrower than 2 mms. introduce errors due to capillarity, and emphasise the error produced by slope of the tube. I find from numerous experiments that sedimentation is more rapid in narrow tubes than in wider ones, but the difference is neither marked nor constant, except in the case of capillary tubes such as those of Hellige. The only reason for using tubes with a bore of less than 2 mms. would be the adoption of a micro-technique whereby a sedimentation test was carried out on capillary blood obtained by pricking the ear or finger. I regard the results of this technique as unduly subject to error to recommend its adoption for general use, chiefly owing to (a) the difficulty of obtaining a sufficient quantity of blood quickly enough to prevent its clotting, (b) the liability of excessive pressure to obtain the blood causing its undue dilution with plasma, and (c) the difficulty of preparing an accurate dilution of blood and citrate. These reasons, combined with the errors associated with the use of capillary tubes indicate that finger-blood methods of performing sedimentation tests are not suitable for inclusion in a scheme of standardisation.

As to the diameter of tube to be used for other methods employing venous blood, there is plenty of choice. The chief factor to consider is that wide tubes require more blood to fill them than narrow ones. A 100 mm. length of tube of $2\frac{1}{2}$ mms. bore requires just under $\frac{1}{2}$ c.c. to fill it. A 100 mm. length of 5 mm. tube requires just under 2 c.cs. I find tubes of $2\frac{1}{2}$ mms. bore satisfactory, and recommend their adoption for general use in view of their convenience in filling. For purposes of standardisation I suggest that it will be sufficient to specify that the tube used should not have a bore of less than 2 mms.

5. *Slope of the tube.* This has been discussed in section 3 and need not be elaborated further.

6. *Cleanliness of the tube.* It is essential for the tubes used for sedimentation tests to be quite clean and dry. Any irregularity of the inner surface of the tube would delay sedimentation. It is only necessary to draw attention to this fact to ensure that each worker adopts his own practice for securing the cleanliness of his tubes. It may be noted, however, that a narrow tube has a greater surface area per unit volume of blood than a wider tube has, so that any want of cleanliness will have its greatest effect in narrow tubes. This is

an additional reason for avoiding capillary tubes, especially in view of the practical difficulty of cleaning them.

7. *Time of sedimentation.* The usual time for which a column of citrated blood is allowed to stand before measuring the distance sedimented by the red cells is one hour. Some observers, however, take a 2-hour reading, others a reading every 10 minutes for an hour and plot the results in the form of a graph, while others attach some importance to a reading at the end of 24 hours. I am satisfied from experience that the one-hour reading gives all the information which the sedimentation test can give, provided the 1-hour reading is accurate. It is found that a series of similar tests on the same blood will show greater agreement after 2 hours than after 1 hour, owing probably to slight variations in the slope and cleanliness of the tubes. But this apparent argument in favour of a 2-hour reading is nullified by the fact that in rapidly sedimenting bloods the stage of " packing " of the red cells may be reached in less than 2 hours, though practically never in less than 1 hour. Under these circumstances the 2-hour reading would be rather a measure of the total cell volume than of the rate of sedimentation.

The 1-hour reading avoids this difficulty and at the same time permits of a sufficient degree of sedimentation to be measured conveniently.

The 24-hour reading is closely related to the total cell volume, and is valueless without a knowledge of the red cell count. Moreover the inconvenience of waiting 24 hours for a result which is obtainable in 1 hour, detracts from any value which the 24-hour reading may possess. There is a tendency to attempt to extract from the sedimentation test more information than it can give, and I regard the 24-hour reading as belonging to this category. After all the sedimentation test is a crude index, which is liable to be affected by many circumstances, and it appears only reasonable to utilise it in the most direct manner possible. The 1-hour reading meets this requirement by measuring purely the rate of sedimentation, without complication due to " packing " of the cells. But readings after a longer period than an hour are to an increasing extent vitiated by this complication.

As for the graphic method of recording sedimentation rates, it seems that the only result of value is the final figure at the end of an hour, and that the intermediate values require time and concentration for their observation without giving any information of value. I am not prepared to believe with Cutler that the form of the graph has any value in prognosis, although I grant that it may be of service as a check on the final result.

From the point of view of standardisation of technique the question whether the graphic method is adopted or not is superfluous. I suggest that the reading after 1 hour is the important measurement, but this need not deter those so inclined from making intermediate measurements and plotting their results.

8. *Temperature at which test is conducted.* The temperature at which a sedimentation test is carried out is usually " room temperature," and although this is a variable quantity, the ordinary variations do not produce an appreciable effect on the sedimentation rate. The rate increases with rise of temperature and is markedly greater at body temperature than at room temperature. A few observers carry out sedimentation tests in a thermostatically controlled air chamber at 18°C., and others use a water bath at 37°C. On the principle that specialised apparatus and specialised conditions should be eliminated from the test as far as possible, it appears undesirable to recommend these practices. If standardisation of technique can be attained by simplification of technique it is all the more likely to be generally adopted.

9. *State of the blood as regards anæmia.* In performing sedimentation tests most observers ignore the red cell count, although it appears to be established that the rate of sedimentation increases as the degree of anæmia increases. Hence unless the sedimentation rate is corrected for the red cell count, one cannot be sure that any improvement in the rate is not merely due to an improvement in the red cell count rather than in the major disease for which the patient is being treated. It is obviously easier to put up with this disadvantage than to do a blood count for every sedimentation test, but this is not the sole reason for neglect of blood counts. It is evident that when the sedimentation rate has sufficiently improved to be within normal limits one is satisfied that the combined effects of the patient's major disease and his anæmia, if any, are not unduly detrimental. In interpreting the sedimentation result one bears in mind the effect of anæmia, but instead of attempting to measure and eliminate this effect one goes on trying to improve the patient. I submit that this is the proper way to deal with this complicating factor.

10. *Permissible delay in performing the test.* Whenever possible it is desirable to proceed with the sedimentation test immediately after the blood is drawn. The objection to postponing the test is that if the blood is allowed to stand the red cells may form small agglomerations which are difficult to break up again by shaking. In this form the cells would sediment more quickly than would fresh blood. If absolutely necessary, however, a delay of 2 to 3 hours is permissible.

I have several times tried the experiment of carrying out a sedimentation test and at the end of an hour emptying and thoroughly mixing the blood and then using it for a further sedimentation test, and repeating this process a third time. The result of the second test was little different from the first, but the third usually showed an increased rate of sedimentation.

11. *Limits of normality.*—The following Table 19 shows technical details regarding the published methods of sedimentation adopted by a number of workers. Columns 4 and 5 show the proposed limits of normality for males and females.

Authors	Length of column of blood (mms.)	Bore of tube (mms.)	Plasma in normal individual not to exceed in 1 hour				Ratio of citrate to blood	Strength of citrate solution
			Mms.		Percentage			
			Males	Females	Males	Females		
(1)	(2)	(3)	(4)	(5)	(6) %	(7) %	(8)	(9) %
Cutler	50	5	8	10	16	20	1 to 9	3
Walton	32·5	6	5½	5½	17	17	1 to 9	3·8
Westergren	200	2½	3	7	1½	3½	1 to 4	3·8
Fahraeus	150	9	9	12	6	8	1 to 4	2
Trail	100	2	6	12	6	12	1 to 4	3·8

It is apparent that there are marked differences in the limits of normality assigned by the originators of the various methods. The differences cannot be regarded as due entirely to the physical variations in the methods, but represent rather the personal belief of the originators as to what is a normal standard. Thus Westergren fixes a much more stringent standard than Cutler. Moreover, a blood which sediments 8 mms. in a Cutler tube will sediment about 16 mms. in a Westergren tube in the same time, from which the real difference in the two standards of these authors is easily apparent.

The fixing of a normal limit is of some practical importance, since it represents a minimum standard of attainment to be aimed at in the treatment of each patient. I find from practical use of the sedimentation test that for a 100 mm. tube as recommended in section 3, the limit of normality for both males and females may be taken as 10 mms. plasma after 1 hour, and since men tend to sediment slightly less rapidly than women, figures approaching this limit must be treated with more caution in men than in women.

The corresponding limit of normality for tubes other than 100 mms. in length is given by the square root of their length in mms. Thus for Cutler's tubes the limit would be about 7 mms. and for Westergren's 14 mms. This conception of the normal limits of sedimentation is suggested as reliable and practical for general adoption.

12. *Method of expressing a sedimentation result.* In view of the suggestions brought forward in the preceding paragraphs for the standardisation of methods of sedimentation testing, it is obviously desirable in the event of the adoption of these suggestions that results obtained by the standardised technique should be expressed in a form which will cause them to be readily recognisable as standardised results. For example a result might be stated as $\frac{10}{50}/15$ to indicate that a 50 mm. column of blood was used and 10 mm.s of plasma were present after 1 hour, giving a calculated standardised result of 15 (*v.* section 3). But even then we are not sure what strength and proportion of citrate was used, or what was the bore of the tube, or how long it was left sedimenting. Obviously all of these factors cannot conveniently be indicated in a summarised result, nor should this be necessary, seeing that the object is standardisation of method and not the expression of personal practice. The alternative course is to draw up a specification for the standardised technique, leaving it as elastic as circumstances will allow, to give it a name by which it may be identified, and to use this name in the statement of a sedimentation rate.

A suggested name for the standard technique described in the following paragraph, which is based on the optimum values arising from the foregoing discussion of the various factors which influence the rate of sedimentation, especially the six factors, length of tube, diameter of tube, strength of citrate solution, ratio of citrate to blood, temperature at which the test is conducted, and the time for which the blood is allowed to sediment, is the Six Point technique, which might be abbreviated to S.P. The statement of a result as 14 S.P. would then mean either that a result of 14 had been obtained directly by following the S.P. technique or that it had been calculated by the approved method, using only those variations from the S.P. technique which are permitted by it. In either case the result would be equally satisfactory.

It will be noted that although I find myself recommending the general adoption of yet another standard technique, it differs from its predecessors in three important respects : (1) It requires no specialised apparatus ; (2) it has a measure of elasticity in its interpretation ; and (3) it provides for a calculated standard when some of the practical details of the standard technique have to be omitted.

In addition it is based on a critical study of the physical principles concerned in blood sedimentation, and avoids the proved disadvantages of other techniques.

I submit this technique as suitable for general use as a standardised method of performing sedimentation tests. It is described in detail in the following section.

Suggested Standard Technique.

Materials required: Glass tubes about 6″ long and not less than 2 mm. internal diameter, preferably $2\frac{1}{2}$ mms. bore; each tube to be marked at exactly 100 mms. from one end. Sterile 3·8 per cent. sodium citrate solution. A one drachm minim measure. Plasticine.

Method: (a) Blood is drawn from a vein into a 1 or 2 c.c. syringe containing citrate solution. The amount of citrate required is one-fifth of the total volume of citrated blood, *i.e.*, 0·4 c.c. citrate requires the syringe to be filled with blood to the 2 c.c. mark.

(b) The citrated blood is discharged into the minim measure, which must be quite dry.

(c) The lower end (*i.e.*, the end 100 mms. from the mark) of a glass tube is inserted in the blood in the measure, and the small column of blood which enters the tube is then caused (by tilting the tube) to moisten the interior of the tube as far as the mark. The blood remaining in the tube is then returned to the measure, and by inserting the end of the tube again in the blood and holding the tube almost horizontal, it will be found that it is readily filled with blood. When the level reaches exactly the 100 mm. mark the top of the tube is sealed with the finger, the tube is removed from the measure, and the 100 mm. column of blood is allowed to run along the tube a little (half an inch or so) past the mark. This leaves an air space between the bottom of the blood column and the bottom end of the tube. The latter is then pressed sufficiently securely into a piece of plasticine, previously stuck on a bench or other steady surface, to support the tube vertically. The tube must be made as vertical as possible by checking its parallelism in two planes with such vertical objects as junctions of walls, window frames, etc. The time is noted at once, and after one hour at room temperature the height of the plasma above the sedimented red cells is measured in mms. This gives the required sedimentation rate.

Permissible deviations from this standard technique. (a) The diameter of the tube may be varied to suit individual needs, but should not be less than 2 mms.

If a 100 mm. column of blood is used, as required by the technique, it is evident that an unnecessarily large amount of blood will be required if the bore of the tube is more than 6 mms.

(b) If for any reason, *e.g.*, wastage through spilling of blood, it is not possible to set up a 100 mm. column of blood, the test may be done with a shorter column, but in this case the result should be expressed as the *average* of the actual length of the plasma column and its length per cent. of the total column.

(c) Those who prefer to continue using the tubes appropriate to other standard methods, such as those of Westergren and Cutler, can contribute to the standardisation of the sedimentation test by using the standard strength and proportion of citrate indicated above. Their results can then easily be converted into standardised results.

Conclusion.

Standardisation of the red cell sedimentation test implies principally the acceptance of six details of technique, *viz.*, the use of 3·8 per cent. citrate as anti-coagulant, a ratio of 1 part citrate to 4 of blood, a tube of not less than 2 mms. diameter or 50 mms. length, the conducting of the test at room temperature, and the reading of the result in mms. at the end of 1 hour. Reasons are given for urging the acceptance of these practical details, and a technique embodying them is described. A method of calculation is also explained whereby the results obtained by any technique conforming to the six specified details can be standardised to show what it would have been had the actual standard technique been used.

I make the suggestion that it will encourage the adoption of a standardised technique if it be made a practice when stating a sedimentation result to indicate the method used, *e.g.*, 10 Cutler, 20 Westergren, 15 S.P., in all cases quoting the distance sedimented in mms. and not as a percentage of the column. If this were done, those whose method is haphazard would probably prefer to improve their method rather than to quote it.

XII.—DISPENSARY AREA No. 1
(including Lancaster Pulmonary Hospital).

Area (estimated population 249,893) embraces Lancaster, Morecambe and Heysham, Garstang Rural (part), Preston Rural, Walton-le-Dale, Chorley, and Horwich districts.

Consultant Tuberculosis Officer ... Dr. G. H. Leigh.
(Dr. Leigh is also the visiting physician to the Lancaster Pulmonary Hospital).

Assistant Tuberculosis Officer ... Dr. F. C. S. Bradbury.

Dr. Leigh reports as follows :—

The number of cases on the dispensary register at the end of the year is slightly in excess of last year.

Fewer new cases have been seen at the dispensary and the visits to new patients at their homes are less by 43. This latter is in part accounted for by the transfer of the Borough of Lytham St. Annes to the Fylde Dispensary Area which took place in the last quarter of 1934.

The new dispensaries at Chorley and Preston are fully established, and the work there has been made easier by the larger and more convenient rooms.

In April, the x-ray apparatus at Lancaster Dispensary was removed and installed at Chorley. Previously all patients from the area had to travel to Lancaster for radiographic examination. This not only added greatly to the cost of travelling expenses, but tended to limit the number of skiagrams taken. In addition to this, patients having artificial pneumothorax treatment had to come to Lancaster in order that screen examinations could be made before their refills were done. Now, all the patients from the part of the area south of Preston who require radiographic examination have only to travel to Chorley. Since the removal of the apparatus, 370 skiagrams have been taken and there have been 99 screen examinations. Patients from the Lancaster district are x-rayed at the Lancaster Pulmonary Hospital.

The blood sedimentation test has been used more this year, and has been found of considerable assistance in evaluating the condition of the patients.

The three care committees at Lancaster, Chorley, and Horwich have continued to do good work during the year. At the annual meeting of the Chorley Committee, Dr. Bradbury gave an interesting address on " The History of Tuberculosis ".

During the year, arrangements were made with the Lancaster Royal Infirmary for the treatment of cases of non-pulmonary tuber-

culosis. This has proved of advantage both to the institution and to our own department, inasmuch as certain surgical cases requiring only general hospital treatment and patients awaiting admission to special hospitals, such as Wrightington, can be treated locally until their turn for admission comes round.

Artificial light treatment. As in previous years, general light treatment has been given twice a week. During the latter part of 1934, the time of each session was increased from one to two hours. During 1935, this has been further extended at the Preston Light Centre by giving the treatment three times a week instead of twice.

One of the mercury vapour lamps from Chorley Dispensary was transferred to Preston, so that it might be used for cases not suitable for the carbon arc lamps.

In addition to the general light treatment, the Kromayer lamp has been used for local treatment of skin conditions and suitable cases of glandular tuberculosis.

Lancaster Pulmonary Hospital.

Matron ... ... Miss E. Burrows (died 15-1-36).
Miss L. Clark.

The Lancaster Isolation Hospital, built to replace the Luneside Hospital which was closed in October, 1927, is situated on the northern boundary of the Borough of Lancaster. Building operations were commenced by the Lancaster and District Joint Hospital Board in July, 1932, and the first tuberculous patient was admitted on the 11th February, 1935.

By agreement between the Lancashire County Council and the Joint Hospital Board, a separate block was provided for patients suffering from pulmonary tuberculosis. The building contains a duty room, dining-room, scullery-servery, stores, x-ray room, treatment room, staff lavatory, dark room, and dispensary in the centre; three single and six double cubicles accommodating 15 male patients, with recreation room and sanitary annexe on the east side; and three single and six double cubicles accommodating 15 female patients, with recreation room and sanitary annexe on the west side. There are also two double sleeping shelters for male patients and one double shelter for females, making a total accommodation for 36 patients (19 males and 17 females). The Joint Hospital Board are responsible for the maintenance and nursing of the tuberculous patients, the County Council paying to them the cost thereof.

The weekly maintenance charge for 1935–36 was £2 12s. 6d. per patient.

The consultant tuberculosis officer for Dispensary Area No. 1 is the visiting physician.

The x-ray apparatus in the tuberculosis block is, for convenience, also used for the dispensary patients from Lancaster and district.

The average length of stay of patients at the Lancaster Pulmonary Hospital during 1935 was as under :—

Patients discharged	125 days.
Patients who died in the hospital	125 days.
Observation cases discharged	29 days.

Dr. Leigh reports :—

During 1935, 79 patients were admitted, 27 were discharged, and 18 died ; in addition, two cases sent in for observation and diagnosis were discharged.

As the institution has to receive not only the advanced cases from Area No. 1, but also assist in the finding of accommodation for similar cases from other dispensary areas, it is inevitable that many of the beds will be taken up by this class of case and the remainder by moderately advanced cases, thus limiting the number of patients for active treatment. It has been possible, however, to utilise both gold salts and artificial pneumothorax with benefit in certain cases.

The majority of the sputum examinations are made at the hospital by the ordinary film method and Ziehl-Neelsen staining. In a special case a guinea-pig inoculation test was arranged for. This was done at the Public Health Laboratory, Manchester.

The only new remedy experimented with was opocalcium, a combination of calcium and parathyroid, which was kindly supplied by the makers. A special case was selected, but the remedy did not prove successful.

The excellent x-ray installation has been used fully for estimating the in-patients' progress, and for selecting and controlling the cases under special treatment ; it also provides the radiographic service for the northern part of Dispensary Area No. 1.

Owing to the small number of patients available for occupational therapy no organised scheme could be attempted, but gardening has been tried and both men and women assist in some of the lighter domestic duties.

Two excellent recreation rooms are available. The men have a billiards table which is much in demand, and the women have a piano. Both rooms have a wireless speaker and all the beds have headphones.

Monthly whist drives are organised. The patients were entertained also by a concert party and by a dramatic society which presented two attractive sketches.

Christmas was celebrated heartily, the patients helping in the preparation of the decorations and the nursing staff of the hospital providing a lively concert.

Visits were paid by the following members of the County Tuberculosis Committee :—Sir Thomas Tomlinson, Dr. P. F. Mannix and Mr. H. Bright.

A religious service is held each week and regular visits are paid to the hospital by the vicar of the parish, the Rev. A. J. Jervis, and by the Rev. T. S. Whiteside ; Nonconformist patients are visited by the Rev. C. L. Wilson and other ministers ; and those patients who belong to the Roman Catholic Church by Father Prescott and Father Marsden.

All the probationers receive a course of training in fever nursing which includes lectures on tuberculosis.

I should like to record the excellent work of the nursing staff under the leadership of our late matron, whom we lost as a result of a road accident at the commencement of 1936. Miss Burrows' work in connection with the fitting up of the hospital will be remembered for a long time, as will also her genial disposition and kindness to all.

Further, I have to thank Dr. Bradbury for his help in the special work of the hospital, and Dr. Chapman for his kindly interest and occasional assistance.

Details of the work carried out at the hospital during the year :—

Artificial pneumothorax—	
Inductions	11
Refills	112
Gold salts—	
Injections of sanocrysin	43
Injections of solganol	37
Blood sedimentation tests	68
Mantoux tests	1
X-ray work—	
Screen examinations	136
Skiagrams	133
Sputum examinations (positive 141, negative 61)	202

Numbers of patients afforded special treatment in Lancaster Hospital for the first time during 1935 :—

Artificial pneumothorax—	
Attempted	11
Abandoned	4
Satisfactory	6
Partially satisfactory	1
Gold salts (sanocrysin, solganol)	10
Opocalcium	1

Numbers of patients in the hospital on the 31st December, 1935, who were having special treatment :—

Artificial pneumothorax	3
Gold salts	1

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1935 (Definitely tuberculous, 845 ; doubtful, 4.)		849

Examinations by tuberculosis officer at—	Examinations of *new persons* and *new contacts* for diagnosis.	Re-visits or re-attendances of "*old*" *cases* and "*old*" *contacts*.
Patients' homes	153	935
Lancaster Chief Dispensary	143	506
Chorley Branch Dispensary	120	803
Preston Branch Dispensary	80	496
	343	1,805

Attendances of patients at dispensaries for artificial light treatment—		
Lancaster Dispensary (21 individual patients)	443	4,342
Chorley Dispensary (54 individual patients)	1,911	
Preston Dispensary (44 individual patients)	1,988	
Attendances for artificial pneumothorax treatment (15 individual patients) ...		174
Mantoux tests		13
Blood sedimentation tests		41
Care committee meetings attended by—		
(*a*) Tuberculosis officers		20
(*b*) Tuberculosis health visitors		38
Lectures or addresses given		3
Visits by tuberculosis officers to sanatoria, and pulmonary and special hospitals		19
Special visits by tuberculosis officers (*i.e.*, interviews with medical officers of health, general hospital officials, &c.)		2
Visits by dispensary nurses to patients' homes—		
Routine visits	3,621	3,736
Application of surgical dressings	96	
Other actual nursing	19	
Patients' dispensary attendances for attention by nurses—		
Application of surgical dressings		627
Sanitary defects reported to the local medical officers of health		3
Disinfections carried out by local sanitary authorities		166
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment *before* statutory notification		89.4%

XIII.—DISPENSARY AREA No. 2
(including Withnell Pulmonary Hospital).

Area (estimated population 330,906) embraces Clitheroe, Colne, Nelson, Burnley Rural, Blackburn Rural, Accrington, Darwen, Haslingden, Rawtenstall, and Bacup districts.

Consultant Tuberculosis Officer ... DR. B. MACPHEE.
(Dr. MacPhee is also visiting medical superintendent of the Withnell Pulmonary Hospital).

Assistant Tuberculosis Officers ... DR. S. C. ADAM.
DR. W. FETTES (to 31-3-36).
DR. J. N. WHYTE (from 27-4-36) (2 days per week).

Dr. MacPhee reports :—

During the year 1935 the administration and work of this area has proceeded smoothly and satisfactorily along routine lines as in previous years.

On divers dates during the year the chief dispensary in Accrington was honoured by visits from the following ladies and gentlemen :—

County Councillor R. I. Constantine ; Mrs. Sinkinson ; Dr. José Devesa Núñez, a tuberculosis medical officer in Spain, and his daughter.

The x-ray work, pathological examinations, and artificial pneumothorax treatment have, as hitherto, been centralised and undertaken at the chief dispensary, where 1,095 skiagrams were taken and 353 screenings made ; 929 specimens of sputum were examined with the following results :—Positive, 175 ; negative, 754.

As indicated above, most of the specimens of sputum are examined at the dispensary laboratory, but there is always a residuum of cases which present especial difficulties, and advantage is taken of the facilities for examinations at the Public Health Laboratory, Manchester. Last year, 38 specimens were submitted for examination for the tubercle bacillus—the examination consisting of the inoculation of guinea-pigs and culturing the bacillus on special media. The results of these tests were 4 positive and 34 negative.

As a further aid to diagnosis, the Mantoux test was done in a number of doubtful cases.

Ultra-violet radiation treatment is carried out at the chief dispensary in Accrington and also at the two branch dispensaries in Nelson and Stacksteads. The patients' attendances at these light centres have, on the whole, been very regular, and, compared with the previous year,

there has been a diminution in the number of cases treated. None of those treated during the year calls for any special comment, but, as previously experienced, the cases in which ultra-violet radiation seems to be most efficacious are those suffering from discharging sinuses and lupus.

The ultra-violet radiation sessions are held thrice weekly; some of the cases of lupus are very stubborn and appear to resist the treatment unless recourse is had to ancillary forms, such as the use of acid nitrate of mercury and spiking.

The artificial light installation at Stacksteads Dispensary has been enlarged by the addition of a "Sunic Home-sunlight" mercury vapour lamp, kindly presented by Mrs. Worswick, of Rawtenstall. This lamp has proved extremely useful in the treatment of particular cases.

A week's intensive propaganda on tuberculosis was organised in October, and Dr. J. H. Harley Williams, of the National Association for the Prevention of Tuberculosis, kindly gave a series of lectures, illustrated by cinematograph films, in Accrington, Nelson, Colne, Darwen, Haslingden, Rawtenstall, and Bacup. The lectures were well attended by appreciative audiences, and many questions were afterwards put to and answered by the lecturer.

During 1935, owing to unemployment in this area, a larger amount from the County care fund was spent—£259, as against £209 in 1934. The fund is extremely valuable in assisting individual cases and also dependants, thus enabling the breadwinners to take advantage of treatment.

I have again pleasure in recording the active co-operation of the medical practitioners in the area, so essential for the success of the work, and I also wish to thank my medical colleagues, the health visitors, and clerical staff for their valuable help during the year.

Withnell Pulmonary Hospital, near Chorley.

Matron ... Miss D. Willman.

The County Council in December, 1924, purchased Withnell Hall (including two cottages, outbuildings, and 37 acres of land) situated on the main road from Blackburn to Chorley. The first patient was admitted on the 15th August, 1927. Accommodation is provided for 52 male patients (20 in double cubicles, 8 in single cubicles, 18 in four wards and 6 in shelters). There is a small treatment block in which artificial pneumothorax inductions and refills and minor operations are carried out. The hospital serves mainly Dispensary Area No. 2. Three houses were provided on the estate for employees.

The weekly maintenance charge for 1935–36 was £2 19s. 7d. per patient. This includes 13s. 2d. for loan charges and 7s. for structural renewals and repairs.

The average length of stay of patients at Withnell during 1935 was as under :—

Patients discharged	191 days.
Patients who died in the hospital...	355 days.
Observation cases discharged	58 days.

Dr. MacPhee reports :—

During the year, 88 patients were admitted to the institution, 64 were discharged, and 26 died ; in addition, 6 observation cases were admitted and 8 were discharged. The percentage of beds occupied during the year was 96·06.

At the institution laboratory, 553 specimens of sputum were examined with the following results :—Positive, 360 ; negative, 193.

In the x-ray department, 203 skiagrams were taken and 222 screenings were made.

With regard to treatment, the ordinary routine was carried out, and the following list shows the special treatment undertaken in selected cases during the year under review :—

Artificial pneumothorax—	
Inductions	11
Refills	95
Gold salts (injections)—	
Sanocrysin	11
Crisalbine	185
Mantoux tests	1
Lipiodol injections	1

The numbers of patients in Withnell afforded special treatment for the first time in 1935 were as follow :—

Artificial pneumothorax—	
Attempted	11
Abandoned	5
Satisfactory	6
Gold salts (sanocrysin and crisalbine)	19

The numbers of patients in the hospital on the 31st December, 1935, who were receiving special treatment were as follow :—

Artificial pneumothorax	3
Gold salts	1
Artificial light	2

With regard to the administration of gold salts, a small number of selected cases were treated but I am satisfied that any improvement which took place could have been ascribed with equal justice to the so-called ordinary sanatorium routine.

Weekly religious services are held alternately by the Rev. S. Archer (Church of England), and the Rev. N. F. Priestley (Nonconformist). The institution is also visited by the Rev. T. Carney (Roman Catholic).

Visits to the institution were made by the Chairman of the County Tuberculosis Committee, Alderman E. Boothman, and also by the members of the Ashton-under-Lyne and District Tuberculosis Care Committee. We were also honoured by a visit from the members of the Amounderness, Blackburn, and Leyland Hundreds of the County Council, along with the County Tuberculosis Committee.

The alterations to the recreation room were completed during the year. They consisted chiefly of an enlargement of the auditorium and stage, the latter convertible by the closure of sliding doors into a reading room or, when necessary, a small chapel; also of the addition of two dressing rooms for the use of artistes.

Work is in progress on the erection of a patients' sleeping pavilion for the more ambulatory cases, to replace the six single shelters now in use. The new pavilion will embody some definite improvements and will be fitted with hot water pipes.

Two series of lectures to the staff were given—one by myself on tuberculosis, and the other by Dr. Fettes on anatomy, physiology, and hygiene. One nurse obtained the certificate of the Tuberculosis Association.

With regard to occupational therapy, this is organised as carefully as possible, having in view its beneficent effect on the mental and physical improvement of the patients.

From time to time, concert parties from Chorley, Blackburn, and the neighbourhood visited the institution and entertained the patients, who were also indebted to a party from Preston when a pantomime was staged. We are also indebted to the Withnell and Brinscall Band for entertaining the patients during the Christmas and New Year festivities and occasionally during the summer months.

Miss Willman, as in former years, arranged the annual trip of the patients; this year they went to Blackpool to see the illuminations. These excursions are eagerly looked forward to by the men.

The library is added to annually, and is an inestimable boon to patients, particularly those confined to bed.

Once again I would place on record my appreciation of the help of my medical colleagues, the matron, and the staff.

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1935 (Definitely tuberculous, 1,154; doubtful, 1.)			1,155
Examinations by tuberculosis officer at—	Examinations of *new persons* and *new contacts* for diagnosis.	Re-visits or re-attendances of "*old*" *cases* and "*old*" *contacts*.	
Patients' homes	207	228	
Accrington Chief Dispensary	350	1,061	
Darwen Branch Dispensary	64	119	
Nelson Branch Dispensary...	205	521	
Stacksteads Branch Dispensary	132	584	
	751	2,285	
Attendances of patients at dispensaries for artificial light treatment—			
Accrington Dispensary (49 individual patients)		2,418	4,628
Nelson Dispensary (31 individual patients)		966	
Stacksteads Dispensary (23 individual patients)		1,244	
Attendances for artificial pneumothorax treatment (25 individual patients) ..			172
Mantoux tests			4
Lectures or addresses given			1
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals			45
Special visits by tuberculosis officers (*i.e.*, interviews with medical officers of health, general hospital officials, &c.)			7
Visits by dispensary nurses to patients' homes—			
Routine visits		5,599	6,346
Application of surgical dressings		246	
Adjustment of splints and surgical appliances		257	
Other actual nursing		244	
Patients' dispensary attendances for attention by nurses—			
Application of surgical dressings		703	784
Adjustment of splints and surgical appliances		81	
Sanitary defects reported to the local medical officers of health			12
Sanitary defects which after notification were remedied			12
Disinfections carried out by local sanitary authorities			1,662
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment *before* statutory notification			97·9%

XIV.—DISPENSARY AREA No. 3
(including Wolstenholme Pulmonary Hospital).

Area (estimated population 371,246) embraces Ramsbottom, Littleborough, Radcliffe, Heywood, Crompton, Royton, Prestwich, Middleton, Chadderton, Failsworth, Ashton-under-Lyne, Mossley, and Denton districts.

Consultant Tuberculosis Officer .. DR. G. FLETCHER.
(Dr. Fletcher is also visiting medical superintendent of Wolstenholme Pulmonary Hospital).

Assistant Tuberculosis Officers .. DR. C. BERRY (to 31/3/36).
DR. J. L. ARMOUR.
DR. W. FETTES (from 1/4/36).

Dr. Fletcher reports :—

An important event of the year in this area was the visit in July by a sub-committee of the Tuberculosis Committee. The working arrangements of the Ashton-under-Lyne Dispensary were explained to them, and an inspection was made of the site of the new dispensary. The sub-committee also visited the Oldham district and selected a site in Brook Street, Chadderton, for the new dispensary which is to replace the existing dispensary arrangements in Barker Street, Oldham. The plan of the new dispensary at Ashton-under-Lyne appears overleaf, and the plan of the Chadderton dispensary is given on page 69.

In June I took part in discussions of the Tuberculosis Section of the Royal Institute of Public Health Congress at Harrogate.

Lectures were given during October by Dr. Harley Williams, the Medical Commissioner of the National Association for the Prevention of Tuberculosis, at Ashton-under-Lyne, Radcliffe, and Shaw, and these were much appreciated by the audiences.

The work of the care committees was continued throughout the year. The Ashton-under-Lyne and District Committee assisted 57 cases at a cost of £203 15s. 4d. ; the Prestwich Care Committee assisted 2 cases at a cost of £6 19s. 4d. ; and 26 cases were dealt with by the Radcliffe, Whitefield, and District Relief Fund for Consumptives at a cost of £150 1s. 11d.

The Ashton-under-Lyne Committee held their annual dance in January ; on the 4th June they visited Withnell Pulmonary Hospital, where Dr. MacPhee kindly explained the working arrangements of the institution.

The districts not covered by voluntary care committees were assisted through the County care fund, 64 cases being dealt with at a cost of £208 7s. 5d.

The annual Christmas party at Ashton-under-Lyne Dispensary was much enjoyed by the children who attended.

During the year, 1,859 skiagrams were taken at Ashton-under-Lyne, as compared with 1,952 in 1934; in addition, 9 skiagrams were taken of County patients from Aitken Sanatorium.

At this dispensary also, 1,421 specimens of sputum were examined, 337 being positive and 1,084 negative.

The light centre at Ashton-under-Lyne Dispensary has now been in operation since September, 1925. During that time, 669 patients have been treated with the following results :—

Disease quiescent	414
Diagnosis not confirmed	4
Admitted to sanatorium or hospital and light treatment ceased for that reason	58
Ceased to attend without completing treatment ...	120
Removed from district	25
Still undergoing treatment	48

The methods employed from the commencement involve the use of carbon arc, Jesionek, and Kromayer lamps.

For a time treatment was given to certain patients by the Sollux lamp, but this did not seem to produce any noteworthy results in the particular cases.

In addition to light treatment, the application of caustic plasters and the treatment of nodules with acid nitrate of mercury has been in use for several years, and recently the introduction of Moogrol appears definitely to have benefited certain cases. Abscesses have been aspirated and incised when necessary.

A certain number of patients have been treated with streptococcus vaccines, whilst a number of patients suffering from genito-urinary tuberculosis have received a course of tuberculin.

One case of obstinate Bazin's disease was referred to a general hospital for treatment by sympathectomy, but the result was not encouraging. In some cases of this disease, the application of elasto-plast bandages has proved useful.

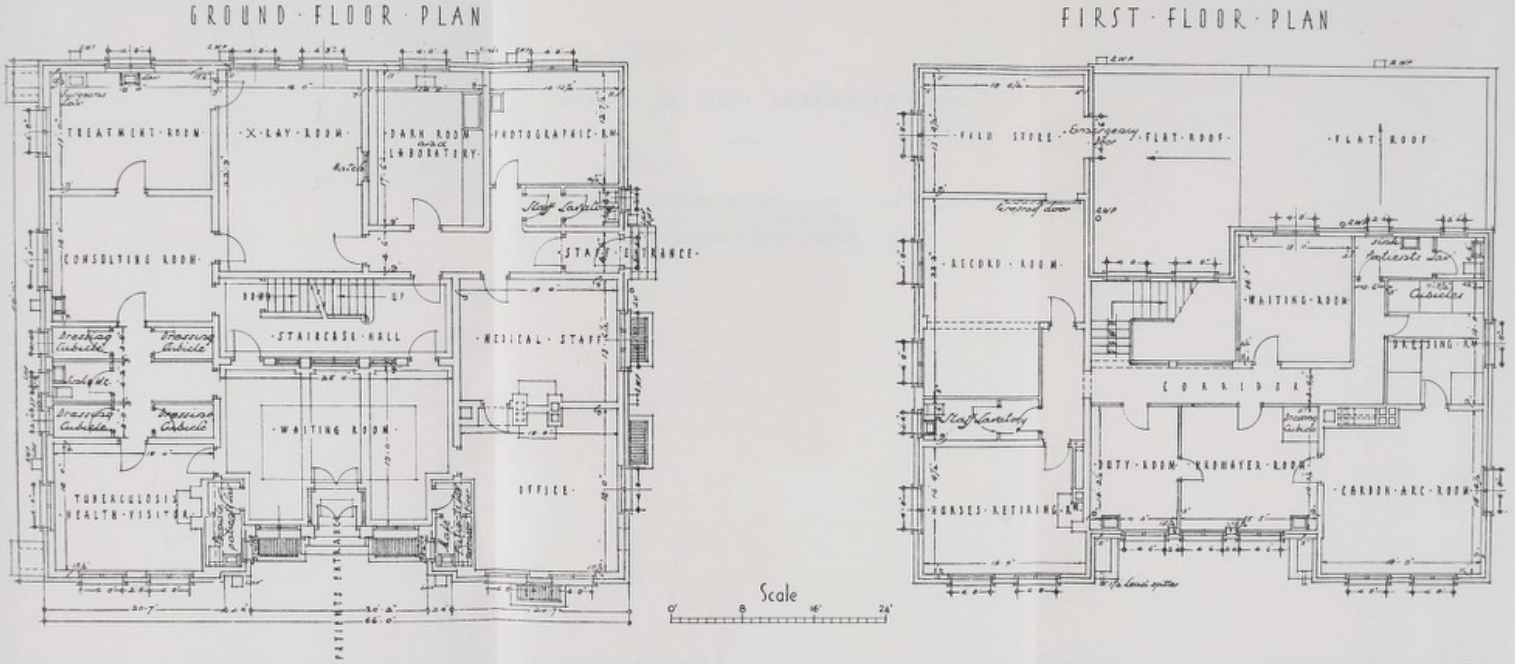
Observation visits were paid to Ashton-under-Lyne Dispensary and Radcliffe Dispensary during 1935 by 108 cases which had been successfully treated by artificial light.

ASHTON-UNDER-LYNE CHIEF DISPENSARY.

PLAN OF PROPOSED NEW PREMISES IN

LEES STREET, ASHTON-UNDER-LYNE.

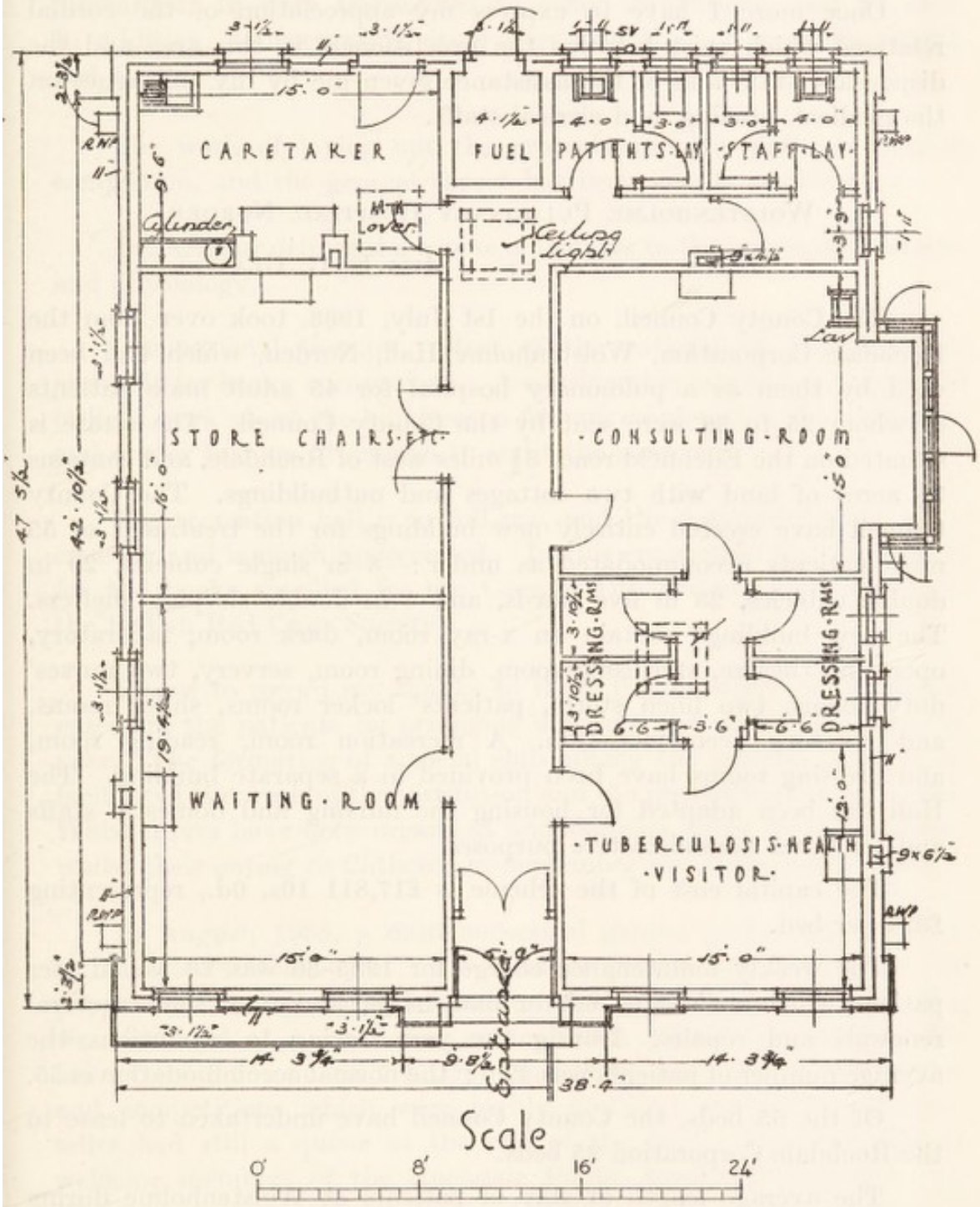
ASHTON-UNDER-LYNE CHIEF DISPENSARY.



Plan of new dispensary premises to be built in Lees Street, Ashton-under-Lyne, to replace the existing dispensary in Warrington Street. The approved estimated cost of the premises is £6,500; the site has been taken on lease at an annual rental of £20. The dispensary at Ashton-under-Lyne is the centre for Dispensary Area No. 3, which contains a population of 371,246. All the patients from the dispensary area will be x-rayed at this dispensary, and the major portion of the artificial light cases will also attend.

[Plan prepared by the County Architect.]

Chadderton Branch Dispensary.



Plan of new one-storey dispensary premises built in Brook Street, Chadderton, to replace the Oldham Dispensary. The approved estimated cost of the premises is £1,536; the site has been taken on lease at an annual rental of £6 11s. 3d. This branch dispensary will serve a population of 79,302; it was opened on the 28th September, 1936.

[Plan prepared by the County Architect.]

Aitken and Springfield Sanatoria, and Chadderton Pulmonary Hospital were visited monthly for the purpose of consulting with the medical superintendents.

Once more I have to express my appreciation of the cordial relations which exist between the practitioners in this area and the dispensary staff, and of the assistance given me by my colleagues on the medical, nursing, and clerical staffs.

Wolstenholme Pulmonary Hospital, Norden.

Matron .. .. Miss E. G. Glass.

The County Council, on the 1st July, 1933, took over from the Rochdale Corporation, Wolstenholme Hall, Norden, which had been used by them as a pulmonary hospital for 45 adult male patients of whom 25 to 30 were sent by the County Council. The estate is situated on the Edenfield road, 3½ miles west of Rochdale, and contains 7¼ acres of land with two cottages and outbuildings. The County Council have erected entirely new buildings for the treatment of 55 male patients accommodated as under :—8 in single cubicles, 20 in double cubicles, 23 in five wards, and 4 in double sleeping shelters. The new buildings contain an x-ray room, dark room, laboratory, operating theatre, sterilising room, dining room, servery, two nurses' duty rooms, two linen stores, patients' locker rooms, sluice rooms, and lavatory accommodation. A recreation room, reading room, and dressing rooms have been provided in a separate building. The Hall has been adapted for housing the nursing and domestic staffs and for other administrative purposes.

The capital cost of the scheme is £17,811 10s. 0d., representing £324 per bed.

The weekly maintenance charge for 1935–36 was £3 5s. 3d. per patient, which includes 6s. 6d. for loan charges and 9s. 3d. for structural renewals and repairs. During the year, owing to alterations the average number of patients was 42·9 ; the normal accommodation is 55.

Of the 55 beds, the County Council have undertaken to lease to the Rochdale Corporation 25 beds.

The average length of stay of patients at Wolstenholme during 1935 was :—

Patients discharged	137 days.
Patients who died in the hospital	71 days.
Observation cases discharged...	59 days.
Observation case which died in the hospital ...	4 days.

A motor ambulance is available at the hospital.

Dr. Fletcher reports as follows :—

During the year, 89 County patients were admitted, 49 were discharged, 12 were transferred to other institutions, and 21 died. In addition, 4 observation cases were admitted, 3 were discharged, and 1 died.

The work of laying out the grounds and the paths is nearing completion, and the general aspect has been greatly improved.

Dr. Armour delivered a course of lectures to the nurses on anatomy and physiology.

Occupational therapy. Most of the patients at Wolstenholme are unfit for heavy occupations. A considerable number are employed in light work about the buildings, a few are employed in the workshop, and one or two are fit enough to assist the gardener.

The recreation hall is in full use, and the patients' library is increasing and is much appreciated. In this connection we are grateful for the books supplied by the County Tuberculosis Committee and the British Red Cross Society.

I have to record my thanks to those friends who have helped to entertain the patients by arranging concerts and sketches during the year. The formation of a social club among the patients has greatly facilitated the work of the institution and the provision of amusements. Whist drives have been organised and sketches acted by the patients, whilst their outing to Clitheroe in September was much appreciated.

In August, 1935, a most successful garden party was organised by the men's social club. The weather proved fine, and about 220 people, mostly friends and relatives of the patients, attended. Tea was provided at a small fee, an orchestra played selections on the lawn from 3-0 p.m. to 7-0 p.m., and there were various side-shows and competitions which were highly popular; indeed the fortune-teller had still a queue at the end of the day! We were glad to welcome members of the Rochdale Public Health Department. As this first venture proved so successful, it was decided to organise another in 1936.

The St. Paul's Men's Bible Class, Norden, visit the institution at intervals, and engage in billiards and whist handicaps with the patients. We are indebted to them also for a gift of table bowls.

Other friends of the institution have presented us with Communion cups, and vases, cross, and cloth for the altar.

We are deeply indebted to the Rev. H. Patrick and Father Watterson for the great interest shown in the patients.

The visits of Mr. C. Fearn, the dentist, have helped considerably in increasing the comfort of the patients and the value of the medical treatment.

Details of work carried out at Wolstenholme during 1935 :—

Artificial pneumothorax—	
Attempted	3
Satisfactory	3
Refills	19
Blood sedimentation tests	108
X-ray examinations—	
Screenings	49
Skiagrams	167
Sputum examinations—	
Positive	226
Negative	131

The number of patients in Wolstenholme on the 31st December, 1935, who were having special treatment was as follows :—

Artificial pneumothorax	2

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1935 (Definitely tuberculous, 1,485 ; doubtful, 1.)		**1,486**
Examinations by tuberculosis officer at—	Examinations of *new persons* and *new contacts* for diagnosis.	Re-visits or re-attendances of " *old* " *cases* and " *old* " *contacts.*
Patients' homes	176	457
Ashton-under-Lyne Chief Dispensary	512	2,198
Middleton Branch Dispensary	67	317
Oldham Branch Dispensary	285	982
Radcliffe Branch Dispensary	176	725
Rochdale Branch Dispensary	123	487
	1,163	4,709
Attendances of patients at dispensaries for artificial light treatment—		
Ashton-under-Lyne Dispensary (81 individual patients)	2,979	4,482
Radcliffe Dispensary (30 individual patients)	1,503	
Attendances for artificial pneumothorax treatment (40 individual patients)		**493**

Care committee meetings attended by—		
(*a*) Tuberculosis officers		11
(*b*) Tuberculosis health visitors		8
Lectures or addresses given		2
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals		73
Special visits by tuberculosis officers (*i.e.*, interviews with medical officers of health, general hospital officials, &c.)		5
Visits by dispensary nurses to patients' homes—		
Routine visits	7,438	
Application of surgical dressings	97	8,215
Adjustment of splints and surgical appliances	421	
Other actual nursing	259	
Patients' dispensary attendances for attention by nurses—		
Application of surgical dressings	77	192
Adjustment of splints and surgical appliances	115	
Sanitary defects reported to the local medical officers of health		48
Sanitary defects which after notification were remedied		28
Disinfections carried out by local sanitary authorities		431
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment *before* statutory notification		89·2%

XV.—DISPENSARY AREA No. 4
(including Peel Hall Pulmonary Hospital).

Area (estimated population 364,632) embraces Westhoughton, Atherton, Farnworth, Leigh, Swinton and Pendlebury, Eccles, and Stretford districts.

Consultant Tuberculosis Officer .. Dr. G. Jessel.
(Dr. Jessel is also visiting medical superintendent of Peel Hall Pulmonary Hospital).

Assistant Tuberculosis Officers .. Dr. A. B. Jamieson and Dr. H. J. Villiers.

Dr. Jessel reports :—

The decline in the number of notifications and in the mortality from tuberculosis is slightly reflected in the figures for dispensary attendances, etc. On the other hand it has been possible to develop, as a necessary routine procedure in the cases where they are applicable, Mantoux and blood sedimentation tests. There is accordingly a definite increase in the corresponding figures. Year by year there is a noticeable movement towards greater precision in the evaluation of the condition of the patients, both from the diagnostic point of view and the progress of the case. This is due to the fact that ordinary clinical methods, although still used, have for some time been supplemented, where applicable, by serial x-ray examination, repeated sputum examinations, and Mantoux and blood sedimentation tests as a part of our regular dispensary routine.

Mantoux tests. Although a positive Mantoux test only shows tuberculous infection and not clinical activity, a negative result is of great value. In the absence of (1) acute illness with fever, (2) convalescence from an infectious disease, *e.g.*, measles, and (3) advanced tuberculosis, a negative result indicates the absence of tuberculous infection. As a result of this test, suspected tuberculosis can frequently be ruled out, and a diagnosis of tuberculosis made elsewhere be negatived. This is by no means uncommon, and has resulted in the saving of a good deal of public money and inconvenience to patients. The following are illustrations of this :—

M. W., aged 9 years. Notified from a large general hospital as suffering from tuberculous adenitis.

One week after swellings in the neck had been noticed, the child was taken to a general hospital where she remained for four weeks and had an operation for removal of glands. After being at home for four weeks she was found to have

diphtheria and was removed to an infectious diseases hospital. A few weeks later she was seen at the dispensary when her tonsils were found to be slightly red and ragged ; there was a healed operation scar, but no swelling or activity.

Mantoux tests were done 1 in 1,000 and 1 in 100 dilutions, and were negative on both occasions.

Conclusion : There was no evidence of tuberculous infection, let alone tuberculous disease.

B. B., aged 9 years. Notified by a local doctor as suffering from tuberculous peritonitis.

The child complained of abdominal pain and frequent vomiting. When 18 months old had an operation for ? obstruction—no intestinal trouble found.

Mantoux tests were done 1 in 1,000, 1 in 100, and 1 in 10 dilutions, and were all negative.

Conclusion : No evidence of tuberculous infection.

During the year, 198 Mantoux tests were done and of these 68 were negative.

Dr. A. B. Jamieson and Dr. H. J. Villiers have contributed the following notes on the Mantoux tests they have made during the past two years :—

All children attending the dispensaries, whether notified cases, "requests," or "contacts," are submitted to a Mantoux test. Old Tuberculin (T) is employed in a dilution of 1 in 1,000, but in cases referred for diagnosis, or which present suspicious features of such a nature that the absence of tuberculous infection must, if possible, be definitely established, a further test, if necessary, is carried out with a dilution of 1 in 100.

No case is regarded as positive which does not show a well-marked erythema with central raised oedematous area of over five millimetres after 48 hours. The children tested belong to two main categories :—

1. Those referred by school medical officers, medical officers of welfare clinics, and private practitioners.

2. Contacts known to be living, or to have lived, in association with a T.B. plus case, and examined largely on the initiative of the tuberculosis health visitors.

In the main, therefore, they are either "suspects" or "contacts" or both.

The following Table 20 gives particulars of the 338 children tested by us between April, 1934, and May, 1936 :—

Age-group.	History of contact with T.B. plus case.		No known contact.	
	Mantoux reaction.		Mantoux reaction.	
	Positive.	Negative.	Positive.	Negative.
0 to 5	18	9	26	20
5 to 10	35	12	77	35
10 to 15	49	3	46	8
TOTAL ...	102 (80·95%)	24	149 (70·28%)	63

It will be observed that the "contact" group shows a higher percentage of positive reactors than the non-contact group.

The test continues to be of great value in diagnosis, especially in those cases where there are grounds for suspecting clinical tuberculosis but the Mantoux test proves negative, care being taken to avoid sources of error mentioned above (see page 74). Admittedly, this number is small but the exclusion of tuberculosis is put on a precise basis. On clinical grounds alone this may be very difficult, often requiring prolonged periods of observation either at the dispensary or in an institution.

Illustrations of notified cases giving a negative Mantoux reaction are quoted earlier in the area report.

While the severity of the reactions varies considerably in children apparently comparable, it has been observed that the most intense local changes—sometimes with vesiculation and necrosis—are found most frequently in two types of case :—

(a) Those in which a diagnosis of clinical tuberculosis could be made with some confidence on other grounds.

(b) Those who are, or have been, exposed to prolonged contact.

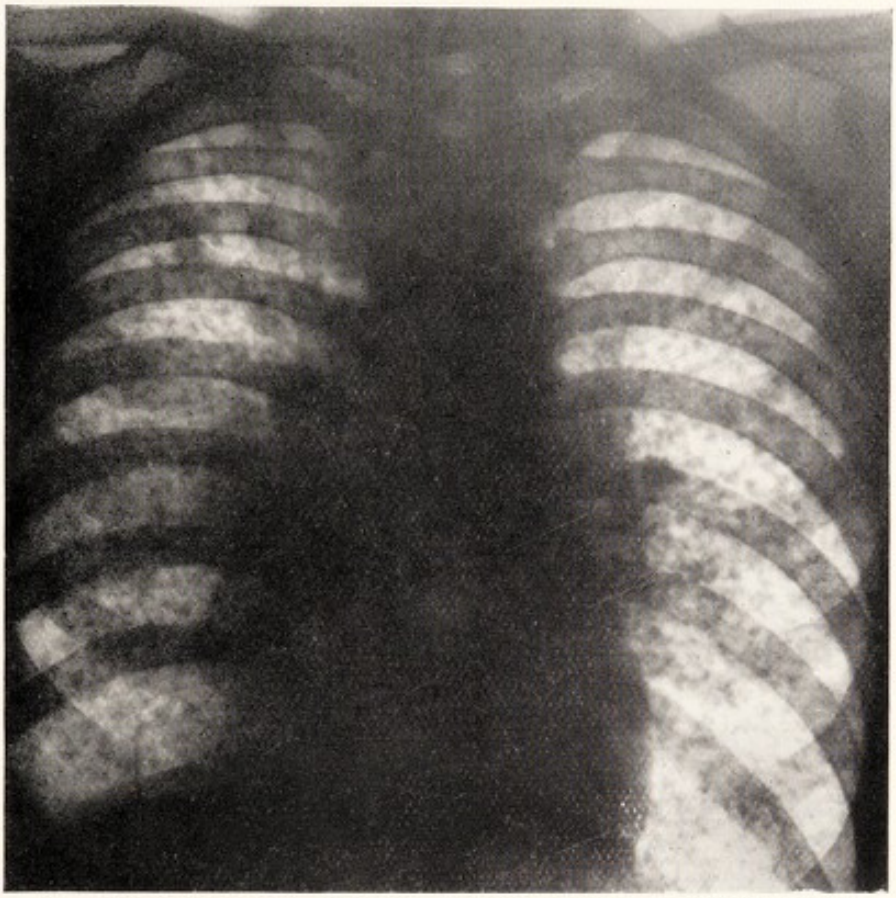
The combination of these two circumstances in one case is not so common as might be supposed among the type of children attending a tuberculosis clinic as out-patients. In one dispensary district, of 41 consecutive cases of cervical adenitis giving a positive Mantoux reaction, only one was known to be a contact.

Of 89 children under 15 years of age, definitely diagnosed as suffering from tuberculosis in one form or another during the period under review, 10, or 11·2 per cent., were known to be contacts of open cases of tuberculosis. The corresponding figure in the case of young adults between 15 and 25 years of age, definitely diagnosed as tuberculous during the same period, was 37 per cent. It must be remembered, however, that the acute and fatal forms of tuberculosis, *e.g.*, meningitis, so common among infants and very young children, especially those of tuberculous parents, are rarely seen at a tuberculosis clinic.

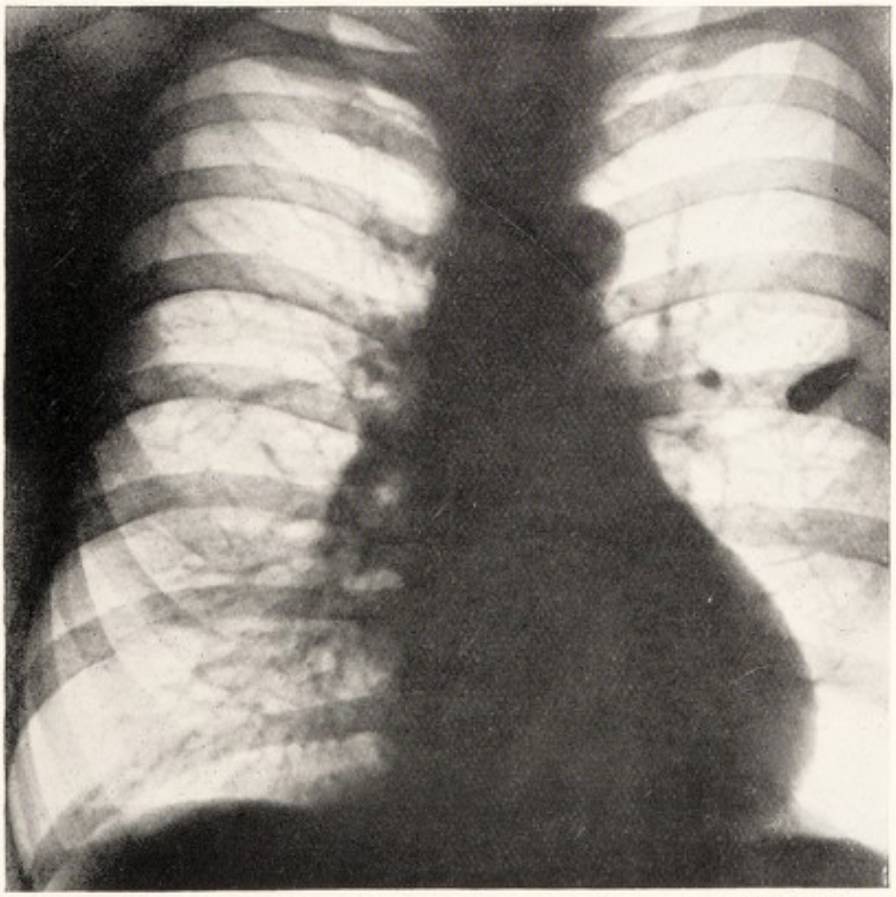
It is believed, therefore, that in the absence of any history of contact, especially prolonged contact, severe local reactions are suggestive of the presence of tuberculous disease requiring treatment. On the other hand, severe reactions, in the absence of evidence of clinical disease, may well suggest the possibility of an unknown source of infection, *e.g.*, parent or other adult in the home. For example, the youngest child tested was aged five months, and gave a markedly positive reaction. The mother is a T.B. plus case.

Blood sedimentation tests. The Westergren method, which is simple and reliable, has been used, and the test has proved useful as another link in the chain of evidence when the question of activity of pulmonary tuberculosis or the progress of a case is under consideration. The clinical assessment of the activity of disease is notoriously difficult, and to some extent depends upon the personal equation of the medical examiner. It is on this account that anything, such as a blood sedimentation test, which would tend to place the assessment of clinical activity on a more accurate basis is to be welcomed. So far as our experience has gone a Westergren absolute figure of under 10, that is, under 5 per cent., indicates absence of activity, while a figure appreciably over 20 indicates a degree of marked activity, intermediate figures being regarded as indicating a borderline. During the year, 315 blood sedimentation tests were done.

The opportunity has been taken to compare at intervals the results of various tests with those found on discharge from institutions.



E.1.—W.J., male, aged 40. T.B. plus. Skiagram taken 29–10–34 shows evidence of chronic miliary tuberculosis. Patient has had two periods of institutional treatment, but his condition has gradually become worse. Sputum still positive.



E.2.—H.W., male, aged 44. Skiagram taken 16–6–36 shows a bullet behind fourth rib in front. Man received bullet wound on 20–10–18 and has remained fairly well until recently, when he had haemoptysis lasting a few days.

[Skiagrams taken at Eccles Dispensary.]

Sputum examinations. A good deal of attention has been paid to this subject during the past year, especially having regard to the claims made for concentration and extraction methods, and guinea-pig inoculation. If sputum examination were the sole or chief reliable means of diagnosing pulmonary tuberculosis, it might be economical for us to devote more time to elaborate laboratory methods. The advent of radiology and an increasing clinical experience, however, have enabled a diagnosis of tuberculosis at an early stage to be made, even in the absence of tubercle bacilli. In such cases bacilli have frequently been found on subsequent examinations. The method adopted in this area of repeated sputum examination with specimens taken on three consecutive days at a time works well in practice. In the aggregate, when combined with other procedures, it probably gives as good results for the time spent as any other method of sputum examination. The finding of tubercle bacilli in the sputum is, of course, important, when the question of infectivity is being considered, but it is safe to conclude that the repeated failure to find bacilli in ordinary smear examinations is reliable evidence of absent or slight risk.

The activities of the dispensary, as outlined in the Astor Report, have been steadily continued and, although not spectacular, the cumulative value is probably considerable. An important feature continues to be the close association between the dispensary and the Peel Hall Hospital. Taking the family as a unit, a patient is cared for from both the medical and social sides throughout the duration of his illness. As usual, there has been close co-operation with the medical practitioners, and they were present in 99 per cent. of my home visits to new cases.

The artificial light department has been open each week-day and one evening a week. The bulk of the cases were suffering from cervical adenitis. As hitherto, light treatment has been combined with other useful methods, *e.g.*, aspiration and incision of abscesses, creosote and salicylic plaster, spiking in cases of lupus, etc. The methods have been described in previous reports.

Not the least important of the dispensary activities is that of maintaining personal relationship with the hundreds of patients under supervision ; thereby changes in their condition can be noted promptly, and they are encouraged to persevere with their treatment. In this connection, tribute must be paid to the work of care committees and allied agencies.

Our practice of sending reduced prints of skiagrams to medical practitioners in certain cases has been continued.

In conclusion, I have pleasure in referring once again to the excellent and conscientious manner in which my colleagues of the medical, nursing, and clerical staffs have co-operated with me, thereby exemplifying a real team spirit.

Peel Hall Pulmonary Hospital, Little Hulton.

Matron .. Miss E. Simmons.

The Hall, with about 17 acres of land attached thereto, was presented in 1914 to the Lancashire County Council by Mr. A. Wynne-Corrie, and an additional 20 acres of land, and later 8 acres, were purchased. The adaptation of the premises as a pulmonary hospital—delayed owing to the Great War—was completed in 1921.

The hospital, accommodating 56 adult males, serves principally Dispensary Area No. 4.

Mr. H. Morriston Davies is the visiting consulting chest surgeon.

A motor ambulance is provided, and is available also for conveying patients to and from other hospitals.

The weekly maintenance charge for 1935–36 was £2 13s. 1d. per patient; this includes 7s. 4d. for loan charges and 5s. for structural renewals.

The average length of stay of patients at Peel Hall during 1935 was as under :—

Patients discharged	217 days
Patients who died in the hospital	204 days
Observation case discharged	14 days

Dr. Jessel reports :—

During the year, 87 patients were admitted, 81 were discharged, and 8 died; in addition, 2 observation cases were admitted and 1 was discharged.

Although the accompanying figures give an imperfect indication of the amount of thought, time, and energy expended on behalf of our patients, they show that a good deal of medical work has been done during the past year. Every patient has been considered from the point of view of suitability for one or other of the recognised methods of modern treatment, all of which, with the exception of thoracoplasty, can be and have been given in the hospital. There is, from year to year, a certain amount of variation in the numbers of patients considered suitable for any particular form of treatment,

Skiagrams Illustrating Reduction in Size of Cavities after Various Forms of Treatment.

P.H. 1(*a*).—W.S., male, aged 48. T.B. plus. Skiagram taken 29–12–35 shows big cavity below left clavicle.

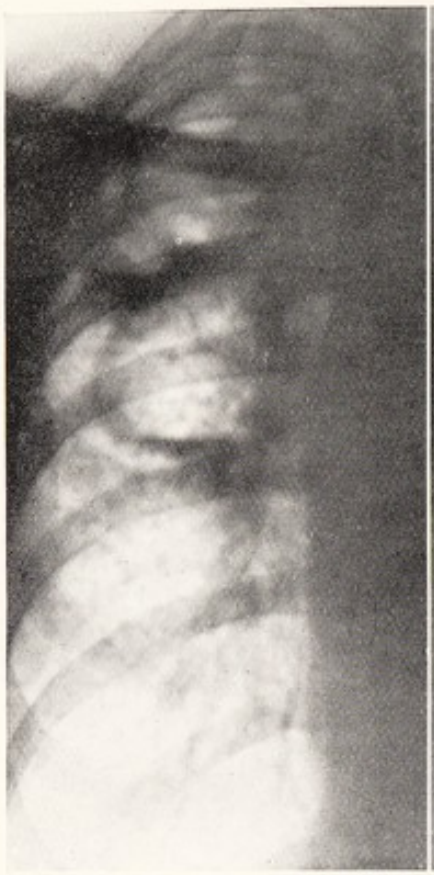
P.H. 1(*b*).—Same patient. Skiagram taken 6–5–36, after treatment in Peel Hall Pulmonary Hospital by artificial pneumothorax, shows that the cavity has disappeared. Sputum negative.

P.H. 2(*a*).—G.D., male, aged 50. T.B. plus. Skiagram taken 20–12–34 shows large cavity below right clavicle.

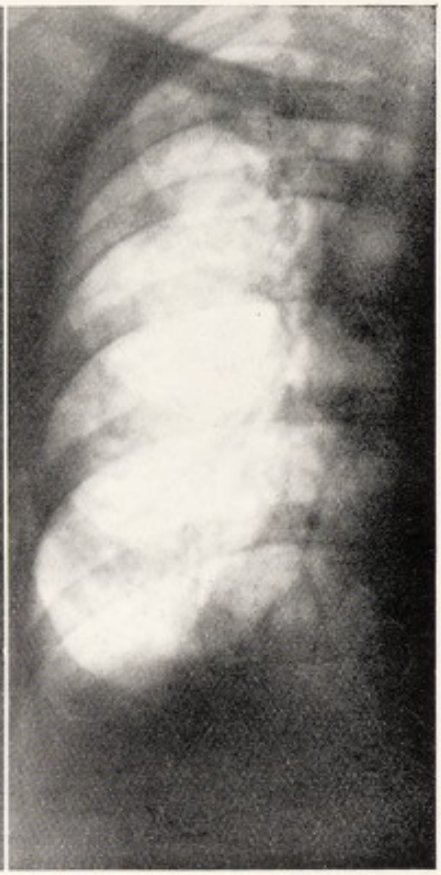
P.H. 2(*b*).—Same patient. Skiagram taken 27–2–36, after treatment in Peel Hall Hospital by artificial pneumothorax, shows that the cavity has disappeared. Sputum negative.

[Skiagrams taken at Peel Hall Pulmonary Hospital.]

Skiagrams Illustrating Reduction in Size of Cavities after Various Forms of Treatment—*contd.*



P.H. 3(*a*).—C.G., male, aged 43. T.B. plus. Skiagram taken 8–4–35 shows the presence of large cavities in the middle of right lung.



P.H. 3(*b*).—Same patient. Skiagram taken 11–3–36 shows the cavities pushed inwards and greatly reduced in size. Patient had artificial pneumothorax and phrenicectomy in Peel Hall Hospital. Sputum negative.

P.H. 4(*a*).—J.R.M., male, aged 38. T.B. plus. Skiagram taken 11–9–35 shows the presence of cavities in upper and middle zones of right lung.

P.H. 4(*b*).—Same patient. Skiagram taken 2–4–36, after treatment in Peel Hall Hospital by artificial pneumothorax and phrenicectomy, shows marked shrinkage of cavities and rise of right diaphragm. Sputum negative.

[*Skiagrams taken at Peel Hall Pulmonary Hospital.*]

Skiagrams Illustrating Reduction in Size of Cavities after Various Forms of Treatment—*contd.*

P.H. 5(*a*).—S.P., male, aged 25. Skiagram taken 5–7–35 shows infiltration of right upper and middle zones. Patient had tubercle bacilli in sputum.

P.H. 5(*b*).—Same patient. Skiagram taken 7–8–35 shows presence of cavities below right clavicle and also adhesion.

P.H. 5(*c*).—Same patient. Skiagram taken 8–7–36, after treatment in Peel Hall Hospital by artificial pneumothorax and division of adhesion, shows considerable shrinkage of cavities and selective collapse.

[Skiagrams taken at Peel Hall Pulmonary Hospital.]

and it is impossible to lay down any hard and fast rules. One important factor in the treatment of any case is the presence or absence of cavities, brought about by the destruction and removal by coughing of diseased portions of lung, for so long as the cavities remain open there is danger of spread of the disease to other portions of the lung, and to other persons through the expectoration of bacilli. Fortunately, many of these cavities will heal or shrink very considerably as the result of treatment, *e.g.*, either simple rest in bed, if sufficiently long, artificial pneumothorax with or without phrenicectomy, or division of adhesions. Skiagrams of some of these conditions are inserted with suitable captions to illustrate these points.

In the treatment of pulmonary tuberculosis two things are essential: (1) to gain and retain the confidence of the patient, and (2) to keep the patient in bed for a long enough period. In dealing with a disease of so long a duration, the mental aspect of the patient is of primary importance, and due attention is constantly paid to this side of treatment. An elaborate system of hobby-occupations, both for bed-patients and for those who are up, has been in operation for several years, each patient receiving individual attention from the mental as well as the physical aspect of the case. In previous reports I have mentioned the various amenities which have been provided to keep patients happy and contented and it is unnecessary to recapitulate them; suffice it to say that each year has seen steady progress in this respect.

The outstanding feature of the year was the construction of a verandah along the south side of the building, so that bed patients on the first floor can be taken out of doors. This balcony and the loggia downstairs enable us to keep our wards practically empty in the daytime and only partially occupied at night. In addition, nine patients sleep in adjacent huts.

The visits of Mr. Morriston Davies have been continued, and during the year he performed 17 phrenicectomies. The services of the dentist have likewise been helpful, particularly as regards the more chronic cases, for fillings and dentures.

A number of patients are permitted to attend Sunday morning service in neighbouring places of worship, while for those in bed there are visits from the clergy of all denominations, wireless services, etc.

As in previous years, the hospital has had many visitors, medical and other, including a number who came specially from Southport when the Conference of the National Association for the Prevention

of Tuberculosis was being held. Not the least welcome are the visits of ex-patients, many of whom turn up frequently at week-ends. This not only shows their feeling towards the hospital, but also serves as an encouragement to patients receiving treatment at the time.

As in previous years, nurses have been trained for the examination for the Certificate of the Tuberculosis Association. The two nurses who sat for this examination were both successful.

Once again I have pleasure in recording the valuable help I have received from the matron and the nursing staff.

On page 34 of the annual report for 1932 I published a table showing the position, at the end of 1932, of 99 cases with tubercle bacilli in the sputum treated at Peel Hall during the period January, 1929, to December, 1932. There was also a table dealing with 40 patients in whose sputum at that time no tubercle bacilli had been found. It has been possible to add a further ten cases to the table dealing with T.B. plus cases, because one original T.B. minus case subsequently became T.B. plus and four cases which were untraced and excluded from the original table have now been included; the remaining five are cases which received an induction less than three months before the end of 1932 and were not included in the original table.

Table 21 shows, three years later, that of 68 patients with satisfactory inductions, 27, or 39 per cent., were still working, that is, the percentage of those working or fit for work had dropped only 3 per cent. since the end of 1932. Nine were unfit for work, two were in hospital, one could not be traced, and 29 were dead. It is interesting to mention that, with one exception, none of those who died received phrenicectomy. With regard to the 41 patients whose pneumothorax was unsatisfactory or abandoned, 15, or 36 per cent., were working three years later, as compared with 40 per cent. at the end of 1932; five were unfit for work, one was in hospital, two could not be traced, and 18 were dead. Of the latter, only five received phrenicectomy. It is noteworthy that of the 15 working or fit for work, all but two had phrenicectomy as a substitute for the unsatisfactory pneumothorax.

Of the 38 patients whose inductions were satisfactory and who were alive and accounted for at the end of 1935, in only eight were tubercle bacilli still present in the sputum, thus showing a bacillary loss of 79 per cent. The loss in the 21 patients, where the pneumothorax was unsatisfactory and who were still alive and accounted for at the

end of 1935, was 80·95 per cent.; 17 of these latter cases had a phrenicectomy as a substitute.

Although the numbers are small, the following conclusions may be drawn :—

1. Of patients with a satisfactory collapse the percentage reported as working or fit for work at the end of 1932 was only slightly reduced three years later.

2. In cases where a pneumothorax was unsatisfactory and where the patients had a phrenicectomy as a substitute, the results were nearly as good as in the cases with a satisfactory collapse. The explanation of this may be that the inability to obtain a satisfactory collapse was due to adherent pleura and fibrosis—a manifestation of good resistance on the part of these patients.

TABLE 21. *Position at the end of* 1935 *of* 109 *artificial pneumothorax patients with positive sputum treated at Peel Hall Pulmonary Hospital from January,* 1929, *to December* 1932.

	Choice.			Total.	
	A	B	C	Number	%
(i) Satisfactory inductions :					
Working or fit for work	6	16	5	27	39·7
Unfit for work	5	4	—	9	
In hospital	—	1	1	2	
Cannot trace	—	—	1	1	
Dead	4	11	14	29*	42·6
TOTAL	15	32	21	68	
(ii) Unsatisfactory inductions :					
Working or fit for work	4	7	4	15	36·6
Unfit for work	3	1	1	5	
In hospital	—	—	1	1	
Cannot trace	1	1	—	2	
Dead	—	5	13	18†	43·9
TOTAL	8	14	19	41	

NOTE.—Of the 68 patients with satisfactory inductions, only 5 received phrenicectomy; and of the 41 patients with unsatisfactory inductions, 22 received phrenicectomy as a substitute.

* Only 1 of these patients received phrenicectomy.

† Only 5 of these patients received phrenicectomy.

Details of work carried out at Peel Hall during 1935 :—

Artificial pneumothorax—	
Inductions	29
Refills	499
Gas replacements	18
Phrenic nerve operations (by Mr. Morriston Davies)...	17
Gold salts—	
Injections of sanocrysin	128
Blood sedimentation tests	306
Lipiodol injections	1
Barium meals	2
X-ray work—	
Screen examinations	683
Skiagrams	503
Sputum examinations (positive, 356 ; negative, 348)	704

Numbers of patients afforded special treatment in the hospital for the first time during 1935 :—

Artificial pneumothorax—	
Attempted	29
Abandoned	7
Satisfactory	22
Phrenicectomy, phrenic evulsion, phrenic crush ...	17
Gold salts (sanocrysin)	13

Numbers of patients in the hospital on the 31st December, 1935, who were having special treatment :—

Artificial pneumothorax	11
Artificial pneumothorax and gold salts	2
Phrenicectomy	4
Phrenicectomy and artificial pneumothorax	5
Gold salts	9
Sanocrysin (after phrenicectomy)	1

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1935 (Definitely tuberculous, 1,477 ; doubtful, 0.) 1,477

Examinations by tuberculosis officer at—	Examinations of *new persons* and *new contacts* for diagnosis.	Re-visits or re-attendances of " *old* " *cases* and " *old* " *contacts.*
Patients' homes	189	903
Leigh Chief Dispensary	208	962
Eccles Branch Dispensary	278	2,253
Farnworth Branch Dispensary	92	501
Pendlebury Branch Dispensary	51	440
Stretford Branch Dispensary	146	681
	775	4,837

Attendances of patients at the Eccles Dispensary for artificial light treatment (82 individual patients) 4,848

Attendances for artificial pneumothorax treatment (42 individual patients) 594

Sputum examinations—			
Total number of specimens examined			1,996
Number where tubercle bacilli were found			339
Number of specimens sent by medical practitioners			284
Number of these where tubercle bacilli were found			22
Blood sedimentation tests			315
Mantoux tests			198
Contacts—			
Number of selected persons examined			180
Number of cases of tuberculosis found			8
X-ray work—			
Skiagrams—pulmonary 1,114, non-pulmonary 59*			1,173
Screenings			745
Care committee meetings attended by—			
(*a*) Tuberculosis officers			32
(*b*) Tuberculosis health visitors			49
Care work—			
Number of patients assisted by care committees and tuberculosis sections of civic guilds of help			217
Amount expended			£354/0/11
Number of patients assisted from County care fund			27
Amount expended			£94/1/1
Lectures or addresses given			3
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals			58
Special visits by tuberculosis officers (*i.e.*, interviews with medical officers of health, general hospital officials, &c.)			23
Visits by dispensary nurses to patients' homes—			
Routine visits	8,724		
Application of surgical dressings	219		
Adjustment of splints and surgical appliances	217		9,414
Other actual nursing	254		
Patients' dispensary attendances for attention by nurses—			
Application of surgical dressings	282		
Adjustment of splints and surgical appliances	32		314
Sanitary defects reported to the local medical officers of health			32
Sanitary defects which after notification were remedied			21
Disinfections carried out by local sanitary authorities			504
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment *before* statutory notification			89·0%

* Spine 19, hip 13, knee 10, pelvis 4, hand 3, foot 2, arm 2, wrist 2, shoulder 1, elbow 1, leg 1, ankle 1.

XVI.—DISPENSARY AREA No. 5
(including Rufford Pulmonary Hospital).

Area (estimated population 269,595) embraces West Lancashire Rural, Great Crosby, Waterloo-with-Seaforth, Litherland, Newton-in-Makerfield, Whiston Rural, Warrington Rural, and Widnes districts.

Consultant Tuberculosis Officer ... Dr. C. W. Laird.
(Dr. Laird is also visiting medical superintendent of the Rufford Pulmonary Hospital).

Assistant Tuberculosis Officers ... Dr. C. H. Lilley
(invalided from service 5-2-36).
Dr. C. Berry (from 1-4-36).
Dr. W. Fettes (to 31-3-36).
Dr. J. N. Whyte (from 27-4-36)
(2 days per week).

Dr. Laird reports :—

As was anticipated last year, there was some slight dislocation of medical work during 1935 owing to illness of members of the staff necessitating the loan of the services of medical officers from other dispensary areas for varying periods. On the whole, however, the work was carried on with the minimum of inconvenience to all concerned.

From the statistical tables one can see at a glance the extent of the activities carried out in the area, and it would be superfluous to do more than allude to them in this description. Artificial pneumothorax treatment has been given to about the same number of individual patients as in the previous year, but the number of refills was materially greater owing to shortening of the intervals between refills. Radiographic examinations were definitely fewer, while radioscopic ones were also slightly fewer in number.

In connection with the x-ray work at Seaforth Dispensary, there was installed for the first time in any part of the County area, as an experimental measure, a special teak tank in which are placed the various containers used in connection with the development, fixation and washing of skiagrams. These containers are entirely surrounded by water which is maintained at a constant temperature by an electrically-operated thermostatic control. It has achieved consistency in the matter of standard development, but as there are other variable factors to be considered in the taking of a radiograph, any fool-proof

arrangement in one section of the process will not ensure a complete absence of variation.

There is little or nothing else out of the ordinary to report in connection with Seaforth Dispensary, and work continues at St. Helens Dispensary on much the same lines as in other years.

In my contribution to last year's annual report I alluded to the fact that the state of affairs which has prevailed at Widnes Dispensary for many years was by no means satisfactory, and I expressed the hope that before long this defect would be remedied. So far, however, my expectations have not been realised, though I understand that efforts have been expended in the course of the year in the drawing up and discussion of various plans which for one reason or another have been rejected. The inclusion of an x-ray apparatus in a new dispensary at Widnes would obviate the necessity at present entailed in requiring patients from Widnes to travel to Seaforth for artificial pneumothorax refills under x-ray control.

As regards the various care committees I have, as usual, nothing but praise for their benevolent work. There are, in each of the districts concerned, still to be found unselfish people who take pleasure in carrying out such duties for the benefit of their weaker brethren, and who devote a considerable amount of time to unobtrusive philanthropic work. I wish to express my personal appreciation of the efforts of the committees as a whole, and to assure them that the central authorities also look with approval and gratitude upon their excellent work.

As regards the routine work of the dispensary organisation I have to acknowledge, as formerly, my indebtedness to the various members of the staff for their helpful co-operation.

Artificial light treatment. The number of patients receiving light treatment at St. Helens Dispensary was slightly more than in the preceding year.

As usual, the greatest improvement was shown in children suffering from adenitis—with or without softening—but it is to be remembered that children form a majority of the patients attending the dispensary for light therapy.

Treatment has, as hitherto, been prolonged in cases of involvement of the skin. Recently a number of lupus cases have been treated by injections of hydnocarpates instead of by light, apparently with encouraging results. More than 20 such injections were given in the course of the past few months.

General irradiation by carbon arc was mainly with grade B carbons, and the Kromayer lamp, with pressure for the most part, was also used to stimulate sluggish lesions.

The percentage of patients who have had their fares paid in order to continue attendance for light treatment has risen slightly, such payment having been made in over four-fifths of the total patients treated. Attendances on the whole have been satisfactory.

Rufford Pulmonary Hospital, near Ormskirk.

Matron ... Miss S. Holmes.

The County Council acquired, on the 18th October, 1920, Rufford New Hall, situated on the west side of the main road from Preston to Ormskirk, together with 128 acres of land adjoining the Hall. Under pressure from the Ministry of Health, a scheme was prepared for using the Hall and land for discharged sailors and soldiers, which included training the patients in several occupations. Some additional land was also obtained with a view to training in agricultural work, but all this, however, was abandoned in 1921 by order of the Ministry of Health, owing to financial stringency. The premises, first used as a pulmonary hospital on the 7th April, 1926, provide accommodation for 52 female patients.

The hospital serves as far as possible the districts in west Lancashire, so that relatives and friends will have reasonable facilities for visiting.

The weekly maintenance charge for 1935–36 was £2 15s. 11d. per patient. This includes 5s. 8d. for loan charges and 5s. 9d. for structural renewals.

The average length of stay of patients at Rufford during 1935 was as under :—

Patients discharged	205 days.
Patients who died in the hospital	172 days.

Dr. Laird reports as follows :—

In the course of the year, 100 patients were admitted, 71 were discharged, and 28 died. Compared with 1934, these figures show a

greater proportion of deaths, for in that year 127 were admitted, 106 were discharged, and 20 died. At the same time, apart from the fact that there appeared to be a marked increase in the number of patients admitted or re-admitted in the advanced state of the disease, the average length of stay in hospital of those who were discharged had increased from 136 days in 1934 to 205 in 1935; and of those who died, from 75 days to 172. These lengthened periods may be explained, in the case of patients discharged, by the more extended and more graduated use of gold salts in treatment; while in the case of those who died, there was obviously prolongation of the time of survival, perhaps as a result of treatment also.

As regards treatment, it may be said that this is of several kinds. In the main it is either specialised or symptomatic. Generally speaking, the treatment of symptoms as opposed to more radical measures aiming at an attack on their cause is liable to be decried; in practice, however, symptomatic treatment, especially of the more advanced cases, has a place of usefulness. Humanity demands it; expediency makes it desirable; and frequently the results obtained from it are sufficient to justify its adoption. Specialised treatment embraces the different forms of collapse therapy, chiefly artificial pneumothorax as far as this hospital is concerned, and aurotherapy; it also includes intravenous injections of calcium gluconate. As a rule, 25 per cent. or more of the patients are in receipt of special measures aimed at mitigating their symptoms and limiting their disease.

Particulars of the special work done during the year are to be found in the following statement:—

Artificial pneumothorax—	
Inductions	38
Refills	422
Gas replacements	8
Gold salts (injections)—	
Sanocrysin	389
Crisalbine	175
Solganol	14
Aspirations—	
Clear fluid	15
Pus	9
Air	13
X-ray examinations—	
Screenings	864
Skiagrams	213
Sputum examinations—	
Positive	406
Negative	192
Bacteriological examinations of pus	4
Blood sedimentation tests	162
Mantoux tests	1
Dental extractions	77

The numbers of patients in Rufford afforded special treatment for the first time in 1935 were as follow :—

Artificial pneumothorax—	
Attempted	38
Abandoned	6
Satisfactory	32
Gold salts (sanocrysin, crisalbine, and solganol)	41

The numbers of patients in the hospital on the 31st December, 1935, who were receiving special treatment were as follow :—

Artificial pneumothorax	6
Artificial pneumothorax and gold salts	11
Gold salts	12

It will be observed from the above figures that the medical work carried out in the hospital does not consist merely of routine visiting. The hospital also serves as a dispensary unit, and it may be mentioned in this connection that in the case of extern patients, 35 screen examinations were made and 37 skiagrams were taken.

In other institutions occupational therapy may play a larger part than at Rufford Hospital, where a large proportion of cases is such that anything in the way of serious work is out of the question. Patients, however, beguile the time to some extent in useful occupations such as needlework, embroidery, the mending of linen, and the cleaning of silver. Their recreation is catered for by the provision of croquet sets, the installation of wireless in every ward, the organisation of whist drives, the exhibition of cinematograph films, and in other ways. Owing to the kindness of the Tuberculosis Committee in making annual grants, the patients' library is kept well stocked, and daily newspapers and periodicals are also available from the same source.

It may be added that the nursing staff have also been provided with a library supplemented from year to year by a grant from the Tuberculosis Committee which is highly appreciated, and another grant is made for the provision of extra fare for patients and staff at Christmas-time.

During the year, religious services were held regularly. Communion was administered once a month and devotional services were held fortnightly.

The Tuberculosis Committee and Councillors from the West Derby Hundred visited the hospital on the 19th June. On the 26th June, a private visit was made by several tuberculosis officers prior to the visit to Rufford by numerous delegates to the Conference of the National

Association for the Prevention of Tuberculosis which was held in Southport. These delegates included representatives from Holborn, Durham, Bristol, West Ham, Oldham, Huddersfield, Dudley, Belfast, Tyrone, and Surrey. They expressed their pleasure at the visit, and their admiration for the work done and for the administration and appearance of the hospital and its grounds.

Lectures were given as in former years by the medical superintendent in preparing nurses for the Tuberculosis Association examination held in May, 1936, and it is gratifying to record that three out of four nurses who entered for Part I were successful in this examination.

I have to express my thanks as on other occasions for the assistance and loyal co-operation of the matron and of the nursing staff in carrying out the work of the hospital.

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1935 (Definitely tuberculous, 1,080 ; doubtful, 6.)	**1,086**

Examinations by tuberculosis officer at—	Examinations of *new persons* and *new contacts* for diagnosis.	Re-visits or re-attendances of "*old*" *cases* and "*old*" *contacts.*
Patients' homes	156	362
Seaforth Chief Dispensary	282	1,462
St. Helens Branch Dispensary	109	664
Widnes Branch Dispensary	145	779
	536	2,905

Attendances of patients at the St. Helens Dispensary for artificial light treatment (73 individual patients)	2,583
Attendances for artificial pneumothorax treatment (52 individual patients)	425
Mantoux tests	3
Blood sedimentation tests	2
X-ray examinations—	
Screenings	486
Skiagrams	676
Care committee meetings attended by—	
(*a*) Tuberculosis officers	4
(*b*) Tuberculosis health visitors	21
Lectures or addresses given	1
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals	67
Special visits by tuberculosis officers (*i.e.*, interviews with medical officers of health, general hospital officials, &c.)	9

Visits by dispensary nurses to patients' homes—		
Routine visits	4,365	
Application of surgical dressings	650	5,162
Adjustment of splints and surgical appliances	122	
Other actual nursing	25	
Patients' dispensary attendances for attention by nurses—		
Application of surgical dressings	591	611
Adjustment of splints and surgical appliances	20	
Sanitary defects reported to the local medical officers of health		46
Sanitary defects which after notification were remedied		23
Disinfections carried out by local sanitary authorities		264
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment *before* statutary notification		87·8%

XVII.—HIGH CARLEY SANATORIUM, OUBAS HOUSE CHILDREN'S SANATORIUM, AND FURNESS DISPENSARY AREA.

Medical Superintendent ... ... DR. GEORGE LEGGAT.

(Dr. Leggat is also visiting medical superintendent of Oubas House Children's Sanatorium, Ulverston, and consultant tuberculosis officer for the Furness Dispensary Area—*i.e.*, the area around the sanatorium—containing a population of 38,066).

Visiting Consulting Chest Surgeon ... MR. H. MORRISTON DAVIES.

Visiting Anæsthetist ... ... DR. J. HALTON.

Assistant Medical Superintendent ... DR. J. N. WHYTE (to 26–4–36).
DR. D. O. HUGHES (from 27–4–36).

Matron ... ... MISS E. WOOSEY.

(The matron is also responsible for the Oubas House Children's Sanatorium, Ulverston).

HIGH CARLEY SANATORIUM, NEAR ULVERSTON.

High Carley Sanatorium is situated about three miles west of Ulverston, to the south of the main road to Barrow-in-Furness. The buildings stand in 23 acres of ground, and accommodation is provided for 118 patients (60 males and 58 females) in 37 double cubicles, 4 single cubicles, 5 six-bed wards, and 5 double sleeping shelters.

The medical superintendent and the assistant are accommodated on the estate; and seven houses are provided in the vicinity of the sanatorium for the male employees.

Electricity is obtained from the public supply.

A treatment block was built in December, 1932, and contains on the ground floor an operating theatre, waiting and anæsthetic room, sterilising room, recovery room, artificial light room with a room adjoining for the sister, laboratory, x-ray room and dark room; on the first floor five bedrooms and a sick room are provided for the staff.

During the year, 205 County patients received from the visiting dental surgeon, Mr. A. Miller, some form of dental treatment, particulars of which will be found in Chapter XXIV.

The weekly maintenance charge for 1935–36 was £2 8s. per patient.

The average length of stay of patients at High Carley during 1935 was as under :—

Patients discharged	279 days.
Patients who died in the sanatorium	316 days.
Observation cases	63 days.
Observation case which died in the sanatorium	4 days.

Dr. Leggat reports as follows on matters relating to the treatment of the patients, and the administration of the sanatorium :—

Artificial pneumothorax treatment. The number of patients continuing treatment from the previous year was 36 ; during 1935, 77 patients commenced this form of treatment resulting in 63 successful inductions (2 cases had bilateral inductions) and 16 failures ; in addition, 4 patients admitted to the sanatorium were already undergoing artificial pneumothorax treatment.

Of the patients with successful inductions, 25·8 per cent. developed fluid varying from a puddle upwards.

Of the 101 patients in which a successful induction had been obtained, 2 patients left the institution for other than medical reasons, 1 patient was transferred to another institution, and 18 ceased treatment for the following reasons :—Lesion clearing up 1, unsatisfactory collapse 4, no air pocket 7, unsatisfactory oscillation 2, obliterative pleurisy 2, fluid 1, died 1.

During the year 38 patients completed the treatment, and 42 were continuing on the 31st December. Of the 38 cases, 24 had a positive sputum on commencement, which in 15 instances became negative, equal to a bacillary loss of 62·5 per cent.

Eighteen of the above 38 patients had no ancillary treatment ; 11 of these had a positive sputum on commencement, 8 becoming negative, giving a bacillary loss of 72·7 per cent.

The number of refills for sanatorium patients alone was 1,870.

Thoracoscopy and division of adhesions. I think it is absolutely essential in all cases of artificial pneumothorax where there are adhesions, either preventing proper collapse of the lung or holding out a cavity, that a thoracoscopic examination should be carried out by an expert, as it is only by viewing the adhesions that one can say whether it is possible for them to be dealt with by division.

The following statement is a short account of the cases that have been done during the past year. The number of patients having a positive sputum before the operation was 5 (excluding case No. 2, as this was not a complete operation) ; of this number 2 became negative following the operation.

Case No. 1. Had three adhesions holding out a large apical cavity. These were divided and allowed for complete collapse of the lung with very definite control of the apical cavity. Sputum—before, positive ; after, negative to nil. (See skiagrams H. C. 1(*a*) to 1(*h*) inserted between pages 94 and 95).

Case No. 2. Apical adhesions holding out cavity at the apex of the lung. Two lateral adhesions were divided, but a large apical one was found impossible to deal with on account of the fact that it was lying up against the subclavian vessels. Cavity still left uncontrolled with positive sputum. Sputum—before division of adhesions, positive ; after partial division of adhesions, positive. This case had a three-stage thoracoplasty at a later date which completely controlled the cavity. Sputum—before thoracoplasty, positive ; after thoracoplasty, negative.

Case No. 3. Two lateral adhesions holding out a cavity. These were divided with control of the cavity. Sputum—before, positive ; after, negative.

Case No. 4. Numerous lateral adhesions holding out a cavity in the mid-zone. On thoracoscopic examination numerous adhesions were found forming veils, impossible to divide.

Case No. 5. Lateral adhesion preventing collapse of the lung. This was divided and a successful collapse of the lung obtained. Sputum before, nil ; after, nil.

Case No. 6. Two lateral adhesions holding out a cavity in the upper zone. These were divided, allowing for collapse and control of the cavity. A large apical adhesion was found impracticable to divide on account of its proximity to the subclavian vessels, but this adhesion did not prevent control of the cavity. Sputum —before, positive ; after, positive.

Case No. 7. Lateral adhesions at apex holding out lung. Thoracoscopic examination showed a forest of adhesions with numerous veils, impossible to divide.

Case No. 8. Three apical adhesions holding out lung and pulling on an apical cavity. History of recent haemoptysis which it was found impossible to control with artificial pneumothorax. The adhesions were successfully divided with marked improvement in the lung collapse and complete control of the apical cavity and haemoptysis. Sputum—before, positive ; after, positive.

Phrenicectomy and phrenic crush. This operation has been carried out in 22 cases. I think this is an operation that is definitely limited in its scope. It is preferable in most cases to do a phrenic crush first, for if the result of this operation is found to be satisfactory, a complete phrenicectomy can be done later.

Some observers have found that phrenicectomy can control and finally lead to the disappearance of apical cavities. This, unfortunately, has not been my experience. I think it is quite sound to try a phrenic crush in such cases, and if the effect of this operation leads to the disappearance of the cavity, then phrenicectomy can be done at a later date. Phrenicectomy as a primary operation should never be carried out for apical cavities, because if the operation gives an unsatisfactory result proper collapse in a subsequent thoracoplasty which may be necessary is not obtained.

Thoracoplasty. Thoracoplasty has been performed on 6 patients, involving 15 separate operations.

Of the 6 cases, 4 were straightforward thoracoplasties for the control of tubercular lesions and cavities, 1 was for unilateral bronchiectasis, and 1 was performed for a tuberculous empyema complicated by broncho-pleural and external fistulae.

In regard to the 4 cases in which the operation was carried out for

the control of tubercular lesions and cavities, the main point influencing their selection for operation was active disease in one lung with cavitation, which it had been found impossible to control by more simple methods of collapse therapy.

The immediate results of the operation in these 6 cases have been excellent, the desired collapse having been obtained in all with control of the cavities. The convalescence has been satisfactory and free from complications ; there have been no deaths.

As this work at High Carley has only recently been carried out, I am not in a position at present to give an opinion on the after-results or the prospect of the patient becoming a useful member of society.

In regard to the pre-operative treatment, it is important to get the patient at the peak as regards his general condition. To help in this, I think it is essential for the patient to be resident in the sanatorium for some time previous to the operation. Not only does this improve the general condition, but it gives the physician an opportunity for a close study and knowledge of the case, for upon the physician lies the responsibility of handing over the patient to the surgeon at the peak of fitness for operation. Thoracoplasty is a major operation, not an emergency, and nothing is to be gained by any undue haste. At the same time, once the operation has been decided upon and the patient is fit, there should be no delay.

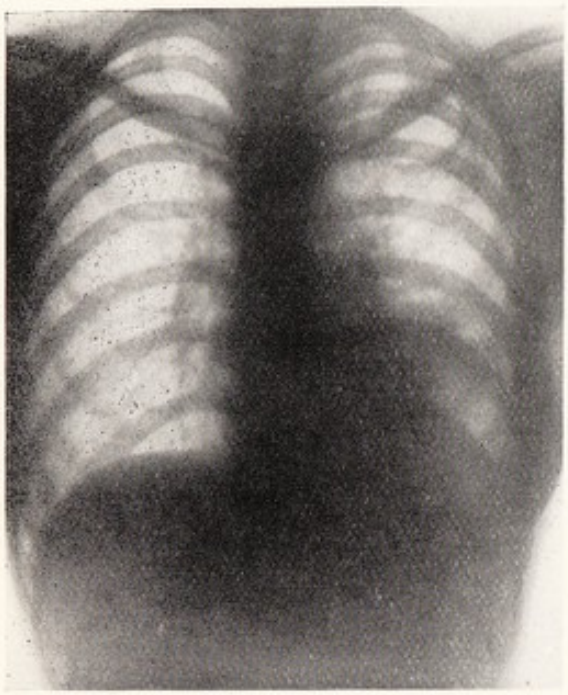
The patient is kept in bed for a week previous to the operation, given cardiac tonics and glucose in the form of barley sugar *ad. lib.* ; bromidia the night before, an aperient two nights before, an enema the day before if required ; very light food the day before the operation, and no food for four hours previous to the operation.

In addition to having the services of a highly specialised chest surgeon, it is essential that the anæsthetist be one who has a wide experience in anæsthetics for chest operations. The patient is given evipan intravenously, followed by a wide regional anæsthesia, and during the operation the patient is kept under control by a very small amount of chloroform vapour.

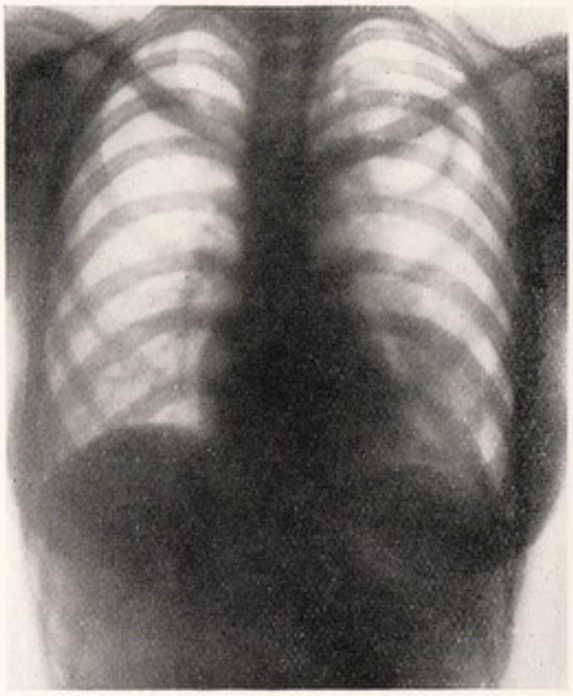
The patient is taken straight from the theatre to a ward in close proximity, thus preventing any sudden lowering of the temperature with resultant shock to the patient. The temperature in this ward is kept up to about 70°F. for the first twelve hours, which I think definitely eliminates shock. Rectal salines are given four-hourly, and if there is much pain, bromochloral, drachms two, in the saline. If

High Carley Sanatorium.

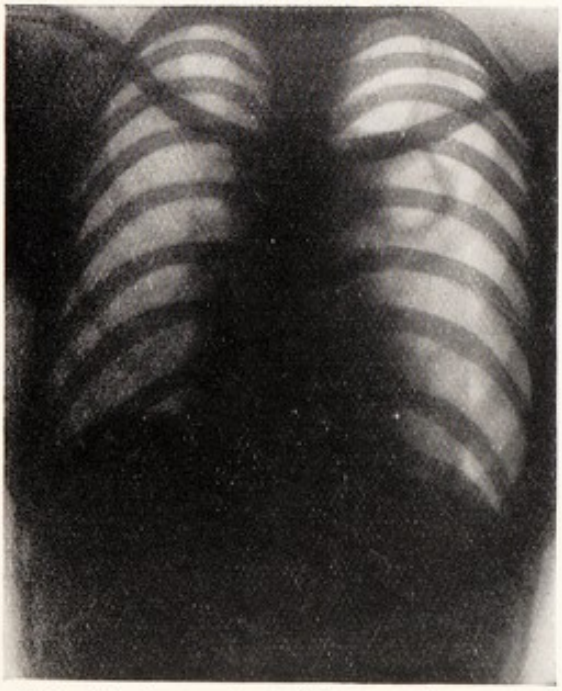
Skiagrams and Photographs illustrating
Thoracoscopy and Division of Adhesions,
and
Thoracoplasty.



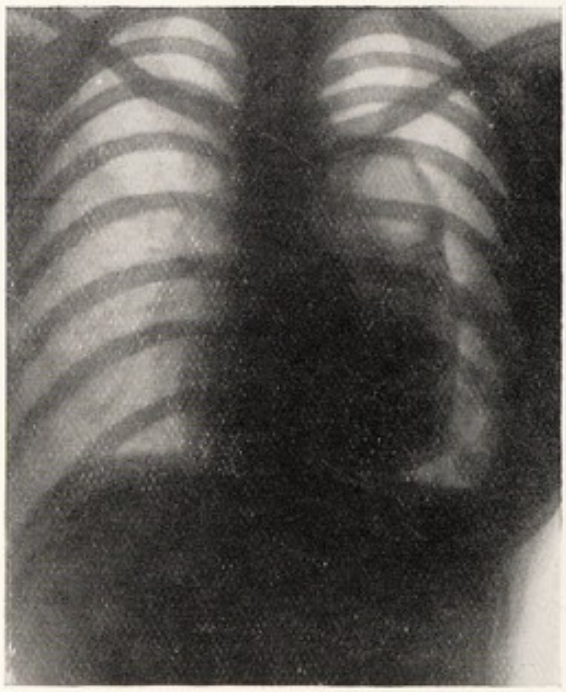
H.C. 1(*a*).—M.P., female, aged 23 years. Admitted High Carley 26–11–34. Sputum positive, amount per day 1 oz. Skiagram taken 22–11–34 before admission to the sanatorium.



H.C. 1(*b*).—Same patient. Left artificial pneumothorax induced 28–11–34. Skiagram taken 30–11–34, after induction, showing large apical cavity held out by lateral and apical adhesions.

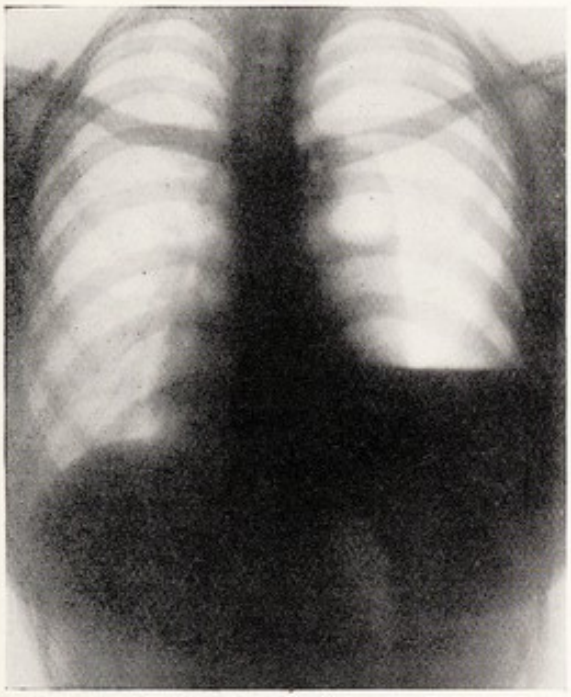


H.C. 1(*c*).—Same patient. Skiagram taken 21–1–35 before division of lateral adhesion.

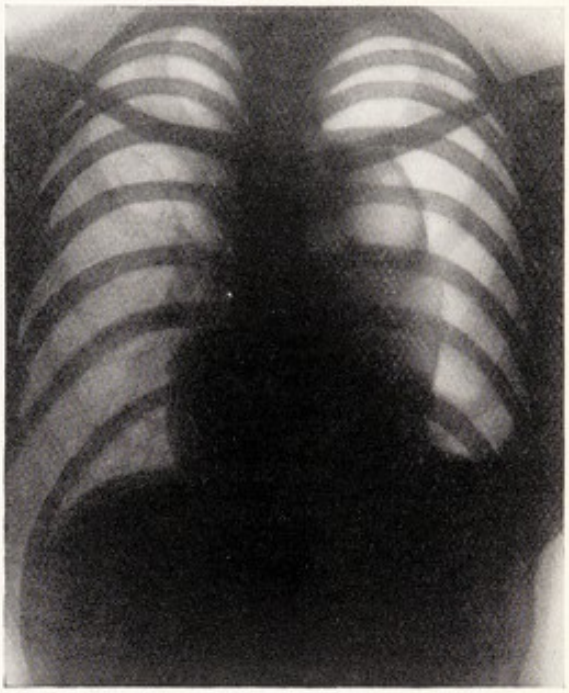


H.C. 1(*d*).—Same patient. Skiagram taken 25–3–35 after division of lateral adhesion.

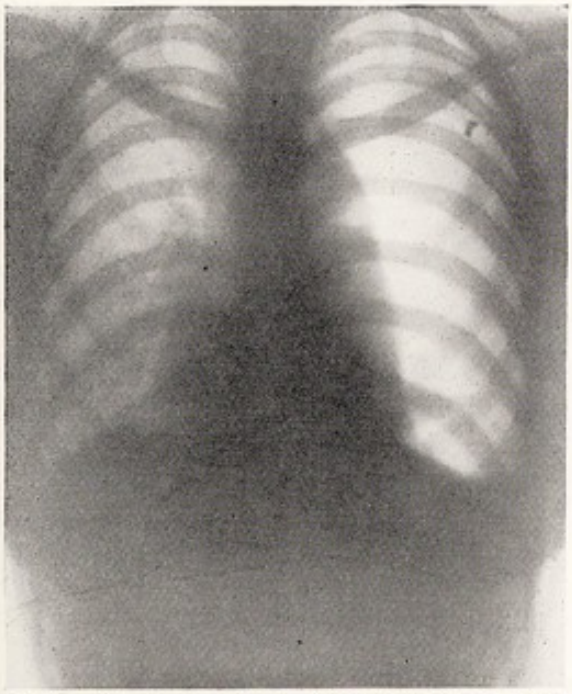
[Skiagrams taken at High Carley Sanatorium.]



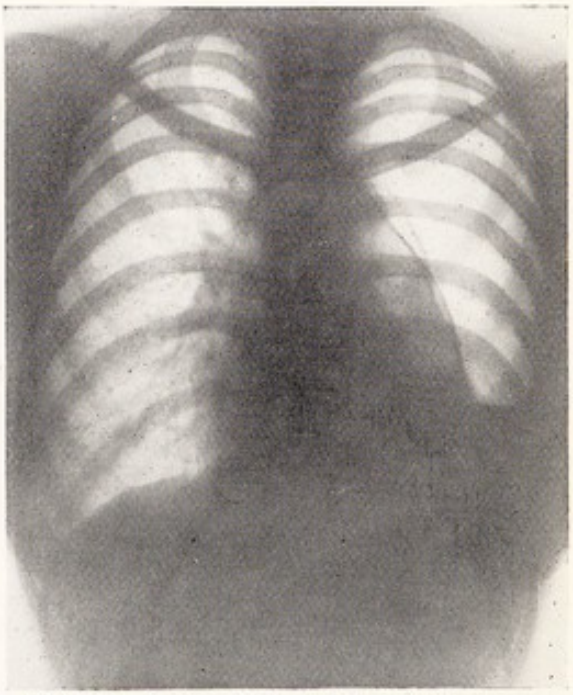
H.C. 1(*e*).—Same patient. Skiagram taken 6–4–35 after refill.



H.C. 1(*f*).—Same patient. Skiagram taken 24–4–35 after left phrenicectomy and before division of apical adhesion.

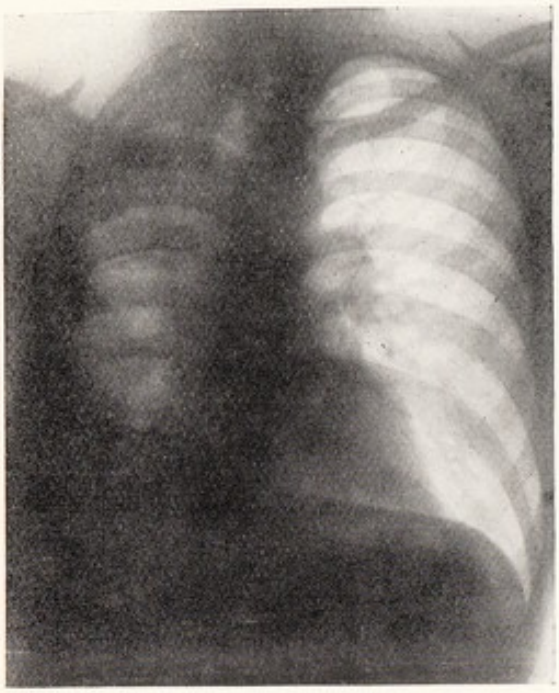


H.C. 1(*g*).—Same patient. Skiagram taken 21–7–35 after division of apical adhesion.

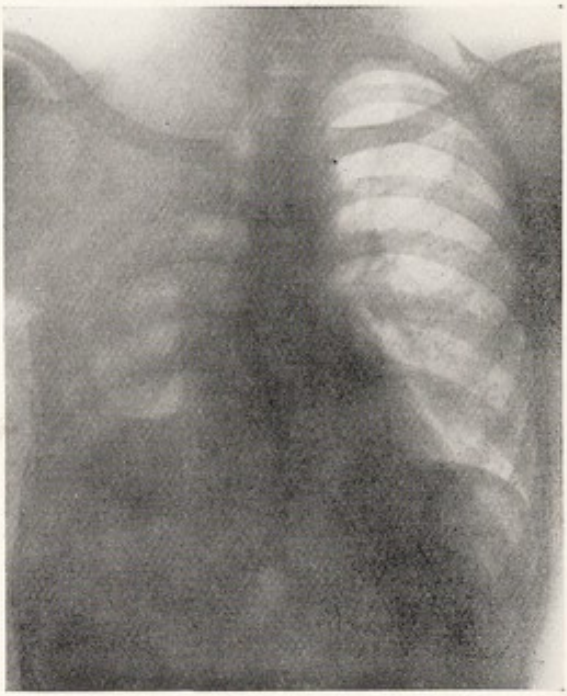


H.C. 1(*h*).—Same patient. Skiagram taken 16–7–36, showing collapse of lung and control of the apical cavity. Sputum negative since 25–10–35, now nil.

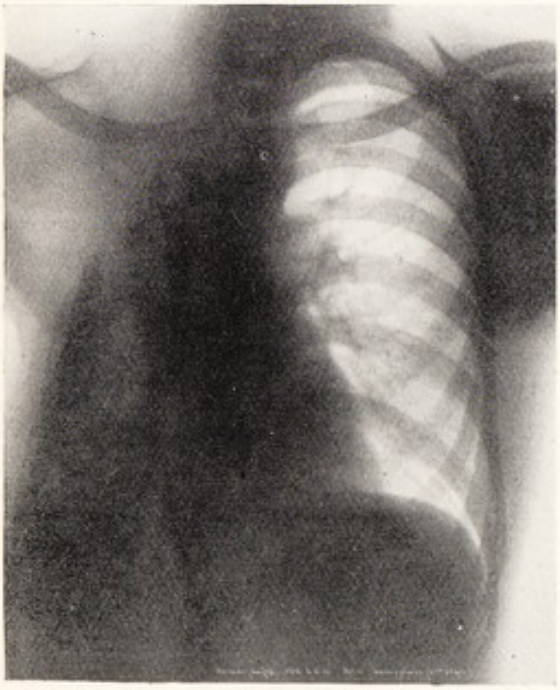
[*Skiagrams taken at High Carley Sanatorium.*]



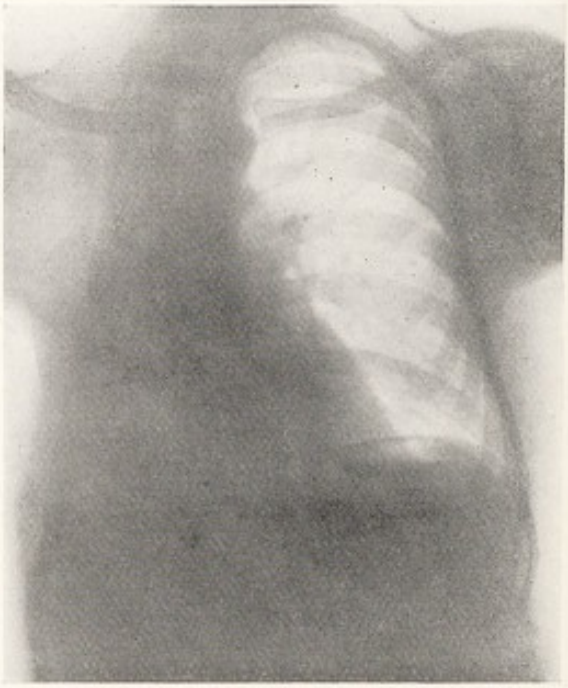
H.C. 2(*a*).—N.L., male, aged 19. Sputum positive, amount per day 1 drachm. Case of two years' standing. Large apical cavity. Previous treatment: artificial pneumothorax 3 months, followed by obliterative pleurisy. Skiagram taken 7–1–36 before thoracoplasty.



H.C. 2(*b*).—Same patient. Skiagram taken 13–2–36 after first stage thoracoplasty. Date of operation 25–1–36, portions of 5 ribs removed.



H.C. 2(*c*).—Same patient. Skiagram taken 2–3–36 after second stage thoracoplasty. Date of operation 15–2–36, portions of 5 ribs removed.



H.C. 2(*d*).—Same patient. Skiagram taken 20–7–36 present condition showing still further improvement in collapse with complete control of apical cavity. Sputum has remained persistently negative since completion of operation, and is now practically nil. Patient discharged and returned to his normal occupation as a clerk.

[*Skiagrams taken at High Carley Sanatorium.*]

H.C. 3(*a*).—M.I., aged 25. Photograph shows the healed scars after the major operation of thoracoplasty performed in three stages by Mr. Morriston Davies. Portions of eight ribs on left side were removed. Note slight deformity.

H.C. 3(*b*).—Same patient. Front view. Note very slight deformity.

[*Photographs taken at High Carley Sanatorium.*]

Group of patients undergoing treatment at the sanatorium in July 1936 upon whom the major operation of thoracoplasty (*i.e.*, removal of portions of ribs to bring about collapse of the lung) has been performed and completed. The signs of deformity are scanty.

[*Enlarged snapshot taken by Sister at High Carley Sanatorium.*]

this is not retained ⅓ grain of omnopon will relieve pain and allow the patient to cough freely and so get rid of retained secretion. The patient must be encouraged to cough, and the nurse-in-charge instructed to support the affected side. The patient usually runs a slight temperature for a few days after the operation.

Table 22 shows the results of the six cases operated on :—

Case and previous treatment.	Date of operations denoting number of stages.	Number of ribs (portions) removed.	Sputum.	Remarks.
No. 1. Female aged 26. No previous active treatment.	26–1–35 12–2–35	5 2	Before + (Specimen only). After—nil.	Apical cavity controlled.
No. 2. Female aged 23. A.P. failed twice in Elswick ; phrenicectomy.	23–3–35 13–4–35 5–5–35	3 4 1	Before—nil. After—nil.	Control of apical cavity. Patient developed haemoptysis with renewed activity around the periphery of the cavity ; thoracoplasty performed on this account.
No. 3. Male aged 27. A.P. right side ; crisalbine 2.7 grams.	10–8–35 31–8–35 10–10–35	4 4 3	Before + 4 ozs. daily. After + 2 ozs. daily.	Case complicated with broncho-pleural and external fistulæ which complete thoracoplasty so far has failed to control.
No. 4. Female aged 30. No previous active treatment.	31–8–35 18–9–35	4 4	Before—nil. After—nil.	Complete control of cavity.
No. 5. Male aged 45. No previous active treatment.	18–9–35 10–10–35 13–12–35	3 3 4	Before—neg. 2-12 drachms daily. After—neg. 4-8 drachms daily.	Case of old-standing unilateral bronchiectasis. Patient improved and feels life is different.
No. 6. Female aged 20. A.P. right side ; phrenic crush ; division of adhesion; crisalbine 4.7 grams.	21–11–35 13–12–35 25–1–36	4 4 2	Before + 2-2½ ozs. daily. Neg. since 3-11-35 2 drs. at present.	Complete control of apical cavity.

Though the numbers in the table are small it is definitely of interest that of three cases returning a positive sputum before operation, two became negative.

Time only will tell whether the patients will be fit to earn a living, but if by thoracoplasty we can stop the source of infection, then I think the operation is fully justified.

Several skiagrams and photographs dealing with thoracoplasty are here inserted.

Artificial light therapy. General light baths with the carbon arc lamps have been given throughout the winter months on carefully selected patients. I think that artificial sunlight has a definite place in sanatorium treatment, but I should like to stress the importance of a careful selection of the cases and close supervision by the medical and nursing staff.

Sanocrysin. A total of 21 patients received this form of treatment during 1935, 14 continuing from the previous year and 7 commencing during 1935.

Treatment was abandoned in 9 cases for the following reasons :— Albuminuria 1, ulceration of mouth 1, dermatitis 2, pyrexia 1, diarrhœa 3, type of case too acute 1.

The remaining 12 cases completed three or more grams.

At the commencement of the treatment 7 of the 12 patients completing the course had a positive sputum ; on completion 2 had lost their tubercle bacilli, representing a bacillary loss of 28·5 per cent.

Five of the above 12 cases did not receive any ancillary treatment, and of these 3 had a positive sputum on commencement of the treatment, one becoming negative, giving a bacillary loss of 33·3 per cent.

The x-ray appearances showed improvement in 66·6 per cent. of the cases and the sedimentation rate was improved in 91·6 per cent. ; the amount of sputum was reduced in 37·5 per cent., and gain in weight took place in 75·0 per cent.

The number of injections during the year was 100.

The following Table 23 shows the position at the end of December 1935 of 31 patients who received three or more grams of sanocrysin during 1933 :—

Classification.	Number of patients treated.	Nett number after deducting removals, etc.	Alive.		Dead.	
			Fit for work.	Unfit for work.	Number.	%
T.B. plus ..	24	20	7	9	4	20·0
T.B. minus ..	7	7	3	2	2	28·5
Total	31	27	10	11	6	22·2

The bacillary loss at the end of treatment of the cases still residing in the County area was 62·2 per cent. The present bacillary loss of the same cases is 50·0 per cent.

Crisalbine. Forty cases received this form of treatment during 1935, 7 continuing from 1934, and 33 commencing during 1935.

Treatment was abandoned in 13 cases for the following reasons :— Ulceration of mouth 1, dermatitis 2, pyrexia 3, diarrhœa 3, diarrhœa and dermatitis 1, abdominal pains 1, ? Raynaud's disease 1, and in favour of bilateral artificial pneumothorax 1.

Of the remaining 27 cases, 25 completed a course of three or more grams, and 2 were continuing at the year end.

At the commencement of the treatment, 18 of the 25 patients who received three or more grams had a positive sputum, but on completion of treatment 8 had lost their tubercle bacilli, representing a bacillary loss of 44·4 per cent.

Sixteen of the above 25 cases did not receive any ancillary treatment; 11 of these had a positive sputum on commencement which in 5 instances became negative, equal to a bacillary loss of 45·4 per cent.

The x-ray appearances showed improvement in 60·0 per cent. of the cases, and the sedimentation rate in 95·6 per cent.; reduction in the amount of sputum was found in 53·8 per cent. and gain in weight in 75·0 per cent.

The number of injections during the year was 458.

The following Table 24 shows the position on the 31st December, 1935, of 20 patients who received three or more grams of crisalbine during the year 1933 :—

Classification.	Number of patients treated.	Nett number after deducting removals, etc.	Alive.		Dead.
			Fit for work.	Unfit for work.	
T.B. plus ..	15	12	6	6	—
T.B. minus ..	5	3	2	1	—
Total ..	20	15	8	7	—

The bacillary loss on completion of the treatment of the patients still residing in the County was 75·0 per cent. The present bacillary loss in the same cases remains at 75·0 per cent.

Details of work carried out during 1935 :—

Artificial Pneumothorax—	
Inductions	63
Refills	1,870
Gas replacements	21
do. with oleothorax	7
Withdrawals of gas	17
Withdrawals of fluid	5
Pressure tests	13
Thoracoscopic examinations	11
Division of adhesions	8
Phrenic nerve operations (phrenicectomy 15, phrenic crush 7)	22
Thoracoplasty operations	15
do. (partial) for drainage of lung abscess ...	1
Injections of gold salts—	
Sanocrysin	100
Crisalbine	458
Solganol oleum-B	12

Other operations—	
Exploration of chest	3
Excisions	2
Incisions	2
Aspirations	10
Throat examinations	23
Sinuses opened and drained	3
Sinuses opened and packed	42
Sinuses irrigated	12
Sinus lavages	97
Ear examinations	1
Methylene blue injected	1
Lipiodol injections	9
X-ray work—	
Screenings	2,174
Skiagrams	1,286
Laboratory examinations—	
Sputum (positive, 618 ; negative, 759)	1,377
Pleural fluid	7
Fæces	10
Pus	2
Cultures (Lowenstein-Jensen method)—	
Pleural fluid	2
Urine	1

The number of patients afforded special treatment for the first time during 1935 was as follows :—

Artificial pneumothorax—	
Attempted	77
Abandoned	16
Satisfactory	61
Thoracoscopy	8
Division of adhesions	6
Phrenicectomy	15
Phrenic crush	7
Thoracoplasty	6
do. (partial) for drainage of lung abscess	1
Gold salts (sanocrysin 7, crisalbine 33, solganol oleum–B 1)	41
Artificial light (general 9, local 12)	21

The numbers of patients in High Carley on the 31st December, 1935, who were receiving special treatment were as follow :—

Artificial pneumothorax	37
Artificial pneumothorax and gold salts	1
Artificial pneumothorax and sunlight treatment	3
Thoracoplasty	1
Thoracoplasty and artificial pneumothorax	1
Thoracoplasty (partial) for drainage of lung abscess	1
Gold salts	1
Artificial light (general, 9, local 1)	10

Bacillary loss. During the year, 78 patients who had a positive sputum on admission were discharged. The sputum on discharge in 49 of these cases had become negative, giving a bacillary loss of 62·8 per cent. A careful record of the bacillary loss has been kept for a number of years, and the average loss for the last eleven years is 32·0 per cent. These figures are most striking, and I think that the marked increase in the bacillary loss can be ascribed to the various methods of

collapse therapy that have been more extensively carried out in recent years.

Sputum examinations. The sputum of patients is examined as follows :—Observation cases weekly, T.B. minus cases fortnightly, and T.B. plus cases monthly. During the year 1,377 specimens of sputum were examined, of which 618 were positive.

Cultural examinations. During the year two specimens of pleural fluid were set up for culture by the Lowenstein-Jensen method, one being found positive for tubercle bacilli. In addition one specimen of urine was set up but this proved to be negative.

Patients' weights. Patients' weights are taken at weekly intervals ; the average gain in weight of those who completed two or more months' treatment was as follows :—75 male patients, 10·12 lbs. ; 57 female patients, 12·08 lbs.

Nurses' examinations. Probationer nurses are prepared for the examination held under the auspices of the Tuberculosis Association. During the year one nurse sat for Part I and two for Part II, all three being successful.

Occupational therapy. The forms of occupational therapy carried out during the year were : joinery, carpentry, wattle-hurdle making, cane-chair mending, gardening and poultry keeping. Boot and shoe repairing was suspended during the year owing to the fact that we were unable to obtain the services of a practical man. Forty-eight wattle-hurdles were made and dispatched to various County sanatoria during the year.

Social activities. The usual outdoor games were provided during the summer months—bowls and clock golf for the men and croquet for the women. Whist drives were held at fairly frequent intervals, and during the winter months the cinema entertainments were continued. During Christmas week the male and female patients each produced a most excellent concert which was very much appreciated by everyone. We are handicapped in staging concerts on account of lack of a proper hall.

Church services. Church of England. Canon Kenworthy holds a service and visits each patient every Thursday, and holds a celebration of the Holy Communion on the last Monday in each month. Canon Kenworthy prepared 17 patients for Confirmation, and the Bishop of Barrow-in-Furness very graciously visited the sanatorium for the Confirmation Service.

Nonconformist. The Nonconformist minister, selected in turn from a panel of clergy, conducts a service on alternate Sunday afternoons.

Roman Catholic. Father Morrisey from Ulverston hears confessions in the evening of every seventh week, and the following morning administers Holy Communion.

Visits by Members of the Committee. We were honoured by visits from the Vice-Chairman of the County Tuberculosis Committee, Sir Thomas Tomlinson, and from County Councillors H. Bright and Dr. P. F. Mannix.

I should like again to record my appreciation of the services of my medical colleagues, and the matron, nursing and clerical staffs, for the very loyal support and assistance they have given me throughout the year.

The following Table 25 shows the condition of patients discharged from the High Carley Sanatorium during the year 1935 :—

Classification on admission to the sanatorium.	Condition at time of discharge.	Duration of residential treatment in the sanatorium.					Total.	
		Under 28 days.	1—3 months.	3—6 months.	6—12 months.	More than 12 months.	No.	%
T.B. minus.	Quiescent	—	1	10	8	5	24	64·9
	Improved	1	—	5	4	1	11	29·7
	No material improvement	1	—	—	—	—	1	2·7
	Died in sanatorium ...	—	1	—	—	—	1	2·7
T.B. plus 1.	Quiescent	—	—	1	5	6	12	40·0
	Improved	—	3	1	7	3	14	46·7
	No material improvement	—	1	1	1	—	3	10·0
	Died in sanatorium ...	—	—	—	1	—	1	3·3
T.B. plus 2.	Quiescent	—	—	3	9	6	18	20·7
	Improved	1	4	11	19	18	53	60·9
	No material improvement	2	—	3	5	3	13	14·9
	Died in sanatorium ...	—	—	1	—	2	3	3·4
T.B. plus 3.	Quiescent	—	—	—	—	—	—	—
	Improved	—	1	2	—	—	3	50·0
	No material improvement	1	1	—	—	—	2	33·3
	Died in sanatorium ...	1	—	—	—	—	1	16·7

Diagnosis on discharge from observation.	Stay under 4 weeks	Stay over 4 weeks.		
Tuberculous	1	2	3	17·6
Non-tuberculous	2	10	12	70·6
Doubtful	—	1	1	5·9
Died*	1	—	1	5·9

* Diagnosis : Acute endocarditis.

Total ... 177

Oubas House Children's Sanatorium, Ulverston.

The medical superintendent, assistant medical superintendent, and matron of the High Carley Sanatorium are also responsible for the work at Oubas House. The sister-in-charge is Miss D. Pope, and the certificated school teacher is Miss A. Gibson.

The house, the property of the County Council, stands in its own grounds (about one acre in extent), and accommodates 21 girls. Educational instruction is given to the children in conformity with the requirements of the Board of Education.

During the year, 11 patients received from the visiting dental surgeon, Mr. A. Miller, some form of dental treatment particulars of which are given in Chapter XXIV.

The weekly maintenance charge for 1935–36 was £2 0s. 0d. per patient.

The average length of stay of patients at Oubas House during 1935 was as under :—

Patients discharged	332 days.
Observation cases	162 days.

Dr. Leggat reports as follows :—

During the year, 15 patients were admitted and 21 were discharged. The condition on discharge of the 21 cases was as follows :—Disease quiescent, 16 (pulmonary 15, non-pulmonary 1) ; improved, 2 ; no material improvement, 3 (all transferred to High Carley). In addition, 5 observation cases were admitted and 3 were discharged (one doubtful case transferred to High Carley, and 2 non-tuberculous).

We were fortunate in having a fair average of natural sunlight and full advantage was taken of this, suitable patients being gradually exposed under strict supervision. There is no doubt that sunlight, properly controlled and regulated, acts as a tonic and improves the general condition. Several journeys by bus were made to Bardsea, where the children enjoyed the picnics and the sea breezes.

The majority of the cases sent in for observation turn out to be basal bronchiectasis following a history of measles and whooping cough. An endeavour is made to treat the cases by postural drainage whilst in the institution, and the results have been most encouraging. I feel that measles and whooping cough are two diseases which are treated far too lightly, as neglect of ordinary precautions such as keeping the child warm in bed may often lead to very distressing bronchiectasis later.

I am happy to say that we have had no cases of infectious diseases during the year.

The Mantoux tuberculin test was carried out in 25 cases with the following results :—

Number of positive reactions after 0·1 c.c. of 1/10,000	11
Number of positive reactions after 0·1 c.c. of 1/1,000...	4
Number of negative reactions	10

There were 36 specimens of sputum examined during the year, with the following results :—Positive, 2 ; negative, 34.

As in previous years, cases with positive sputum or those requiring specialised treatment were transferred to High Carley Sanatorium. During the year three such cases were transferred, one of which received artificial pneumothorax treatment.

The average gain in weight of patients discharged during 1935 was 11 lbs.

Miss Gibson's report in regard to the school is as follows :—

The work of the school is carried out on the general principles and methods laid down by the Board of Education for open-air elementary schools. The work is entirely individual, and graded to the physical condition of the child.

Special attention is paid to the teaching of hygiene, physical exercises, and handicraft. Teaching and practice in the usual school subjects are carried on, as the children on discharge have to return to elementary schools.

Lady Fell visited the sanatorium very frequently during the year, and her visits were greatly appreciated by the children and the staff.

Sir Thomas Tomlinson visited periodically during the year to mark the school register.

I should like again to record my appreciation of the services of Sister Pope and of the personal care and interest she has taken in the children in her charge.

We have also to thank numerous people for the various gifts at Christmas and throughout the year.

Furness Dispensary Area.

Area (estimated population 38,066) embraces Dalton-in-Furness, Grange-over-Sands, Ulverston, and Ulverston Rural districts.

Dr. Leggat sends the following report :—

The close co-operation between the practitioners and the tuberculosis officer has been maintained during the past year, and I would again like to thank the general practitioners in my area for their continued support.

The number of new cases and new contacts examined during 1935 was 144; of these, 39 were diagnosed as tuberculous, 103 as non-tuberculous, and at the end of the year, 2 cases still remained doubtful.

During the year, 280 skiagrams were taken and 37 screen examinations made at High Carley in regard to dispensary patients.

Seven individuals from the dispensary area attended High Carley for artificial pneumothorax refills in continuance of their treatment after discharge from sanatoria. The number of refills during the year was 75.

The examination of sputum as in previous years, was carried out at High Carley; 84 specimens were examined, 12 of which were positive for tubercle bacilli and 72 negative. One specimen was sent to the Public Health Laboratory, Manchester, for guinea-pig inoculation and one specimen for guinea-pig inoculation and culture by the Lowenstein-Jensen method, the result in both cases being negative.

I should again like to thank Nurse Duston for the help she has given me, and for the interest she has shown in the patients under her care.

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1935 (Definitely tuberculous, 249; doubtful, 2)			251
Examinations by tuberculosis officer at—	Examinations of *new persons* and *new contacts* for diagnosis.	Re-visits or re-attendances of "*old*" *cases* and "*old*" *contacts*.	
Patients' homes	31	51	
Ulverston Dispensary	113	445	
Attendances of patients at the Ulverston Dispensary for artificial light treatment (26 individual patients)			1,027
Attendances for artificial pneumothorax treatment (7 individual patients)			75
Blood sedimentation tests			3
Visits by tuberculosis officer to sanatoria, and pulmonary and special hospitals			11
Visits by dispensary nurse to patients' homes—			
Routine visits		1,772	1,974
Application of surgical dressings		160	
Adjustment of splints and surgical appliances		24	
Other actual nursing		18	
Disinfections carried out by local sanitary authorities			47
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment *before* statutory notification			96·7%

XVIII.—ELSWICK SANATORIUM AND FYLDE DISPENSARY AREA.

Medical Superintendent ... ... Dr. G. Barker Charnock.

(Dr. Charnock is also consultant tuberculosis officer for the Fylde Dispensary Area —*i.e.*, the area around the sanatorium—containing a population of 87,256).

Visiting Consulting Chest Surgeon ... Mr. H. Morriston Davies.

Assistant Tuberculosis Officer ... Dr. W. Fettes (to 31–3–36)
Dr. J. N. Whyte (from 27–4–36)
(1½ days per week).

Matron ... ... Miss A. Jones.

Elswick Sanatorium, near Kirkham.

This sanatorium is situated on the east side of Elswick village, and is about six miles from Kirkham station. The buildings and about 11 acres of land belong to the Fylde, Preston, and Garstang Joint Smallpox Hospital Board, and are held on lease by the County Council until 1955. The Council are under an obligation to vacate the premises in case of a severe epidemic of smallpox. Accommodation is provided for 38 males and 32 females ; total 70 pulmonary cases.

An x-ray apparatus is provided in a separate building.

A treatment block, built as an extension to the x-ray room, consists of operating theatre, sterilising room, consulting room, dressing rooms, and lavatory. This block also serves as a dispensary for out-patients from the southern part of the dispensary area and saves their attendance at the Fleetwood Dispensary.

During the year, 131 County patients received from the visiting dental surgeon, Dr. R. D. Allison, some form of dental treatment, particulars of which will be found in Chapter XXIV.

The weekly maintenance charge for 1935–36 was £2 12s. 7d. per patient.

The average length of stay of patients at Elswick during 1935 was as under :—

Patients discharged	185 days.
Patients who died in the sanatorium	81 days.
Observation cases discharged...	30 days.

Dr. Charnock reports as follows :—

In the annual report for 1934 the provision of modern sleeping shelters was mentioned. Ten of these structures have now been completed and are in full use. They are built on a 6-inch concrete bed, with an air space of 6 inches between this bed and the wood floor, and there is also an air space in the walls. This construction renders them very dry. The shelters are heated with small steam radiators, and are fitted with electric light and wireless. Wardrobe accommodation has been built into the structure, a feature which has been found of great convenience to the patient. It would seem from observation of these shelters, through one of the fiercest and longest winters known in the Fylde for many years, that the type has met all needs. Patients quite ill have been nursed in them with great success.

The work of re-conditioning the lighting and heating at the sanatorium has continued steadily, and is rapidly approaching completion. The alterations carried out in the kitchen have added greatly to the efficiency of this very important department.

The long, high-roofed, and airy wards of Elswick are eminently suited to the surgical treatment of pulmonary tuberculosis, and are popular with the patients.

Those patients who have been able have been encouraged to interest themselves in the general activities in the hospital, *viz.*, fruit farming ; pig, poultry, and geese rearing ; gardening ; woodwork ; painting ; trenching ; basket-chair repairing ; and wood chopping.

Specimens of the milk supply have been sent away at regular intervals for chemical and bacteriological examination. The milk has proved of excellent quality, and is pasteurised before the patients receive it.

The sewage plant has been maintained in good order, and has produced a satisfactory effluent.

In June, the sanatorium and grounds were inspected by Sir Thomas Tomlinson, the Vice-Chairman of the County Tuberculosis Committee, and in November, Major T. E. Jesson, a member of the Committee, visited the sanatorium.

The recreation of the patients is well catered for. An up-to-date library and numerous indoor games including billiards, provide inside interest, and the quiet reading room in the male pavilion, established last year, has proved a valuable addition to the general amenities. Bowls for the men and clock golf for the women are the main features of outdoor pleasures. The tennis court has been re-conditioned for the use of the staff, and is now in excellent condition.

At Elswick, prolonged bed rest is adopted as a routine measure. There is no doubt that long rest in bed prevents tendency to relapse while in sanatorium, particularly in the more advanced cases; this naturally, comes very heavy on the nursing staff, but it is worth the extra trouble involved. Medical treatment in use included gold therapy, which has proved beneficial in small doses in certain selected cases. Nordalin treatment has been tried on a number of patients; some have benefited, while others do not seem to have been affected in any material way. It is early yet to report on any cases treated by this method. Artificial pneumothorax treatment has been found possible, in some degree, on an average of 21 per cent. of cases attempted throughout the year.

The new Apneu-Collison inhaler continues to be of great help. Its use in tuberculosis complicated by much bronchitis, in asthmatic cases, and in tuberculous disease of the larynx is invaluable.

An infra-red apparatus has been added to the theatre equipment and has proved of value. A short paper on this form of treatment forms the subject of Chapter X.

The surgical work carried out in the theatre included aspiration of glands of the neck, removal of broken down sebaceous cysts, aspiration of abscesses, and excision of glands.

The kindly ministrations of the local clergy, who visited and held services, have been of great help, and the co-operation of all denominations is encouraged.

We are greatly indebted to our consulting thoracic specialist, Mr. H. Morriston Davies, F.R.C.S., for all the help and encouragement he has given us at Elswick during the year. His guidance and advice, so willingly given on all occasions, has been invaluable.

Many thanks are due to Dr. W. Fettes for his good help and co-operation, to Dr. R. D. Allison for his continued good work in the dental section, and to all medical colleagues who have in any way helped to make the work at Elswick run smoothly.

It is a pleasure to record my appreciation of the untiring assistance of Miss Jones and her efficient nursing and domestic staffs.

Details of special treatment undertaken at Elswick Sanatorium during 1935 :—

Artificial pneumothorax—	
Inductions	42
Refills	541
Gas replacements	3
Phrenic nerve operations	26
Crisalbine injections	93
Blood sedimentation tests	301
Lipiodol injections	6
Aspirations	23
Withdrawals of pus	12
Pleural wash-outs	6
Explorations	2
X-ray work—	
Screen examinations	506
Skiagrams	272
Sputum examinations—	
Positive (gasolene concentration, 4; ordinary test, 216)	220
Negative (gasolene concentration, 10; ordinary test, 208)	218

Numbers of patients in the sanatorium afforded special treatment for the first time during 1935 :—

Artificial pneumothorax—	
Attempted	42
Abandoned	17
Satisfactory	20
Partially satisfactory	5
Phrenicectomy, phrenic evulsion, phrenic crush ...	26
Gold salts (crisalbine)	8
Nordalin	4

Numbers of patients in Elswick on the 31st December, 1935, who were receiving special treatment :—

Artificial pneumothorax	12
Phrenicectomy, phrenic evulsion, and phrenic crush...	5
Phrenicectomy and artificial pneumothorax	2
Gold salts (crisalbine)	1
Nordalin	4

The following Table 26 shows the condition of patients discharged from the Elswick Sanatorium during the year 1935 :—

Classification on admission to the sanatorium.	Condition at time of discharge.	Duration of residential treatment in the sanatorium.					Total.	
		Under 28 days	1—3 months	3—6 months.	6—12 months.	More than 12 months.	No.	%
T.B. minus.	Quiescent	—	1	5	9	1	16	29·1
	Improved	—	11	15	7	1	34	61·8
	No material improvement	1	1	1	—	—	3	5·4
	Died in sanatorium ...	—	1	1	—	—	2	3·6
T.B. plus 1.	Quiescent	—	—	2	5	1	8	29·6
	Improved	—	1	6	7	1	15	55·5
	No material improvement	1	—	2	—	—	3	11·1
	Died in sanatorium ...	—	—	—	1	—	1	3·7
T.B. plus 2.	Quiescent	2	—	—	—	—	2	4·0
	Improved	2	3	6	16	4	31	62·0
	No material improvement	4	4	1	3	—	12	24·0
	Died in sanatorium ...	2	1	—	2	—	5	10·0
T.B. plus 3.	Quiescent	—	—	—	1	—	1	25·0
	Improved	—	—	1	—	1	2	50·0
	No material improvement	—	—	1	—	—	1	25·0
	Died in sanatorium ...	—	—	—	—	—	—	—

Diagnosis on discharge from observation.	Stay under 4 weeks	Stay over 4 weeks.		
Tuberculous	6	6	12	92·3
Non-tuberculous	—	1	1	7·7
Doubtful	—	—	—	—

Total .. 149

Fylde Dispensary Area.

Area (estimated population 87,256) embraces Fleetwood, Thornton Cleveleys, Fylde Rural, Garstang Rural (part), Lytham St. Annes, and Kirkham districts.

Dr. Charnock reports :—

The work of the Fylde Dispensary Area has continued on lines laid down in previous annual reports.

The attendances at both the Fleetwood and Elswick Dispensaries have been very good. As a centre for the working of the area, Elswick

has proved very satisfactory since the administrative work, together with diagnosis and treatment, can be carried on in one building. This has saved much time and energy.

Cases undergoing artificial pneumothorax treatment have received their refills at Elswick, and no difficulty has been experienced in getting patients to attend regularly.

Co-operation with all medical practitioners, medical officers of health, and local authorities has been cordially maintained throughout the year.

In January, Dr. Harley Williams, the Medical Commissioner of the National Association for the Prevention of Tuberculosis, gave a series of lectures in the area. Well-attended public meetings were held at Fleetwood, Cleveleys, Poulton, Kirkham and Freckleton. The lectures were illustrated by cinematograph films. In the afternoons, sessions were held for school children in the senior forms. The kind help and co-operation of the school managers contributed largely towards making the propaganda a success.

Major T. Jesson, a member of the County Tuberculosis Committee, visited the Fleetwood Dispensary in November.

Special action was taken in one part of the Fylde Area in connection with the bacteriological examination of milk supplied to certain schools.

Steadily the housing conditions are improving in the towns, but in some of the country districts they are far from satisfactory.

The Fleetwood Dispensary electric lighting, heating and artificial light apparatus have been brought up to modern standards following on the change over from direct current to alternating current by the Fleetwood Corporation.

During the year, the number of x-ray skiagrams taken of dispensary patients was 323, and 174 screenings were made. The specimens of sputum examined numbered 269, of which 42 proved positive. In addition, 10 specimens of sputum were examined by gasolene concentration test. The number of artificial pneumothorax refills given was 133.

The health visiting of the whole area, although very arduous, has been carried out very satisfactorily by Nurse A. Tweedy, and her excellent co-operation has been appreciated by all local authorities as well as by ourselves.

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1935 (Definitely tuberculous, 417 ; doubtful, 0.)		417

Examinations by tuberculosis officer at—	Examinations of *new persons* and *new contacts* for diagnosis.	Re-visits or re-attendances of "*old*" *cases* and "*old*" *contacts*.
Patients' homes	101	483
Fleetwood Dispensary	123	626
Elswick Dispensary	40	263
	163	889

Attendances of patients at the Fleetwood Dispensary for artificial light treatment (38 individual patients)		1,120
Attendances for artificial pneumothorax treatment (12 individual patients)		133
Visits by tuberculosis officer to sanatoria, and pulmonary, special, and public assistance hospitals		13
Special visits by tuberculosis officer (*i.e.*, interviews with medical officers of health, general hospital officials, etc.)		1
Visits by dispensary nurse to patients' homes—		
Routine visits	1,412	
Application of surgical dressings	46	1,848
Adjustment of splints and surgical appliances	351	
Other actual nursing	39	
Patients' dispensary attendances for attention by nurse—		
Application of surgical dressings	176	192
Adjustment of splints and surgical appliances	16	
Sanitary defects reported to local medical officers of health		9
Sanitary defects which, after notification, were remedied		6
Disinfections carried out by local sanitary authorities		53
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment *before* statutory notification		96·1%

XIX.—WRIGHTINGTON HOSPITAL AND WIGAN COUNTY DISPENSARY AREA.

Medical Superintendent ... ... DR. E. H. ALLON PASK.
(Dr. Pask is also consultant tuberculosis officer for the Wigan County Dispensary Area—*i.e.*, the area around the hospital—containing a population of 109,506).
Visiting Consulting Orthopædic Surgeons... MR. T. P. MCMURRAY.
MR. HARRY PLATT.
Visiting Consulting Ophthalmic Surgeon... MR. H. H. BYWATER.
Visiting Consulting Urological Surgeon ... MR. C. A. WELLS.
Assistant Tuberculosis Officer ... ... DR. J. E. WALLACE (to 31.3.36).
... DR. E. H. W. DEANE (from 6.2.36).
Assistant Medical Superintendent ... DR. E. H. W. DEANE (to 5.2.36).
... DR. J. DOBSON (from 6.2.36).
Junior Assistant Medical Officer... ... DR. J. DOBSON (to 5.2.36).
... DR. W. G. TIMMIS (from 1.4.36).
Matron ... ... MISS E. MOSELEY.
Assistant Matron ... ... MISS M. L. STRUDWICK.

WRIGHTINGTON HOSPITAL, APPLEY BRIDGE, NEAR WIGAN.

The Wrightington Hospital is situated close to the high road between Standish and Parbold, about six miles north-west of Wigan; altitude 300 feet above sea level. A scheme for the adaptation of the Hall as a nurses' home and the erection of new buildings to provide accommodation for 226 patients was adopted by the County Council and approved by the Ministry of Health towards the end of 1927. The first patients were admitted on the 14th December, 1931.

The accommodation provided is utilised as under :—

Adults : Three one-storey pavilions (two for men and one for women). One pavilion contains 30 beds, and at one end for isolation a small ward for four beds and two single cubicles ; the other two pavilions each contain 31 beds for non-pulmonary cases and at one end cubicles for 10 combined cases of pulmonary and non-pulmonary tuberculosis	118 beds.
Children : Two one-storey pavilions for non-pulmonary tuberculosis ; each pavilion containing 44 beds, and at one end a ward for four beds, and two single cubicles for isolation on admission ...	100 beds.
Isolation block for outbreaks of infectious disease	8 beds.
	226 beds.

All the buildings are heated.

In addition to the patients' pavilions, there are the following buildings :—Treatment block, kitchen block, official block, power house, laundry, quarters for nurses and maids (modern portion of

the Hall and an annexe), medical superintendent's house, seven cottages for male employees, outbuildings (utilised for garages, workshops, stores, etc.).

The capital cost of the Wrightington Hospital has worked out at £670 per bed with land, towards which the Ministry of Health made a grant of £40,680.

The water supply is obtained from a well (1¼ miles distant), which is the property of the County Council. Sewage works are installed on the estate. The electric light is from the public supply.

The Lancashire Education Committee have kindly arranged for lecturers to visit the institution to speak on social history and current events to adult patients; there are two part-time instructresses who teach handicrafts to both men and women. For the children there is a head teacher, with two assistants.

During the year, 137 patients received from the visiting dental surgeon, Mr. J. J. Ward, some form of dental treatment, particulars of which will be found in Chapter XXIV.

The weekly maintenance charge for 1935–36 was £3 0s. 6d. per patient; this includes 14s. 6d. for loan charges.

The average length of stay of patients at Wrightington during 1935 was as under:—

Patients discharged	257 days.
Patients who died in the hospital	223 days.
Observation cases discharged...	59 days.

Dr. Pask reports as follows:—

During the year, 275 patients were admitted, 230 were discharged, and 50 died. Table 27 on page 113 deals with the patients who were suffering from tuberculous conditions.

In addition to the 265 patients shown in Table 27, 7 adults and 8 children, the majority of whom had been admitted for observation purposes, were discharged as suffering from non-tubercular conditions. These included 5 cases with abdominal symptoms suggesting tubercular peritonitis; one was suffering from ulcerative colitis, and in the four others the condition was due to dietetic errors—a frequent cause of symptoms simulating those of abdominal tuberculosis. An interesting case was that of a youth, aged 22, with two discharging sinuses in the left loin due to the bursting of an empyema necessitas following pneumonia. The pleura was washed out by passing a catheter through one of the sinuses via the diaphragm, which was perforated, and the condition cleared up completely. Other observation cases proved to

W.1.—F.P., male, aged 8. Perthes' disease (8). History of limp for 18 months but remained ambulatory until admission, when there was limitation of movement of right hip in all directions which was resented. Half-inch shortening. Mantoux test negative. Skiagram shows marked flattening ("mushrooming") of epiphysis of head of right femur with fragmentation. There is irregularity of epiphyseal line, thickening of neck of femur, and some widening of the joint space. The hip was treated by immobilisation in a plaster spica.

W.2.—I.T., male, aged 4. Infantile coxa vara(1). Mother noticed that boy walked with a limp for six months before admission. On admission half-inch shortening. Movements of joint free and painless except for some limitation of abduction. Skiagram shows typical coxa vara deformity, *i.e.*, lessening of angle formed by neck of femur with shaft, which in this case is a right angle. The neck is shortened and thickened, epiphyseal line is vertical compared with normal side which is more or less horizontal. Wedge osteotomy on outer aspect of great trochanter corrected deformity.

RIGHT. [*Skiagrams taken at Wrightington Hospital.*] LEFT.

W.3.—F.A., male, aged 14. "Slipped epiphysis (L)." Two months' history of aching pain left knee and thigh. He fell on his knee one month after onset of pain. On admission eversion of left leg, any attempt at movement causing pain in both hip and knee. Tenderness over hip joint. Skiagram shows neck of femur displaced upwards, lower border being contiguous with middle of head. Deformity completely corrected with full range of movement of hip after treatment with weight and pulley extension, the limb being in extreme abduction and inversion. An interesting point about this case is that his brother was seen four years previously with a similar condition.

W.4.—E.E., female, aged 42. Osteo-arthritis right hip. History of intermittent hip trouble for 30 years after a fall. On admission complained of aching pain in right hip. There was ankylosis in slight adduction with 1½ inch shortening. Skiagram reveals excessive new bone formation with "lipping". The hip was treated by a Lorenz bifurcation operation.

[*Skiagrams taken at Wrightington Hospital.*]

RIGHT. LEFT.

be colon bacilluria, juvenile coxa vara, sprain of foot, chronic nephritis, infective polyarthritis, bronchiectasis with empyema, kyphosis of adolescence (Scheuermann's disease), and septic conditions.

From time to time cases are admitted for observation purposes in which the diagnosis of tubercle of the hip is in doubt. Illustrative examples of this type of case are seen in skiagrams W 1, 2, 3, and 4, here inserted.

TABLE 27. *Condition on discharge of 265 patients suffering from tuberculosis.*

LESION.	ADULTS.					CHILDREN.				
	Quies.	Imp.	Stat.	Worse.	Died.	Quies.	Imp.	Stat.	Worse.	Died.
Spine—										
Cervical	—	—	3	—	1	—	—	—	—	1
Dorsal	6	3	3	—	4	6	—	—	—	1
Dorso-lumbar	1	1	—	—	—	1	—	—	—	—
Lumbar	7	1	1	—	3	2	—	1	—	1
Hip	5	5	2	—	3	9	—	—	—	—
Great trochanter	1	—	—	—	—	—	—	—	—	—
Knee	3	1	—	—	—	9	—	—	—	—
Tibia	—	—	—	—	—	1	—	—	—	—
Fibula	—	—	—	—	—	1	—	—	—	—
Ankle	3	1	—	—	—	—	—	—	—	—
Bones of foot	—	1	—	—	—	—	—	—	—	—
Shoulder	1	—	1	—	—	—	—	—	—	—
Elbow	—	1	—	—	—	—	—	—	—	—
Wrist	1	3	1	—	—	1	—	—	—	—
Dactylitis	—	—	—	—	—	1	—	—	—	—
Rib	—	—	1	—	—	1	—	—	—	—
Sacro-iliac joint	1	1	—	—	—	—	—	—	—	—
Lupus	4	1	—	—	—	2	1	—	—	—
Peripheral glands	3	4	—	—	—	15	1	—	—	—
Peritonitis, etc.	11	5	2	—	2	17	—	—	—	—
Lungs	—	4	3	—	2	—	—	—	—	—
Genito-urinary	2	5	4	—	1	1	—	—	—	—
Iritis	—	—	—	—	—	—	1	—	—	—
Empyema	—	1	—	—	—	—	—	—	—	—
Multiple lesions	3	4	2	—	7	5	1	—	—	3
Combined pulmonary and non-pulmonary	4	9	5	—	21	—	3	—	—	—
Total	56	51	28	—	44	72	7	1	—	6
	179					86				

The condition on discharge of children and adults is given in Table 27. It will be seen that the results of treatment are much more favourable in children. These are so striking that it might be imagined that one was dealing with a different disease in the two classes of case. The percentage of cases discharged as quiescent is 83·7 for children as against 31·3 for adults.

The number of deaths occurring was 50 (44 adults and 6 children). These figures again emphasise the seriousness of the disease in adults. A large number of deaths occurred in the combined pulmonary and non-pulmonary cases. A useful purpose is served in admitting these patients to hospital as it ensures their getting adequate nursing and prevents infecting other members of the family in the home—two very important factors.

During the year, 407 blood sedimentation tests have been made. All patients are tested on admission and discharge, and certain cases at more frequent intervals when receiving special treatment, *e.g.*, sanocrysin. This test forms a valuable index as regards prognosis, and is useful along with other factors in assessing the result of treatment.

The intravenous injection of uroselectan B. for help in the diagnosis of renal tuberculosis has been continued. Forty-six patients were submitted to this examination during 1935; this is almost twice as many as in the previous year. These injections are also given in other non-pulmonary conditions showing renal symptoms. Renal tuberculosis occurs frequently in cases of Pott's disease.

During the year, 102 Mantoux tests have been made on children and all proved positive. This test has been done as a routine on all children since Wrightington was opened—four years ago—and it is noticeable that the number of Mantoux negative cases has become progressively less each year. Before a case is designated "Mantoux negative," three dilutions are employed:—1/10,000, 1/1,000 and 1/100.

The following is a list of operations performed during 1935:—

Amputations (arm 2, leg 1)	3
Arthrodesis of hip	4
Aspirations (abscesses 276, chest 103)	379
Cisternal puncture	1
Curettage (sinuses 3, lupus 1)	4
Cystoscopy	14
Excision of bones and joints (sacro-iliac 1, knee 3, wrist 1, metatarsal 1)	6
Excision bursa...	1
Excision sebaceous cyst	1
Excision of lymphatic glands (neck 9, inguinal 1, axillary 1) ...	11
Excision nodule leg	1
Epididymectomy	2
Ether injections	8

Fixation of spine (Albee)	4
Incision and curettage (abscesses 25, cervical glands 3) ...	28
Joint manipulation (knees and ankles)	1
Laminectomy	1
Lumbar puncture	10
Ligature hæmorrhoids...	1
Paracentesis abdominis	1
Nephrectomy	7
Sequestrectomy (femur 1, rib 1, malar bone 1, spinal 1) ...	4
Trimming of stump	1
Ureterectomy	1

The practice at Wrightington as regards operation in bone and joint tuberculosis is only to operate on the lesion when it has become reasonably quiescent, and operations are largely confined to adult patients ; speaking generally, the majority of patients tend to recover without operation.

Ether Injections. Considerable benefit has resulted in selected cases of tuberculosis of the knee by the injection of ether into the joint. The type of case which responds best to this form of treatment is the large swollen knee with either fluid or pus in the joint. This is aspirated and a few c.cs. of ether are injected into the joint afterwards. The process may have to be repeated several times, but it frequently results in a fairly rapid recovery compared with cases treated by rest alone. The ether vaporises in the joint, resulting in considerable swelling which is associated with a certain amount of pain, but these rapidly subside. In view of the favourable results in knee cases we have tried these injections in tubercle of the hip-joint but without success, the resulting pain being very severe, due probably to the fact that the joint space in the hip is much smaller than in the knee, and the ether on vaporising is under considerable tension.

Sanocrysin. As in previous years, sanocrysin has been used to a limited extent. Twelve cases received this form of treatment during the year. It has been used on all types of non-pulmonary lesion and on some combined cases, but I am not convinced that it has the same value as in pulmonary tuberculosis. The efficacy of the drug is difficult to assess as most of the cases received other forms of treatment simultaneously. Lupus, and breaking-down glands of neck with keloid formation, appeared to show evidence of improvement, but these cases were receiving local treatment (artificial light, creosote plasters, etc.) at the same time. A few selected combined cases were treated, but I do not think they were improved as a result of the sanocrysin, as it has to be remembered that the fact of a non-pulmonary lesion developing in a pulmonary case has of itself a retarding effect on the lung lesion. Two cases of Pott's disease treated with sanocrysin definitely showed evidence of rapid recalcification of the lesion, but this is also seen in cases receiving ordinary recumbent treatment on

retentive apparatus. I have come to the conclusion that sanocrysin is of doubtful value in non-pulmonary tuberculosis.

There were 116 plasters applied, and 39 casts taken for the making of celluloid splints during the year. The celluloid splints are made at Wrightington, and sent to surgical appliance makers for finishing. A number of wooden and iron splints are made on the premises by the carpenter and engineer; others are ordered from surgical appliance makers. It has not been found necessary to keep special splint makers at the hospital. I am of opinion that our method is definitely more economical than keeping special workmen on the premises for this purpose.

The artificial light department has worked to full capacity, and 214 cases received treatment during 1935. Carbon arc lamps (20 amp., 30 amp., and 75 amp.) with grade A carbons, and Jesionek, "Alpine Sun," and Kromayer mercury vapour lamps were used. The times of exposure for the various lamps conformed to our previous practice.

During the year, 31 post mortem examinations were carried out. These examinations are made as a routine wherever possible, and much valuable information is obtained.

Laboratory work. Examinations of the following specimens have been made during the year in the hospital laboratory:—Urine, 50; pus, 12; cerebro-spinal fluid, 6; fluid from chest, 2; blood, 1; gland scraping, 1. Sputum: hospital patients, 67 (positive 22, negative 45); dispensary patients, 552 (positive 107, negative 445).

Material for guinea-pig inoculation and special pathological investigation, which has been sent away for examination, consisted of:

Inoculation tests: urine, 29; fæces, 1; sputum, 1; pus, 4.

Microscopical examinations: urine, 26; fæces, 1; pus, 5.

Throat swabs for diphtheria, 159; enlarged gland, 1; mucous membrane hard palate, 1; piece of gland wall, 1; granulation tissue, 1; blood urea, 3; cerebellum, 1; section of kidney, 3; pleural effusion, 2; specimen of lung, 1; liver, 1; pus from spinal lesion, 1; exudate from surface of brain, 1; lymphatic gland, 3; cerebro-spinal fluid, 1; section of epididymis, 1.

In addition to that of the hospital, the x-ray work of the Wigan County Area and the Heath Charnock Pulmonary Hospital is done at Wrightington. During 1935, the following skiagrams were taken:—

TABLE 28.

Wrightington Hospital patients	Wigan County Dispensary Area patients	Heath Charnock Pulmonary Hospital patients	TOTAL
1,411	454	20	1,885

The amount of work done in this department is very similar to that of the previous year.

Cultivation of tubercle bacilli. During the year, Dr. Dobson has continued the use of a modification of Lowenstein's medium for the culture of tubercle bacilli, and he reports as follows :—

Since the publication of the annual report for 1934, when Dr. Deane reported on the results of the culture of the tubercle bacillus in 70 specimens, a further 87 cultures have been made. The method used has been the same, *viz.*, a modification of Lowenstein's medium supplied to us in special screw-topped bottles to prevent drying during incubation.

Of a total number of 157 specimens submitted for culture, 52 were positive, that is 33·12 per cent.

The specimens submitted and the results were as follow :—

TABLE 29.

Specimen	Number of cultures made	Result		
		Positive	Negative	% Positive
Sputum	62	11	51	17·74
Pus	42	24	18	57·14
Urine...	37	12	25	32·43
Cerebro-spinal fluid...	8	5	3	62·50
Pleural fluid	4	—	4	—
Glands	3	—	3	—
Fæces	1	—	1	—
Total	157	52	105	33·12

Most of the specimens of sputum have been spent from the dispensaries, and have been from cases which have proved to be persistently negative on microscopical examination ; 56 such specimens have been cultured and 8 (14·28 per cent.) were positive.

Microscopical examination of the specimens of pus which have been cultured has, in almost every case, proved to be negative.

Of the 37 specimens of urine put down, 25 were also submitted to the guinea-pig inoculation test at the Public Health Laboratory, Manchester, and the following statement shows the comparative value of the two methods :—

Culture positive,	guinea-pig positive	...	...	6
,, positive,	,, negative	...	...	3
,, negative,	,, positive	...	...	6
,, negative,	,, negative	...	...	10

From this statement, containing a larger number of specimens than dealt with last year, it would seem that the guinea-pig inoculation test is the more reliable, but if the two methods are used a diagnosis can often be arrived at in a much shorter time than if the inoculation test alone were employed.

Of the 8 specimens of cerebro-spinal fluid which were cultured, the 5 which became positive also showed definite disease at post-mortem examination. Of the 3 patients providing negative cultures, one recovered and was, therefore, presumably not a case of tubercular meningitis. The other two proved to be positive cases at autopsy.

Type of bacillus. The majority of the colonies have been the large yellow, cauliflower-like growths typical of the human type of organism. Some of the strains, however, were atypical in character and were thought to be possibly of the bovine type. Further investigation in each case proved them to be " human."

So far, then, we have been unable to produce any positive cultures of the bovine type of bacillus.

According to some authorities, notably Griffith, the glycerine present in the Lowenstein medium makes it unsuitable for the growth of the bovine type of bacillus, and they recommend using a plain egg medium.

It is possible, therefore, that some of the negative results may be due to the bovine bacillus, and all specimens are now put down on both the Lowenstein and the Dorset egg medium. So far, however, sufficient numbers have not been cultured for any informative results to be available.

Mr. McMurray, Mr. Platt, and Mr. Wells, the consulting surgeons, have paid monthly visits. Mr. Bywater, the consulting ophthalmic surgeon, has also attended periodically. I should like to express my thanks to these gentlemen for their valuable help.

Visits were paid to the hospital during the year by members of public bodies and others interested in tuberculosis. These included :—

National Association for the Prevention of Tuberculosis.
College of Nursing (Preston Branch).
College of Nursing (Wigan Branch).
Medical Superintendents' Society (North-Western Branch).
College of Nursing (Blackburn Branch).
St. John Ambulance (Standish Division).
Committee of Victoria Hospital, Blackpool.

The visit of the National Association for the Prevention of Tuberculosis was in connection with their Annual Conference which was held at Southport. Some 95 members came to Wrightington.

Religious services are held at the hospital by the following chaplains :—Rev. C. E. Brett (Church of England), Rev. W. Gainsborough (Nonconformist), and Rev. Father Barry (Roman Catholic). Early in 1936, the Rev. R. Schofield, Church of England chaplain, left the district and was succeeded by the Rev. C. E. Brett. His services to the hospital soon after it was opened, and before we had an officially-appointed chaplain, are gratefully remembered.

Numerous concert parties have visited the hospital to entertain the patients. These were very much appreciated. In addition, during the Christmas season, entertainments were organised by the nursing staff, maids, and patients, when a considerable amount of latent talent was revealed. During the winter months a fortnightly cinema show is held in each ward, the apparatus used being a Kodascope, and we anxiously await the arrival of a portable " talkie " apparatus. The provision of amusements for patients in a non-pulmonary institution differs considerably from that of a sanatorium, in that most of the patients are confined to bed and are not able to assemble in a large room. Consequently, each ward has to be catered for separately.

The adult education classes have been much appreciated by the men and women patients. Mr. James and Mr. Bruce lecture weekly, and Miss Roll and Mrs. Forster attend thrice weekly to give instruction in handicrafts.

A number of the men and women patients who have learnt handicrafts here have been able to supplement their incomes a little by making and selling articles when they have returned home. We know definitely that 18 ex-patients (12 men and 6 women) have been able to dispose of the articles they have made. The women's work includes the making of artificial flowers and jewellery, needlework, hand-painted glass, decorated earthenware jugs, knitted toys, embroidery, and leather work. The men do french-polishing, stool seating, poker work, leather work, and make jewellery and door-mats. This, I think, proves that the handwork the patients do here is definitely worth while, both from the point of view of occupying them during their treatment and also as a means of supplementing their income on discharge.

The education of the children is in the hands of Mrs. Keyworth, who has two assistants. She reports as follows :—

Number of children admitted to registers during the year 1st April, 1935, to 31st March, 1936, 183. Number of children discharged during the same period, 86. Average number on registers for the year, 94. Average attendance for the year, 86.

Extraordinary diligence is shown by the average child during the morning lessons, which are drawn from the usual elementary curriculum. Quiet, steady work is carried on week after week with nothing ostentatious to show, as in the case of handwork, but the developing of general alertness and intelligence in the individual.

The brighter types of children progress by leaps and bounds, being unhampered by those who are not so bright, and they constantly clamour for more and more difficult text books from which to work. The dull or backward child is quickly put at ease when he finds he is not harassed by having to keep step with his more fortunate neighbours, and after a few weeks of healthy conditions of living his brain begins to quicken accordingly. It is a cause of extreme gratification to see him taking his right place amongst the other children and gradually losing his inferiority complex. Many children on admission are exceedingly nervous, and are afraid of coming into the school because they have missed so much of their school life at home and have lost a great deal of ground. Every effort is made to lull their fears and win their confidence, and then it is only a matter of a few weeks before the lost ground is being slowly regained.

The three R's are especially attended to, and no child of suitable age, who on admission can neither read nor write, has been discharged without these accomplishments.

Memory training is also a great feature of the curriculum.

There continues to be a steady demand for the handwork which is executed in the afternoon lessons. The supply, however, fails to meet the demand, as the spirit of commercialism must necessarily be kept away or the lessons would fail in their true purpose. The children work at their own pace—according to ability and position in bed—making their own choice of craft, design, and colouring as much as possible, with suggestions and guidance from their teachers. As a result, the handwork lessons are looked upon as a great treat. Most children have strong creative

instincts, and these children have every opportunity to give full play to their instincts. Their imagination is uncurbed and finds fullest scope in their handwork lessons, which include drawing. Weaving on small looms has been added to the list of crafts taught, and already a few attractive articles have been made on table looms.

An exhibition of handwork was made for the National Association for the Prevention of Tuberculosis on the 29th June, 1935, when the delegates visited the hospital, and on the 4th December, 1935, an invitation was extended by the County Branch of the Educational Handwork Association to show the handwork in the County Offices, Preston, along with that executed in the Preston and District council schools. Our exhibits were received with great appreciation, the soft toys receiving special mention. The Lancashire Education Committee again extended an invitation for the handwork to be exhibited at the Royal Lancashire Agricultural Show held at Burnley during August Bank Holiday week-end, 1935. This was accepted and a large stand was placed at the disposal of the hospital. The girl guides in the hospital also exhibited their school handwork at an exhibition of Guides' Handicrafts held in Wigan on the 14th March, 1936, and secured a first prize and a " highly commended " ; from Wigan the whole consignment was sent on to Liverpool to a County Exhibition of Guides' Handiwork to be held in April. During the year, £42 8s. 10½d. has been handed in for the sale of children's handwork —making a full total of £236 7s. 11d. since the school opened in 1932.

The annual pantomime, which was *Jack and the Beanstalk* this year, was unavoidably postponed until after Christmas, but the enjoyment of the children was not abated. The play was written, produced, and dressed by Miss Crabbe. The parents of the children had an opportunity this year of seeing the pantomime, as it was given again for their benefit on Saturday, 1st February.

Nature walks are taken on suitable days, an unflagging interest being taken in everything seen in the hospital grounds. The school garden made a brilliant patch of colour in front of the children's wards during the summer ; the convalescents work in it when the weather permits. The daily dancing class continues to be looked forward to every day, for it means more than dancing to the children—it means learning to walk correctly.

The percussion band is another source of enjoyment, especially to the bed patients who find it a pleasant outlet for pent-up energy whilst at the same time they are learning the theory of music. Even the youngest members of the community join in the school life with obvious enjoyment. There are dolls, Froebel and Montesorri apparatus, and a dozen other simple forms of occupation to employ the fingers.

Thus, the children's school days are filled, with their minds fully occupied and their disabilities temporarily forgotten. Their high spirits find an outlet through the medium of fingers and brain, turning them to good account.

For apathetic children the teaching staff must be constantly on the *qui vive* and combine firmness with kindness. It is our endeavour to make up much that has been lost to these children, so that they can take their right places when they resume ordinary school life and eventually their places in the social system.

There has been no Board of Education inspection during the school year. The last one took place on the 8th May, 1934.

Records are kept of physically defective children on Form 44a D, issued by the Board of Education.

During the year, 8 probationer nurses on completing their training received the Hospital Certificate, and one was successful in passing the Preliminary State Examination of the General Nursing Council before proceeding to one of the affiliated hospitals for general training.

Dr. Deane was transferred to this dispensary staff in April, 1936, and the post of assistant medical superintendent is now occupied by Dr. Dobson, who was promoted from junior assistant medical officer, the latter post being filled by Dr. Timmis. I should like to express my thanks to them for their help and co-operation, and also to the matron, Miss Moseley, and the nursing and clerical staffs.

Details of special work undertaken at Wrightington during 1935 :—

Artificial pneumothorax :—	
Inductions	3
Refills	41
Sanocrysin injections	88
Uroselectan injections	46
Blood sedimentation tests...	407
Mantoux tests	102
Lipiodol injections	15
X-ray work :—	
Screen examinations	85
Skiagrams	1,411
Sputum examinations (positive, 22 ; negative, 45)	67

Numbers of patients afforded special treatment in Wrightington for the first time during 1935 :—

Artificial pneumothorax :—	
Attempted	3
Satisfactory	3
Gold salts (sanocrysin)	12
Tuberculin	14

Numbers of patients in the hospital on the 31st December, 1935, who were receiving special treatment :—

Gold salts	2
Artificial light	87

Wigan County Dispensary Area.

Area (estimated population 109,506) embraces Ashton-in-Makerfield, Hindley, Ince-in-Makerfield, and Wigan Rural districts.

Dr. Pask reports :—

There is a welcome decrease in the number of definite cases taken on the books compared with previous years.

During the year, lipiodol injections for diagnostic purposes were done in 10 cases as out-patients. The choice of administration is the oral method. The oil is trickled down the pharynx behind the posterior pillars of the fauces, thus obviating any form of trauma as in the crico-thyroid method.

The number of patients attending at the dispensary for artificial pneumothorax refills is steadily increasing.

The assistance given by the Wigan County District Care Committee continues to be appreciated.

Dr. Wallace, who has been assistant tuberculosis officer in the Wigan County Area for the past four years, severed his connection with the Lancashire County Council on the 31st March, 1936, to take up an appointment under the West Sussex County Council, and I much regret the loss of such a valuable colleague. Dr. Deane, who was assistant medical superintendent at Wrightington Hospital, has succeeded Dr. Wallace as assistant tuberculosis officer in this area.

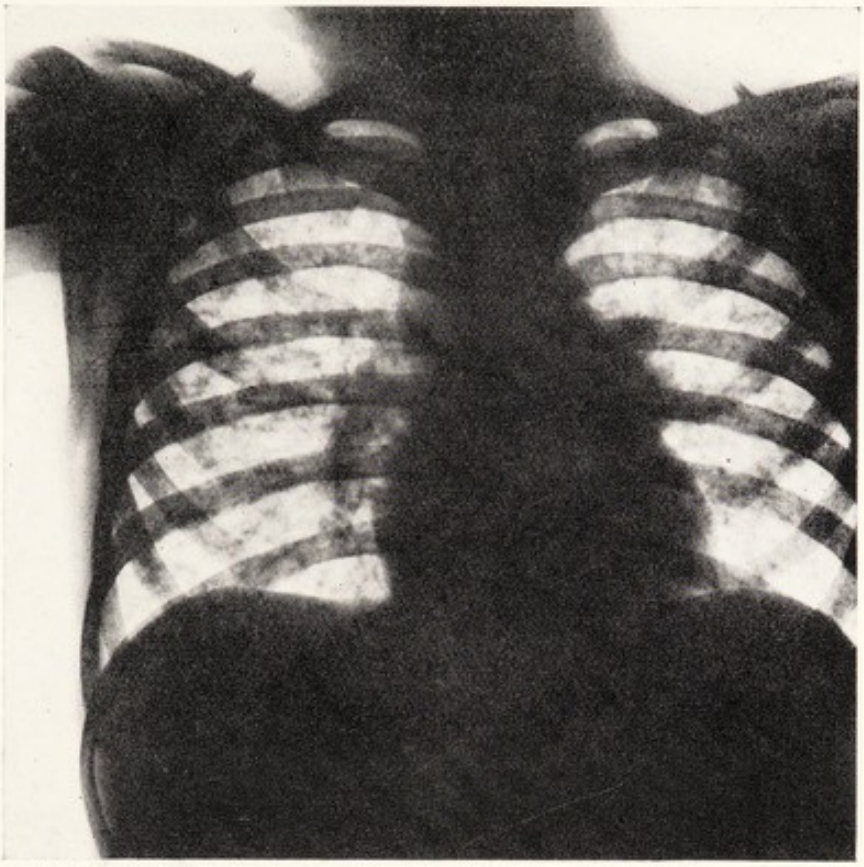
The 1935 annual conference of the National Association for the Prevention of Tuberculosis was held at Southport, and, on the 29th June, 22 delegates attending the conference visited the Wigan Dispensary and were received by Sir Thomas Tomlinson and Dr. Cox, who addressed them on the working of the County tuberculosis scheme. A series of interesting skiagrams was afterwards shown, and several patients who had received treatment at the Wigan Dispensary were in attendance. The delegates later made a tour of the premises before proceeding to Wrightington Hospital.

Skiagrams W 5 (a), 5 (b), 6 (a) and 6 (b) are here inserted of two interesting cases.

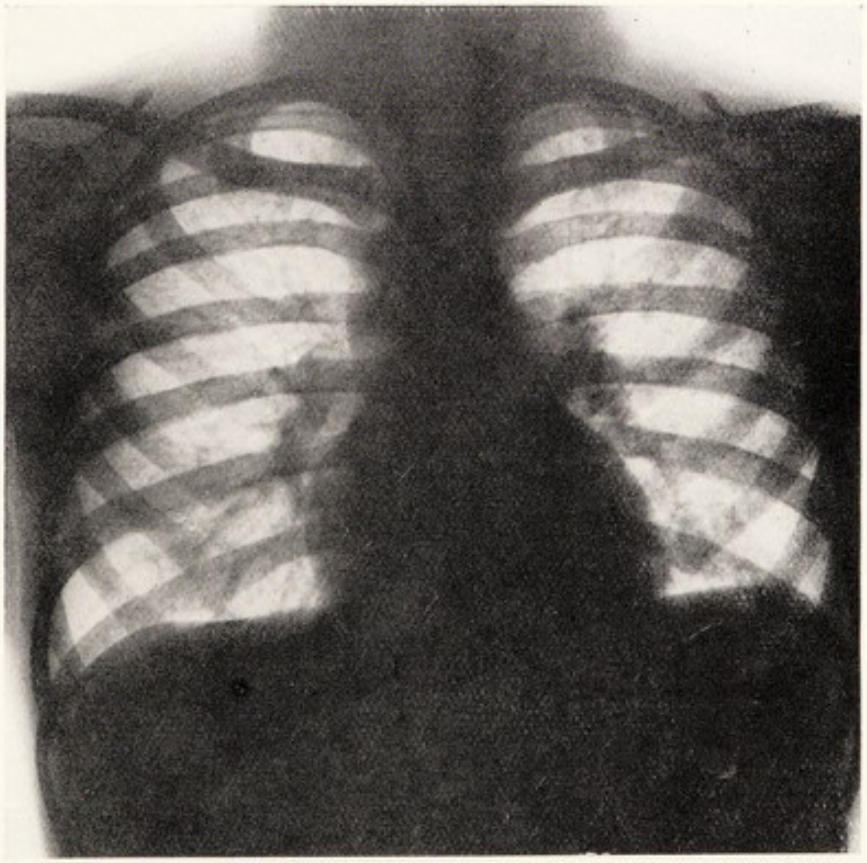
The following conditions were treated at the Wigan Dispensary Light Clinic during 1935 :—Lupus, tuberculous adenitis with and without abscess formation, erythema nodosum, tuberculous peritonitis, and tuberculous osteitis with sinuses.

No particular change in the form of treatment has been made during the year, and we have continued to use both grade A and grade C carbons for general light baths. Very little difference in the actual results from these two types of carbons has been noted, but the grade C carbon, with its shorter exposure of half-an-hour, has been found to be a convenience for patients who may be working and can ill afford the time to attend at the light centre for long exposures.

The number of lupus cases attending the dispensary has now diminished considerably, partly as the result of Moogrol treatment which has been described in previous reports. Certain of these cases, however, are still found which respond to local applications from the Kromayer lamp. It has been found also that treatment with the Jesionek mercury vapour lamp frequently hastens the healing of the skin-cracks, which appear sometimes in old-standing lupus cases and are so difficult to cure.

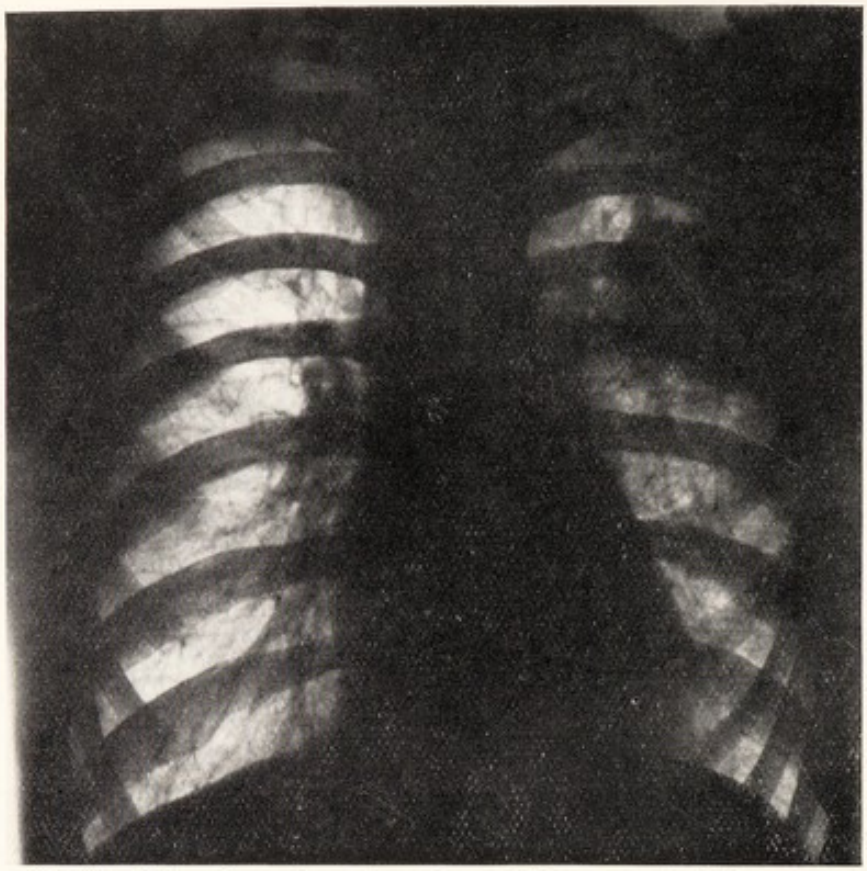


W.5.(*a*).—B.G., female, aged 14. Chronic miliary tuberculosis. First seen 3–1–35, 11 weeks after an attack of "congestion of the lungs". No definite abnormal physical signs were detected in the chest. Skiagram taken 14–5–35 shows a typical picture of miliary tuberculosis; non-pulmonary disease (peritoneum and glands neck) was also diagnosed at this time.

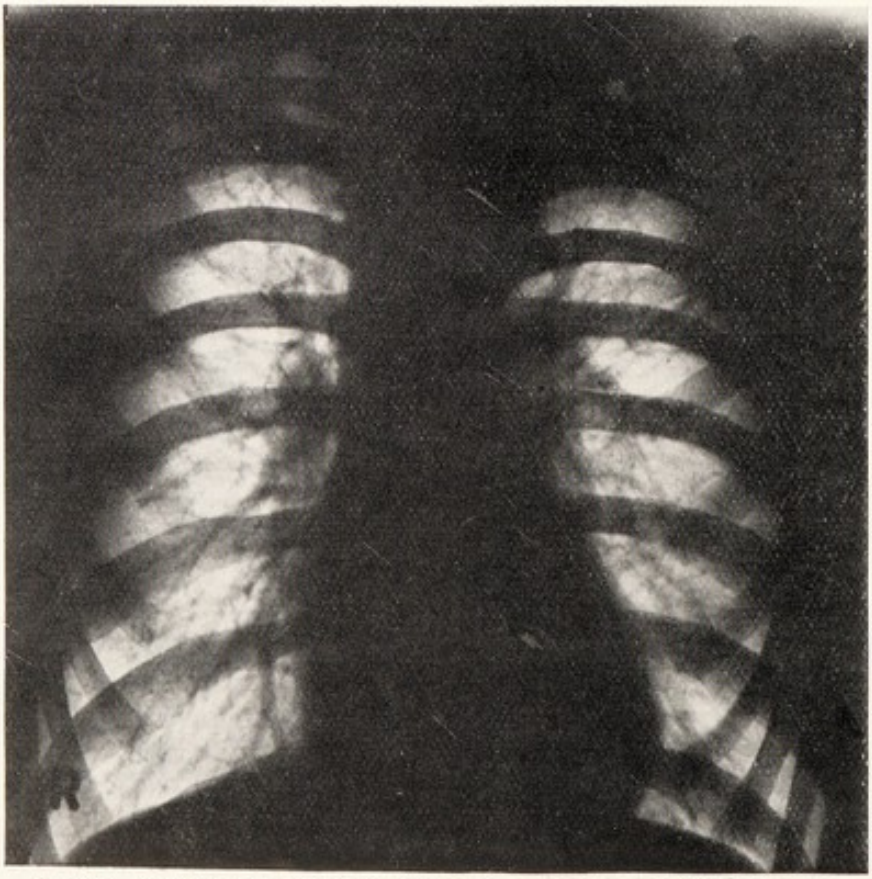


W.5.(*b*).—Same patient. Skiagram taken 31–3–36, after 11 months' institutional treatment (Wrightington Hospital 7 months, Oubas House Sanatorium 4 months); note disappearance of the extensive mottling on both sides. Patient gained a stone in weight.

[*Skiagrams taken at Wrightington Hospital.*]



W.6.(*a*).—T.H., male, aged 21. Lung abscess. History: 4 weeks before examination hurt his left side whilst lifting a side of beef; slight cough and sputum; 14 days after the accident spat up a quantity of copper-coloured offensive sputum. Clinical examination: diminished expansion at the left apex with poor air entry and impaired percussion note, with a few indefinite crepitations in the second interspace. Sputum negative. Skiagram taken 3–8–35 shows a lesion at the left apex with a cavity containing a fluid level. Admitted to Aitken Sanatorium for 3 months' observation.



W.6.(*b*).—Same patient. Skiagram taken 30–11–35 shows complete disappearance of the lesion. Considerable improvement. Weight gained 14 lbs. Cough and sputum disappeared.

[*Skiagrams taken at Wrightington Hospital.*]

Cases of tuberculous adenitis with softening have frequently been subjected to minor surgical procedures, and, here again, it has been noticed that the mercury vapour light hastens the healing process after the major part of the disease has been eradicated.

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1935 (Definitely tuberculous, 697 ; doubtful, 4.)		701
Examinations by tuberculosis officer at—	Examinations of *new persons* and *new contacts* for diagnosis.	Re-visits or re-attendances of "*old*" *cases* and "*old*" *contacts*.
Patients' homes	92	280
Wigan Dispensary	259	1,835
Attendances of patients at the Wigan Dispensary for artificial light treatment (90 individual patients)		3,293
Attendances for artificial pneumothorax treatment (15 individual patients)		167
Attendances for moogrol treatment		207
Care committee meetings attended by—		
(*a*) Tuberculosis officers		8
(*b*) Tuberculosis health visitors		19
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals		23
Special visits by tuberculosis officers (*i.e.*, interviews with medical officers of health, general hospital officials, &c.)		1
Visits by dispensary nurses to patients' homes—		
Routine visits	2,675	3,128
Application of surgical dressings	178	
Adjustment of splints and surgical appliances	196	
Other actual nursing	79	
Patients' dispensary attendances for attention by nurses—		
Application of surgical dressings		43
Sanitary defects reported to the local medical officers of health		11
Sanitary defects which after notification were remedied		5
Disinfections carried out by local sanitary authorities		122
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment *before* statutory notification		92·5%

XX.—CHADDERTON PULMONARY HOSPITAL, NEAR OLDHAM.

Visiting Medical Superintendent ... DR. E. T. HOLDEN.
Matron ... ... MISS I. FELSTEAD.

An agreement was made on the 1st October, 1919, with the Chadderton, Royton, and Crompton Joint Hospital Board for the use of the buildings at Racefield, erected as a smallpox hospital, for the treatment of patients suffering from pulmonary tuberculosis. Accommodation is provided for 44 female patients. The County Council are under an obligation to vacate the premises in case of an epidemic of smallpox.

The weekly maintenance charge for 1935–36 was £2 1s. 5d. per patient.

The average length of stay of patients at Chadderton during 1935 was as under :—

Patients discharged	274 days.
Patients who died in the hospital	165 days.
Observation cases discharged	82 days.

Dr. Holden reports as follows :—

During the year, 63 patients were admitted, 38 were discharged (including four who were transferred to other institutions), and 25 died ; in addition, three cases sent in for observation and diagnosis were discharged. Of the 25 patients who died, 8 had been in the hospital for under one month and four for under two months.

It has been my endeavour at Chadderton during the period under review to place every patient on some special form of treatment irrespective of the nature and extent of the pulmonary lesions, unless the expectation of life is obviously only a few weeks.

This may seem an unwarrantably optimistic procedure in view of the fact that it is seldom that a patient is admitted with other than bilateral disease, which, in the majority of cases, is extensive. In my opinion, however, the psychological aspect of the treatment of these advanced cases is very important. Patients can rarely be persuaded to submit to the ordinary hospital routine of rest, good feeding, etc., for a sufficiently long period to be of permanent benefit

unless it is supplemented by one or other form of special treatment. They are apt to become unsettled, and take their discharge directly they show signs of improvement and are able to get about for part of the day. As a result, in many instances, the period spent in hospital is completely wasted. By the practically universal use of special treatment the morale of the hospital is raised, the patients are more content and stay for a longer period than formerly, and something is done towards eradicating the all too prevalent impression that a pulmonary hospital is an institution to which only hopeless cases are admitted.

The forms of special treatment in use during the year have been artificial pneumothorax, gold salts (sanocrysin) and nordalin.

Artificial pneumothorax. Despite a careful survey of each individual case, it has unfortunately only been considered justifiable to treat six patients by this method during the year, and in two instances the treatment had to be abandoned as unsatisfactory. Two of the successful cases were given gold injections in addition.

Gold salts. Sanocrysin was used and given in the usual manner to 53 patients. The doses employed were 0·01 gm., 0·025 gm., 0·05 gm., 0·1 gm., 0·25 gm., 0·35 gm., and, in selected cases, 0·45 gm. The injections were given at bi-weekly intervals up to a dosage of 0·25 gm., and thereafter at weekly intervals up to a total of between 6·0 gm. and 6·5 gm. The average amount given during a complete course was 6·3 gm.

Treatment had to be abandoned in 13 cases for the following reasons :—Albuminuria, 2 ; dermatitis, 2 ; diarrhœa, 2 ; unsatisfactory general condition, 4 ; transfer to another institution, 1 ; and left at own request, 2. It was found useless to resume treatment even after a long interval as the complication causing abandonment invariably recurred.

Despite the unpromising clinical material, results have been highly encouraging, noteworthy features being :—

(1) General improvement in nearly all cases, and a surprising improvement in some unfavourable cases.
(2) Lessening in amount and improvement in character of the sputum with disappearance of tubercle bacilli.
(3) Considerable improvement in the x-ray appearances in a large percentage of the cases.

I hope to give a more detailed account of sanocrysin therapy when a somewhat larger series of cases has been treated.

Nordalin. The nordalin treatment of tuberculosis consists in the oral administration of three separate tablets :—

(*a*) A tablet containing 0·0025 gm. of " active substance " (a sulphoguaiacolic precipitate of the plasma of specially prepared animals) together with 0·00004 gm. Koch tuberculin—called " nordalin A ".
(*b*) A tablet containing 0·035 gm. of " active substance " but without any tuberculin—" nordalin B ".
(*c*) A lipoidogenous organic extract called " recytel ".

Favourable reports on the treatment have been made by observers on the Continent and by Dr. Gordon Tippett in this country. At the end of 1935, nine patients were receiving nordalin treatment at Chadderton. It is impossible to assess its therapeutic value on such a scanty basis, and it has to be remembered that the cases chosen were those unsuitable for any other form of treatment. Nordalin treatment has, however, been considered sufficiently encouraging to justify its continuance for a further period.

The following shows the amount of special work undertaken at the hospital during the year :—

Artificial pneumothorax—	
Inductions	6
Refills	53
Sanocrysin injections	834
X-ray work—	
Screen examinations	110
Skiagrams	139
Sputum examinations (positive, 160 ; negative, 225) ...	385
Lipiodol injections	1

The numbers of patients in the institution on the 31st December, 1935, who were having special treatment were :—

Artificial pneumothorax	2
Artificial pneumothorax and sanocrysin	2
Sanocrysin	24
Nordalin	9

The introduction of systematic dental treatment has proved a great boon. The dental condition of patients admitted is, on the whole, poor, and even after emergency treatment many patients are definitely dentally unfit unless more radical measures are carried out. As the result of the visits of Mr. J. H. Walker, dentist, this state of affairs has been remedied. Details of the dental treatment given to the patients at Chadderton during 1935 are as follow :—

Number of individual patients treated	69
New dentures provided—complete sets	6
partial sets	4
Repairs to dentures	1
Extractions	156
Fillings	8
Scalings and cleanings	13
Other operations	4
Number of inspections	20

There is little scope for other than the lightest occupational therapy. Recreation facilities include library (343 books being lent out during the year), concerts, whist drives, cinema shows, clock golf, and wireless; there is also a company of girl guides.

Further improvements have been made to the hospital grounds, and two extra huts have been built. Isolation accommodation which previously was greatly lacking has thus been provided without increase in the number of beds.

We were honoured by three visits during the year. On the 8th February, County Councillors H. Bright and E. Clegg visited the hospital, and on the 12th July a special sub-committee of the County Tuberculosis Committee. On the 15th September, the County Tuberculosis Committee together with members of the Chadderton, Royton, and Crompton Joint Hospital Board made an inspection of the hospital.

Our grateful thanks are again due to the County Council for grants towards special Christmas fare, hire of cinema films, and provision of books for the patients and staff; to the various concert parties who have provided entertainment, and to the ministers who have looked after the spiritual welfare of the patients.

I should like also to express my appreciation of the helpful co-operation of my colleagues of Dispensary Area No. 3 and, in conclusion to acknowledge my indebtedness to the matron, Miss Felstead, for her assistance with the x-ray work, to Sister Goodall for cheerfully and competently shouldering the greatly increased clerical and other duties necessitated by the special treatments, and to both these ladies and the staff for their loyal support during the year.

XXI.—HEATH CHARNOCK PULMONARY HOSPITAL, NEAR CHORLEY.

Visiting Medical Superintendent ... DR. J. RIGBY.
(Dr. Rigby is also medical officer to the Chorley Joint Hospital Board).

Matron ... ... MISS H. SINCLAIR.

In 1914, by agreement with the Chorley Joint Hospital Board, the County Council leased 1½ acres of land adjoining the Board's isolation hospital on which they erected, equipped, and furnished two pavilions, dining hall, and additional accommodation for the staff.

The Joint Board are, by agreement, responsible for the maintenance, nursing, and treatment of the patients, the County Council paying to them the cost thereof.

Accommodation is provided for 34 patients—16 men and 14 women in the two pavilions, and four men in wooden sleeping shelters.

The weekly maintenance cost for 1935–36 was £1 18s. 10d. per patient.

The average length of stay of patients at Heath Charnock during 1935 was :—

Patients discharged	244 days.
Patients who died in the hospital	140 days.

Dr. Rigby reports as follows :—

During the year, 45 patients were admitted (30 men and 15 women), 30 were discharged, and 16 died.

Many beds, especially on the female side, are occupied by chronic cases in an advanced stage of the disease who have no suitable alternative accommodation to which they could be sent, and therefore remain here for long periods.

Of late, the patients admitted have not been in such an advanced stage as previously. As a result, two were selected as suitable for gold treatment and were able to take the full course of nine injections of solganol. One patient, whose condition was much improved, was discharged, and the other is still in the hospital having deteriorated after temporary improvement.

The specimens of sputum examined numbered 186 (132 positive and 54 negative).

The x-ray examinations were carried out at the Wrightington Hospital, but arrangements have now been made for this work to be undertaken at the Chorley Dispensary.

A great improvement has been effected by the installation of electric light in place of gas.

A further improvement will be made by transferring the nurses' sleeping quarters from the sanatorium grounds into the new extension to the administrative block of the adjoining infectious diseases hospital. This extension, consisting of twelve bedrooms and the necessary dining and sitting-rooms, will, it is hoped, be completed by the middle of 1936. Part of the building vacated will be transformed into a treatment block, where we hope to instal an x-ray apparatus. The remaining space will be converted into a recreation room for the women patients, and will supply a much needed want.

Canon W. R. Coombs, Vicar of Adlington, who was appointed honorary chaplain, and Father W. Formby, of Chorley, visit the hospital and administer to the spiritual needs of the patients.

The social side has been very well attended to by the staff. There have not been many concerts in the hall because of the number of bed patients who could not attend, but whist drives and entertainments in which they could take part have been arranged. During the summer, the usual annual events took place. The garden party and teas on special visiting days were again successful, and out of the proceeds a new all-mains wireless set was purchased. For the annual trip the patients were taken to Southport, and the season was ended by a visit to the illuminations at Blackpool.

XXII.—COST OF THE TUBERCULOSIS SCHEME.

The report so far has dealt entirely with measures for the prevention and treatment of tuberculosis, and with vital statistics, but it is also desirable that the cost of the scheme should be recorded.

The following statement shows the expenditure under the principal headings incurred by the Lancashire County Council on the operation of their tuberculosis scheme :—

	1934–35 £	1935–36 £
1. Maintenance of 24 dispensaries (including artificial light departments, x-ray plants, salaries of staff, provision of special nourishment) and home supervision of patients, average 7,425	45,374	46,071
2. Accommodation at sanatoria and hospitals provided, leased, or rented by the County Council for the treatment of patients suffering from tuberculosis (average number of beds occupied :—1934–5, 929 ; 1935–6, 969) ...	135,763	138,892
3. Patients' travelling expenses (proceeding to and from institutions, and for special treatment at dispensaries)...	3,087	2,979
4. Administration expenses (including salary of Central Tuberculosis Officer and staff, travelling expenses, printing, stationery, proportion of cost of County Architect's, Clerk of Council's, and County Treasurer's departments) and research	13,254	13,562
Total gross expenditure	£197,478	£201,504
Less income from beds rented to other authorities, Ministry of Pensions in respect of tuberculous ex-service men, sale of produce, rents from land, etc....	6,214	7,622
Total net expenditure	£191,264	£193,882
Equivalent rate in the £	4·93d.	4·88d.

It should be remembered that tuberculosis is one of the services aided by the General Exchequer Contribution which succeeded the 50 per cent. grant discontinued by the Local Government Act of 1929. It is not possible to state what proportion of the General Exchequer Contribution is in respect of tuberculosis expenditure.

The weekly maintenance charges for patients at the several sanatoria and hospitals of the Lancashire County Council are included in the report for the particular institution.

XXIII.—CARE WORK.

What is Care Work?

A definition of care work is not easy to give, but a comprehensive one might be :—All that part of the anti-tuberculosis scheme which does not directly deal with diagnosis and special treatment in hospital, sanatorium or dispensary. More particularly it may be described as the efforts directed to attain or maintain the patient's social welfare, so that he and his household may be in the best environment to take advantage of medical knowledge concerning tuberculosis. Assuming the above definition is reasonable, it is clear that care work is not only very comprehensive but consists of many factors, even, for example, measures taken to prevent spread of the disease in patients' homes.

In the country generally, the dividing line between care work under the official scheme and care work done by voluntary committees varies considerably. In Lancashire, however, since the inception of the scheme and with subsequent expansion, a considerable proportion of items of a care nature are done under the official scheme. The following statement shows readily where the division takes place in Lancashire :—

(*a*) *Items of Care Work done for patients in the whole Administrative County under the OFFICIAL SCHEME (with approximate yearly costs) :*

1. Provision of special nourishment (milk) *on medical grounds* (1935, £2,600).
2. Thermometers, paper handkerchiefs, and sputum cups (1935, £950).
3. Appliances, *e.g.*, splints, crutches, supports, surgical boots (1935, £650).
4. Dressings, if patients are suffering from " open " surgical tuberculosis.
5. The loan of bedsteads and mattresses, and nursing requisites (1935, £50 for replacements).
6. Payment of railway fares to and from institutions, and cost of removal of patients by ambulances or taxis (1935, £3,400).
7. Training and re-settlement in a tuberculosis colony (1935, £800).
8. Dental attention (1935, for dispensary patients £225 ; for institutional patients £455).
9. Wooden sleeping shelters (1935, £75 for repairs and removals).
10. Public lectures—propaganda—(1935, £60).

(*b*) *Items of Care Work, additional to (a) above, done in the whole Administrative County either by the voluntary CARE committees or through the dispensary CARE organisation :*

11. Provision of milk, meat, and groceries *on economic grounds* for patients or family.
12. Provision of clothing and footwear.
13. Occasional payment of rent.
14. The committees occasionally purchase blankets, invalid carriages, and nursing requisites, articles which could be paid for out of the tuberculosis funds.

Outline of the Lancashire Care Scheme.

The statutory power for undertaking care work is contained in the Public Health (Tuberculosis) Act of 1921 which states (Sec. 2): "The council of a county or county borough shall have power to make such arrangements as they think desirable for the after-care of persons who have suffered from tuberculosis."

The extended care scheme adopted by the County Council in August, 1924, is carried out in accordance with the following policy :—

(a) For the portions of the County where the 17 voluntary care committees (covering a population of 770,295) already function, the work is done by these committees, and annual grants are made to them by the County Council of 33⅓ per cent. of their expenditure on assistance to patients.

(b) For the remainder of the County, where no voluntary care committees have been established (at present comprising a population of 1,050,805), the work is done through the dispensary organisation under the direction of the Central Tuberculosis Officer, based on instruction from the County Tuberculosis Committee.

(c) Encouragement and assistance, as heretofore, will be given to the formation of new voluntary care committees, and from time to time as committees are approved they will assume responsibility for the care work in their particular districts in succession to the dispensary organisation.

Before 1924, no money from the tuberculosis funds of the County Council was available for care work in the areas where there were no voluntary care committees.

The principle underlying the method of allocating grants for care work is that proportionately the same amount of money from the tuberculosis funds is available for the whole County whether covered by voluntary care committees or not. This ensures, also, that the voluntary committees have the benefit of all moneys collected by them from other sources. The matter may be pictured more clearly by taking two towns, say, "A" with a care committee who spend £99 per annum (£66 raised locally and £33 granted from the County Council), against "B," without a care committee, for whose patients £33 is granted from the County Council.

Enquiry is often made as to the difference in benefit which a patient would receive if dealt with by a voluntary care committee as against the dispensary organisation: do the patients in town "B" suffer through the lack of voluntary funds? The following statement has been prepared to answer the question :—

Voluntary care committee.	*Dispensary organisation.*
Through having larger funds care committees can be more generous.	The tuberculosis officers work to a family income scale.
There is reluctance to refer cases to Public Assistance Committee or Unemployment Assistance Board unless they are likely to require substantial grants.	The tuberculosis officers, to conserve their relatively small funds, refer cases more quickly to the Public Assistance Committee or Unemployment Assistance Board.
There is no restriction on the amount of help which care committees can give—it depends entirely on their resources.	Where patients are already in receipt of relief, the tuberculosis officer recommends the Public Assistance Committee or Unemployment Assistance Board to make a grant for extra food.

The care committees enjoy almost complete autonomy. No stipulation has been imposed as to the collection of funds; in fact, the only condition of recognition of a voluntary committee is that they shall appoint the consultant tuberculosis officer of the area as medical adviser and shall issue an annual report and balance sheet.

The annual reports and balance sheets of the various committees are considered by the County Tuberculosis Committee, who have expressed their appreciation of the helpful voluntary work carried out.

The following is a list of the existing voluntary care committees, the populations served, the number of patients assisted, and the amounts expended on assistance during 1935 :—

TABLE 30.—*Work done by voluntary care committees.*

Name of committee.	Estimated population served 1935.	Number of individual patients assisted during 1935.	Expenditure on patients during 1935.
			£ s. d.
Ashton-under-Lyne and District... ...	68,600	57	203 15 4
Chorley and District	72,125	43	305 2 8
Earlestown, Newton and District ...	22,896	11	19 8 6
Egerton, Eagley, Dunscar and District...	5,623	—	—
Farnworth and District	67,462	32	90 11 9
Golborne	14,100	13	26 2 4
Horwich	15,100	20	148 13 4
Huyton-with-Roby District	9,390	5	29 17 8
Lancaster and District	93,751	15	123 15 7
Leigh and District...	84,630	112	151 2 9
Prescot and District	23,052	11	84 8 7
Prestwich	29,120	2	6 19 4
*Radcliffe, Whitefield and District Relief Fund for Consumptives ...	38,620	26	150 1 11
Stretford Civic Guild of Help	59,250	50	61 16 9
Westhoughton	15,570	10	24 7 4
Widnes	42,100	36	98 13 2
Wigan County District	109,506	77	55 6 0
TOTAL	770,295	520	£1,580 3 0

* Relates to year ended 31st March, 1936.

In addition to the grant-in-aid of 33⅓ per cent. from the County Tuberculosis Committee, the cost of all stationery, printing, advertising, postages, and of clerical assistance is borne entirely by the Tuberculosis Committee. This also applies, of course, to the care work done by the dispensary organisation.

For most of the care committees, the tuberculosis health visitor or the dispensary clerk is the hon. secretary or assistant hon. secretary ; the consultant tuberculosis officer is the medical adviser.

The accounts of the care committees are subject only to audit by each care committee's own appointed auditor. On the other hand, the accounts of the dispensary organisation are subject to audit by the County Auditor and the Government District Auditor.

Objects of Voluntary Care Committees.

The following are in general the objects for which the voluntary care committee may be said to stand :—

(1) To assist in the purchase of clothing which patients need when they go to a sanatorium or hospital.

(2) To provide food and clothes for poor patients who are receiving treatment at home.

(3) To give assistance (in kind) to dependants, so as to enable patients, for whom institutional treatment has been recommended, to take advantage of the opportunities provided under the County scheme.

(4) To assist patients, who are sufficiently recovered, to obtain suitable employment.

(5) To give suitable advice and encouragement to patients and their friends, and generally to assist the dispensary staff in the enlightenment of the public both as to the laws of health and the facilities for treatment.

Objects of County Care Fund.

In the areas without care committees the County Council have charged the tuberculosis dispensary staff with the duty of carrying out the relief work. Grants to necessitous patients or their dependants are made on the recommendation of the consultant tuberculosis officers, with the following general objects :—

(*a*) To assist in the purchase of clothing which patients need when they go to a sanatorium or hospital.

(*b*) To provide food and clothes for necessitous patients who are receiving treatment at home, and for those who have returned from an institution with no chance of resuming work.

(*c*) To give assistance (in kind) to dependants, so as to enable patients, for whom institutional treatment has been recommended to take advantage of the opportunities provided under the County scheme.

Co-operation with Other Bodies.

With the transfer of the Poor Law functions to the County Council, arrangements have been made to continue co-operation with the Public Assistance Committee and their Guardians Committees so as to prevent overlapping in rendering assistance in necessitous or destitute cases; liaison has also been established with the newly-formed Unemployment Assistance Board.

County Care Fund.

The following Table 31 shows the position of the remainder of the dispensary areas not covered by voluntary care committees and the amount of the grants made by the County Tuberculosis Committee :—

Dispensary Area.	Estimated population 1935.	Total population covered by care committees 1935.	Balance of population to come under dispensary organisation 1935.	Amount of grant available for area not covered by care committees, calculated on population.
				£
No. 1 ...	249,893	180,976	68,917	49
No. 2 ...	330,906	5,623	325,283	238
No. 3 ...	371,246	135,740	235,506	170
No. 4 ...	364,632	241,012	123,620	88
No. 5 ...	269,595	97,438	172,157	122
Furness .	38,066	—	38,066	28
Fylde ...	87,256	—	87,256	62
Wigan County	109,506	109,506	—	—
Total ...	1,821,100	770,295	1,050,805	£757

Any grant made by the tuberculosis officer to a tuberculous patient is reported to the local Guardians Committee of the Public Assistance Committee if the patient or family are already receiving relief from the Public Assistance Committee.

During 1935, assistance (mainly in the provision of milk, groceries, and clothing) was afforded through the dispensary staff to 231 individual patients, the amount expended being £721 4s. 10d.

Visits by Voluntary Care Committees.

The following visits of voluntary care committees to County sanatoria and hospitals have taken place :—

Horwich Care Committee	...	Lancaster Pulmonary Hospital	25th May, 1935.
		Withnell Pulmonary Hospital	6th June, 1936.
Ashton-under-Lyne and District Care Committee	...	Withnell Pulmonary Hospital	4th June, 1935

The County Tuberculosis Committee encourage these visits as they enable the members of the care committees to see at first hand the institutional side of the scheme.

Handicrafts.

At the Wrightington Hospital children and adults are trained in handicrafts by the teachers and the instructresses. When the adult patients return to their homes, it is known that a number of them continue the work they have learnt and are able to sell the articles they have made. The medical superintendent of the Wrightington Hospital reports that 18 adults (12 men and 6 women) are known to be benefiting by the handicrafts taught at the hospital. The following are the subjects in which instruction is given: Women—making of artificial flowers and jewellery, needlework, embroidery, hand-painted glass, decorated earthenware jugs, knitted toys, and leather work; men—french polishing, stool seating, poker work, leather work, jewellery, and making door mats. Thus, the handwork which the patients learnt at Wrightington is definitely worth while, both from the point of view of occupying them during their treatment and also as a means of supplementing their income after discharge.

XXIV.—DENTAL TREATMENT.

Patients eligible for dental treatment are those who, in the opinion of the medical superintendent or the tuberculosis officer, are unable to derive full benefit from their treatment for tuberculosis owing to defective teeth. Patients already covered by dental schemes of other bodies, *e.g.*, school children at home and tuberculous pensioners, are excluded from benefit. For insured persons who are tuberculous many approved societies make a contribution towards the cost of dental attention required.

At the following County sanatoria and hospital the dental work is carried out by a visiting dentist:—High Carley, Oubas House, Elswick, and Wrightington. At the other County institutions, *e.g.*, Chadderton, Heath Charnock, Lancaster, Peel Hall, Withnell, and Wolstenholme Pulmonary Hospitals, a local dentist is called upon to visit as and when required.

The statement below shows the dental work carried out during 1935, under the scheme approved by the County Council:—

TABLE 32.

Institution.	Number of individual patients who received dental attention.	New dentures provided.		Repairs to dentures.	Extractions.	Fillings.	Scalings and cleanings	Other operations.	Inspections.
		Complete sets.	Partial sets.						
High Carley ...	205	21	15	14	331	66	2,495	410	101
Oubas House (Children)	11	—	—	—	11	1	—	9	1
Elswick	131	3	7	3	121	5	42	66	98
Wrightington ...	137	19	8	12	539	48	435	83	508
Other sanatoria and hospitals	163	23	9	18	450	31	20	7	71
Dispensary patients	34	12	16	6	240	2	—	—	—
TOTAL	681	78	55	53	1,692	153	2,992	575	779

The dental scheme, considering the benefit derived by the patients, has proved economical, and continues to be justified.

XXV.—INSTITUTIONAL ACCOMMODATION.

On the 31st December, 1935, there were altogether 914 beds at sanatoria and hospitals occupied by County patients, as compared with 911 at the end of 1934. The number of beds occupied by pulmonary cases worked out at 77 per 100 pulmonary deaths; for non-pulmonary tuberculosis the proportion was 133 beds per 100 non-pulmonary deaths.

Table 33 below gives a summary of the beds occupied at the end of 1935 at the several types of institutions, the names of which are contained in Appendix XI :—

Type of institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
Institutions for pulmonary tuberculosis	592	24	—	6	622
Training colonies	6	—	5	—	11
Institution with accommodation for combined tuberculosis	20	5	—	—	25
Beds occupied by observation cases	8	4	1	4	17
Institutions for non-pulmonary tuberculosis ...	3	—	91	145	239
Total	629	33	97	155	914
	662		252		

The number of beds occupied fluctuates during the course of the year, there being a greater demand for beds in the summer than in the winter. In July 1935, the beds occupied totalled 1,018, and in July 1936, 976.

The number of beds in occupation by County patients on the 31st December of each year is as follows :—1926, 825; 1927, 819; 1928, 858; 1929, 874; 1930, 906; 1931, 875; 1932, 931; 1933, 875; 1934, 911; and 1935, 914.

Of the 914 beds occupied, 683 were in sanatoria or hospitals belonging to the County Council, and 231 were in non-County institutions.

Of the 662 beds occupied by pulmonary patients, 81 per cent. of the cases were classified as " T.B. plus," that is, sometime during treatment their sputum was positive.

The list of patients waiting for institutional treatment averaged at monthly periods during 1935, was as follows :—Sanatoria, adults 24; pulmonary hospitals, adults 19; special hospitals, adults 16, children 10; general hospitals, adults 1.

A return was obtained from the medical superintendents of Public Assistance hospitals of the number of patients suffering from tuberculosis chargeable to the Lancashire County Council who were in such hospitals on the 31st December, 1935. The following statement has been prepared from the returns so furnished :—

TABLE 34.

	Patients in Public Assistance hospitals on 31st December, 1935.				
	Adult males.	Adult females.	Children.	Total.	
Pulmonary tuberculosis	17	10	—	27	57
Non-pulmonary tuberculosis ...	8	12	10	30	

The foregoing total of 57 cases (compared with 42 at end of 1934) in Public Assistance hospitals contains those tuberculous patients whose mental condition, or other complication, does not permit of their being treated in sanatoria and hospitals. Every effort is made to transfer as soon as possible patients who require special treatment for tuberculosis to the sanatoria and hospitals provided for such treatment.

Further particulars of the residential treatment for tuberculous patients in Public Assistance hospitals are given in Appendix VII.

XXVI.—TREATMENT, OCCUPATIONAL TRAINING, AND VILLAGE SETTLEMENTS.

A complete tuberculosis scheme has facilities for sending carefully selected patients to village settlements where they can undergo a probationary period of treatment combined with training to fit them to live with their families in cottages forming part of the village settlement, or, if single, to enter the hostel in such settlement. The main factors to be considered when making the selection are: the inadvisability of the patient returning to his normal occupation, the unsuitability of the home circumstances of the patient, temperamental suitability, the medical condition, age of the patient, and the likelihood of the patient and family to become successful settlers.

So far, the principal village settlements established in England are: Papworth Village Settlement, Cambridge (Medical Director, Sir Pendrill Varrier-Jones); British Legion Village, Preston Hall, Aylesford, Kent (Medical Director, Dr. J. B. McDougall); East Lancashire Tuberculosis Colony, Barrowmore Hall, Chester (established and administered by the Order of St. John and the British Red Cross Society—Medical Director, Dr. E. L. Sandiland).

Arrangements exist for County patients to be sent to each of these settlements upon agreed terms, and the following statement shows the number entering the settlements and the number who still remain:—

TABLE 35.

Name of settlement.	Number of patients who entered the settlement to 31-12-35.	Number of patients who left the settlement.	Number of patients who died in the settlement.	Number of patients in the settlement on 31-12-35.
Papworth Village Settlement	2	—	1	1
British Legion Village ...	4	1	1	2
East Lancashire Tuberculosis Colony	22	6	4	12

A village settlement with its associated workshops, seeking orders in the open market at competitive rates, makes this aspect of a settlement similar to a large business with consequent commercial risks. It is generally agreed that local authorities, owing to methods of public finance, to mention but one factor, are unable themselves to manage village settlements, hence co-operation with settlements under the control of voluntary bodies is advisable.

On the 1st July, 1936, revised arrangements with the Committee of the East Lancashire Tuberculosis Colony were adopted concerning the admission of County patients to the sanatorium, industries, and settlement.

The arrangements embrace the following conditions :—

SANATORIUM SECTION.—The maintenance charge to accord with the annual return to the Ministry of Health.

INDUSTRIES.—Patients and potential settlers of commercial value in the industries to be charged for at a lower maintenance rate.

SETTLEMENT.—Payment at a flat rate (£1 per week for married men and 10s. per week for unmarried men) for a period of five years, with the proviso that any patient relapsing and re-entering the sanatorium section should be paid for at the maintenance rate applicable to sanatorium patients. The return to the normal population of patients who have recovered from tuberculosis, including the possibility of a rehabilitation grant by the County Council to any recovered patient leaving the settlement.

Although settlement facilities are important in a tuberculosis scheme, the proportion of patients dealt with is very small. At the most it can be said that the proportion of sanatorium patients suitable for settlement will not exceed 5 per cent.

Experience shows that many patients show a disinclination to leave the locality in which their homes are situated to enter with their families a village settlement many miles away.

In addition to patients who receive training in a workshop preparatory to entering a settlement and to those who receive treatment and undertake work as occupational therapy, arrangements exist for suitable patients, both pulmonary and non-pulmonary, to receive training in a definite occupation in order to fit them to return to useful employment. Patients sent for such training combined with treatment are youths who have had little or no employment and who require occupational training under sanatorium conditions. The following statement shows the patients who have been afforded training combined with treatment :—

TABLE 36.

Name of institution.	Number of patients admitted to 31-12-35.	Patients discharged.		Number of patients undergoing training on 31-12-35.
		Training completed.	Training terminated before completion of course.	
Burrow Hill Sanatorium Colony	8	3	4	1
Derwen Cripples' College	9	1	3	5
St. Vincent's Orthopædic Hospital	2	1	1	—

Here again every care has to be taken in selecting patients to undergo training, as much public money can be expended in attempting to train persons who prove to be unsuitable.

XXVII.—HOME TREATMENT AND DISPENSARY TREATMENT OR SUPERVISION.

All notified cases of tuberculosis while at home are under the supervision of the tuberculosis officers and tuberculosis health visitors, in addition to the treatment that may be obtained from their medical attendants. Ordinary medical treatment at dispensaries (as distinct from special treatment such as artificial light and artificial pneumothorax) has never been undertaken, unless the patient has no doctor or requires some special form of treatment. The number of consultations with medical practitioners in 1935 was as follows :—Personal, 618 ; otherwise, 5,404 ; total, 6,022.

Appendix I.

Death-Rates for 1935 from tuberculosis in 110 urban and rural districts in Lancashire, and in the 8 County dispensary areas.

Sanitary district.	Estimated population, 1935.	Pulmonary tuberculosis.			Non-pulmonary tuberculosis.	
		Number of deaths, 1935.	Death-rate per 1,000 of population, 1935.	*Average* death-rate 5 years, 1930–34.	Number of deaths, 1935.	Death-rate per 1,000 of population, 1935.
URBAN						
Abram	6,576	2	0·30	0·52	—	—
Accrington (B)... ...	40,960	21	0·51	0·52	2	0·04
Adlington	4,117	1	0·24	0·75	—	—
Ashton-in-Makerfield ...	20,040	8	0·39	0·40	5	0·24
*Ashton-under-Lyne (B)	50,220	25	0·49	0·66	3	0·05
Aspull	6,739	5	0·74	0·58	4	0·59
Atherton	20,520	9	0·43	0·38	1	0·04
Audenshaw	10,380	4	0·38	0·58	2	0·19
Bacup (B)	20,040	11	0·54	0·56	2	0·09
Barrowford	5,050	3	0·59	0·29	2	0·39
Billinge and Winstanley	5,311	4	0·75	0·57	—	—
Blackrod	3,417	1	0·29	0·49	—	—
Brierfield	7,520	2	0·26	0·66	1	0·13
Carnforth	3,193	2	0·62	0·36	—	—
Chadderton	27,690	10	0·36	0·57	—	—
*Chorley (B)	29,910	11	0·36	0·46	4	0·13
Church	5,814	3	0·51	0·52	2	0·34
Clayton-le-Moors ...	7,499	3	0·40	0·39	1	0·13
Clitheroe (B)	11,580	10	0·86	0·41	1	0·08
*Colne (B)	23,090	16	0·69	0·73	4	0·17
Crompton	14,060	7	0·49	0·51	3	0·21
*Dalton-in-Furness ...	10,270	4	0·39	0·88	1	0·09
Darwen (B)	33,670	10	0·29	0·35	1	0·02
Denton	18,770	7	0·37	0·55	3	0·15
Droylsden	17,100	8	0·46	0·77	6	0·35
Eccles (B)	42,900	14	0·32	0·63	4	0·09
Failsworth	16,740	12	0·71	0·74	4	0·23
Farnworth	28,170	7	0·24	0·51	2	0·07
Fleetwood (B)	24,030	11	0·45	0·63	2	0·08
Formby	8,584	4	0·46	0·55	1	0·11
Fulwood	10,010	3	0·29	0·18	—	—
Golborne	14,100	7	0·49	0·65	2	0·14
Grange-over-Sands ...	2,347	3	1·27	0·60	—	—
Great Crosby ...	24,100	9	0·37	0·40	3	0·12
Great Harwood ...	11,750	5	0·42	0·43	2	0·17
Haslingden (B) ...	15,920	4	0·25	0·48	1	0·06
Haydock	10,470	6	0·57	0·57	—	—
Heywood (B)	26,010	17	0·65	0·67	2	0·07
Hindley	20,810	13	0·62	0·72	4	0·19
Horwich	15,100	3	0·19	0·45	1	0·06
Huyton-with-Roby ...	9,390	5	0·53	0·57	3	0·31
Ince-in-Makerfield ...	21,920	17	0·77	0·79	—	—
Irlam	14,000	9	0·64	0·51	2	0·14
Kearsley	10,990	4	0·36	0·42	—	—
*Kirkham	4,169	2	0·48	0·57	1	0·24
*Lancaster (B)	46,570	23	0·49	0·51	6	0·12
Lees	4,453	3	0·67	0·54	—	—
Leigh (B)	45,240	20	0·44	0·55	1	0·02
Leyland	11,160	3	0·26	0·34	—	—
Litherland	17,100	8	0·46	1·15	5	0·29
Littleborough	11,640	5	0·42	0·27	1	0·08
Little Lever	4,879	3	0·61	0·63	—	—
Longridge	4,069	—	—	0·67	—	—
Lytham St. Annes (B)...	25,120	9	0·35	0·39	1	0·03
Middleton (B) ...	29,040	22	0·75	0·51	4	0·13
Milnrow	8,406	3	0·35	0·34	—	—
Morecambe and Heysham (B)	27,980	14	0·50	0·48	4	0·14
Mossley (B)	11,450	9	0·78	0·43	1	0·08
*Nelson (B)	37,090	23	0·62	0·48	2	0·05
Newton-in-Makerfield	20,640	14	0·67	0·68	3	0·14
Ormskirk	17,860	4	0·22	0·55	2	0·11
Orrell	7,664	4	0·52	0·39	1	0·13
Oswaldtwistle ...	13,350	5	0·37	0·57	3	0·22
Padiham	11,120	6	0·53	0·59	2	0·17
Poulton-le-Fylde ...	5,670	—	—	0·38	—	—
Preesall	2,092	—	—	0·19	1	0·47

Appendix I (cont.).

Sanitary district.	Estimated population, 1935.	Pulmonary tuberculosis.			Non-pulmonary tuberculosis.	
		Number of deaths, 1935.	Death-rate per 1,000 of population, 1935.	*Average* death-rate 5 years, 1930–34.	Number of deaths, 1935.	Death-rate per 1,000 of population, 1935.
Urban (contd.)						
Prescot	11,410	4	0·35	0·59	3	0·26
Prestwich	29,120	20	0·68	0·52	2	0·06
Radcliffe (B)	26,910	13	0·48	0·66	4	0·14
Rainford	3,600	3	0·83	0·44	—	—
Ramsbottom	15,220	10	0·65	0·66	2	0·13
Rawtenstall (B) ...	27,940	15	0·53	0·44	2	0·07
Rishton	6,194	2	0·32	0·81	1	0·16
Royton	16,330	12	0·73	0·60	—	—
Skelmersdale	6,051	1	0·16	0·48	—	—
Standish-with-Langtree	7,779	4	0·51	0·32	—	—
Stretford (B)	59,250	22	0·37	0·66	6	0·10
Swinton & Pendlebury (B)	38,740	18	0·46	0·50	2	0·05
Thornton Cleveleys ...	11,570	6	0·51	0·83	1	0·08
Tottington	6,187	—	—	0·30	—	—
Trawden	2,429	—	—	0·47	—	—
Turton	11,510	2	0·17	0·57	—	—
Tyldesley	18,870	9	0·47	0·52	1	0·05
Ulverston	9,249	1	0·10	0·56	2	0·21
Upholland	5,921	5	0·84	0·45	3	0·50
Urmston	27,980	9	0·32	0·41	4	0·14
Walton-le-Dale ...	13,160	5	0·37	0·57	1	0·07
Wardle	4,387	—	—	0·48	—	—
Waterloo-with-Seaforth	30,930	28	0·90	0·85	2	0·06
Westhoughton ...	15,570	5	0·32	0·45	2	0·12
Whitefield	11,110	6	0·54	0·46	—	—
Whitworth	8,023	7	0·87	0·67	1	0·12
Widnes (B)	42,100	26	0·61	0·90	11	0·26
Withnell	2,908	5	1·71	0·39	—	—
Worsley	23,423	11	0·46	0·41	1	0·04
*Total Urban ...	1,591,510	769	0·48	0·56	170	0·10
Rural						
Blackburn	11,620	4	0·34	0·25	—	—
*Burnley...	17,880	6	0·33	0·53	3	0·16
Chorley	24,030	7	0·29	0·30	1	0·04
Clitheroe	8,880	2	0·22	0·28	1	0·11
*Fylde	9,666	8	0·82	0·33	2	0·20
Garstang	11,760	3	0·25	0·23	1	0·08
*Lancaster	9,502	7	0·72	0·45	—	—
*Limehurst	8,000	4	0·49	0·59	1	0·12
Lunesdale	6,506	1	0·15	0·24	—	—
Preston	31,440	13	0·41	0·34	1	0·03
*Ulverston	16,200	4	0·24	0·36	1	0·06
Warrington	16,570	6	0·36	0·34	1	0·06
West Lancashire ...	28,700	13	0·45	0·35	2	0·06
Whiston	22,090	6	0·27	0·38	4	0·18
Wigan	6,746	2	0·29	0·56	1	0·14
*Total Rural ...	229,590	86	0·37	0·36	19	0·08
Total for Administrative County ...	1,821,100	855	0·46	0·53	189	0·10
Dispensary Areas						
No. 1	249,893	102	0·40	0·42	19	0·07
No. 2	330,906	153	0·46	0·49	33	0·09
No. 3	371,246	204	0·54	0·57	39	0·10
No. 4	364,632	147	0·40	0·53	28	0·07
No. 5	269,595	137	0·50	0·63	40	0·14
Furness...	38,066	12	0·31	0·56	4	0·10
Fylde	87,256	36	0·43	0·50	8	0·09
Wigan County	109,506	64	0·58	0·58	18	0·16

* Consequent on the alteration of boundaries on the 1st April, 1935, the death-rates have been calculated on the following adjusted populations supplied by the Registrar-General :—Ashton-under-Lyne (B), 50,070 ; Colne (B), 23,060 ; Dalton-in-Furness, 10,230 ; Kirkham, 4,151 ; Lancaster (B), 46,475 ; Nelson (B), 37,095 ; Burnley Rural, 17,905 ; Fylde Rural, 9,684 ; Lancaster Rural, 9,597 ; Limehurst Rural, 8,150 ; Ulverston Rural, 16,240 ; Urban districts, 1,591,182 ; Rural districts, 229,918.

TABLES B, C, AND D,

ANALYSING

NOTIFICATIONS UNDER PUBLIC HEALTH

(TUBERCULOSIS)

REGULATIONS, 1930.

TABLE B.

ADMINISTRATIVE COUNTY OF LANCASTER.

Public Health (Tuberculosis) Regulations, 1930.

SUMMARY OF NOTIFICATIONS OF PULMONARY AND OTHER FORMS OF TUBERCULOSIS DURING THE FIFTY-TWO WEEKS ENDED 28th DECEMBER, 1935*.

(Extracted from Weekly Returns of District Medical Officers of Health.)

NOTIFICATIONS ON SCHEDULE A—Excluding Duplicates.

	PULMONARY.						NON-PULMONARY. Bones and Joints.																	
								Trunk.		Arm.							Leg.							
	Lungs only.	Lungs and Larynx.	Larynx.	Bronchial Glands.	Mediastinal Glands.	Total.	Head (including Middle Ear).	Ribs and Sternum.	Spine.	Shoulder.	Scapula.	Humerus.	Elbow.	Radius.	Ulna.	Hand and Wrist.	Hip and Pelvis.	Femur.	Knee.	Tibia.	Fibula.	Foot and Ankle.	Two or more different Joints.	Not Classified.
Thirteen weeks ended 30th March, 1935 ...	338	2	2	...	1	343	1	2	13	3	...	...	1	...	...	2	7	...	4	...	...	3	3	...
Thirteen weeks ended 29th June, 1935 ...	327	3	1	1	...	332	...	...	11	...	...	...	...	1	...	5	10	...	3	...	...	4	1	1
Thirteen weeks ended 28th September, 1935...	339	7	...	1	2	349	...	1	11	2	...	...	1	...	...	1	10	1	5	...	...	4	2	1
Thirteen weeks ended 28th December, 1935...	277	4	...	...	...	281	...	1	10	...	...	...	...	...	...	1	10	...	5	...	...	1	2	...
Total	1281	16	3	2	3	*1305	1	4	45	5	...	...	2	1	...	9	37	1	17	...	...	12	8	2

	NON-PULMONARY (continued). Abdominal.			Genito-urinary.										Peripheral Glands.						
	Intestines.	Peritoneum.	Mesenteric Glands.	Bladder.	Fall. Tube.	Kidney.	Prostate.	Suprarenal.	Testicle and Epididymis.	Not Classified (two or more).	Meningitis (Brain).	Miliary (Generalised).	Skin (Lupus).	Axillary.	Cervical.	Inguinal.	Miscellaneous.	Total.	Total Pul-monary and Non-Pul-monary.	Total Notifi-cations (i.e., including cases previously notified by other Doctors).
Thirteen weeks ended 30th March, 1935 ...	2	10	3	...	...	5	...	...	6	1	20	...	14	...	87	1	3	191	534	588
Thirteen weeks ended 29th June, 1935 ...	3	22	2	1	...	4	...	1	1	2	16	...	11	3	110	...	4	216	548	621
Thirteen weeks ended 28th September, 1935...	...	7	2	...	...	2	...	...	1	1	8	...	4	2	51	2	10	129	478	538
Thirteen weeks ended 28th December, 1935...	1	12	...	1	2	2	...	...	4	1	6	...	7	1	67	1	1	136	417	480
Total	6	51	7	2	2	13	...	1	12	5	50	...	36	6	315	4	18	*672	*1977	2227

NOTIFICATIONS ON SCHEDULE A—Excluding Duplicates.

	Sex.	PULMONARY. Age-Group—Years. 0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total.	Total M. & F.
Thirteen weeks ended 30th March, 1935 ...	M.	...	4	2	1	17	25	51	38	27	25	7	197	343
	F.	...	1	3	7	17	32	43	17	19	6	1	146	
Thirteen weeks ended 29th June, 1935 ...	M.	...	...	2	3	14	26	44	38	31	20	12	190	332
	F.	...	1	...	4	16	27	51	23	9	10	1	142	
Thirteen weeks ended 28th September, 1935 ...	M.	...	1	2	7	17	29	25	40	29	17	8	175	349
	F.	...	1	3	6	14	32	48	34	17	16	3	174	
Thirteen weeks ended 28th December, 1935 ...	M.	...	1	2	3	13	17	32	29	35	19	7	158	281
	F.	...	3	...	4	12	30	35	17	7	13	2	123	
Total	M.	...	6	8	14	61	97	152	145	122	81	34	720	*1305
	F.	...	6	6	21	59	121	177	91	52	45	7	585	

	Sex.	NON-PULMONARY. Age-Group—Years. 0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total.	Total M. & F.	Total Pul-monary and Non-Pul-monary.	Number of Cases Notified on Form I. (Admissions). Public Assist-ance Hospi-tals.	Sana-toria.	Number of Cases notified on Form II (Dis-charges from Institu-tions).
Thirteen weeks ended 30th March, 1935 ...	M.	3	17	20	19	8	6	9	11	3	2	2	100	191	534	14	309	271
	F.	3	13	17	13	10	10	13	5	2	3	2	91					
Thirteen weeks ended 29th June, 1935 ...	M.	1	17	24	14	14	10	8	7	3	4	...	102	216	548	15	283	265
	F.	1	18	18	14	25	15	15	5	2	1	...	114					
Thirteen weeks ended 28th September, 1935 ...	M.	...	14	7	7	8	8	5	4	4	3	2	62	129	478	22	335	336
	F.	1	11	8	12	8	3	10	8	2	1	3	67					
Thirteen weeks ended 28th December, 1935 ...	M.	...	11	11	12	8	7	8	2	4	2	...	65	136	417	13	256	301
	F.	1	12	14	5	9	14	9	2	1	2	2	71					
Total	M.	4	59	62	52	38	31	30	24	14	11	4	329	*672	*1977	64	1183	1173
	F.	6	54	57	44	52	42	47	20	7	7	7	343					

* Corrected figures after deducting 48 pulmonary and 40 non-pulmonary cases notified in error by practitioners.

TABLE C.

ADMINISTRATIVE COUNTY OF LANCASTER.

Public Health (Tuberculosis) Regulations, 1930.

ANALYSIS OF THE NOTIFICATIONS ON SCHEDULE A (EXCLUDING DUPLICATES) RECEIVED DURING THE FIFTY-TWO WEEKS ENDED 28th DECEMBER, 1935. †

(Extracted from Weekly Returns of District Medical Officers of Health.)

Age—Years.	...	0 — 1			1 — 5			5 — 10			10 — 15			15 — 20			20 — 25			25 — 35			35 — 45			45 — 55			55 — 65			65 & over.			TOTAL.			...
Sex.	Col.	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	Col.
PULMONARY—																																				
Lungs only	1	...	...	...	6	6	12	8	5	13	12	20	32	59	59	118	96	121	217	148	173	321	142	91	233	119	51	170	80	45	125	33	7	40	703	578	1281	1
Lungs and Larynx... ...	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	...	1	[illegible]	4	6	3	...	3	3	1	4	1	...	1	...	...	...	11	5	16	2
Larynx	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	3	...	3	3
Bronchial Glands ...	4	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	4
Mediastinal Glands ...	5	...	...	...	...	...	...	...	1	1	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	3	5
Pulmonary Total	6	...	...	...	6	6	12	8	6	14	14	21	35	61	59	120	97	121	218	152	177	329	145	91	236	122	52	174	81	45	126	34	7	41	720	585	†1305	6
*Cases—Pulmonary and Non-Pulmonary combined		...	...	...	2	1	3	...	...	...	1	1	2	2	1	3	2	4	6	2	1	3	3	...	3	3	2	5	1	1	2	3	...	3	19	11	30	
NON-PULMONARY—																																						
Bones and Joints — Head— (Incl. Middle Ear) ...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	1	...	1	7
Trunk— Ribs and Sternum ...	8	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	4	8
Spine	9	...	...	...	4	7	11	3	4	7	3	...	3	1	2	3	1	2	3	5	3	8	2	1	3	3	...	3	...	1	1	...	3	3	22	23	45	9
Arm— Shoulder	10	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	1	2	...	1	1	...	...	...	...	...	...	...	...	...	1	...	1	3	2	5	10
Scapula	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11
Humerus	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12
Elbow	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13
Radius	14	...	...	...	...	...	...	1	...	1	1	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14
Ulna	15	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	15
Hand and Wrist ...	16	...	2	2	3	1	4	...	1	1	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	16
Leg— Hip and Pelvis ...	17	...	...	...	8	2	10	4	4	8	3	2	5	...	1	1	4	4	8	2	...	2	1	...	1	...	1	1	1	...	1	...	...	...	23	14	37	17
Femur	18	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	1	1	2	1	...	1	2	1	3	...	...	...	1	...	1	...	...	...	1	...	1	18
Knee	19	...	...	...	2	...	2	4	2	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	13	4	17	19
Tibia	20	...	...	...	...	...	...	...	...	...	2	...	2	1	1	2	1	...	1	2	1	3	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	20
Fibula	21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	21
Foot and Ankle ...	22	...	...	...	1	3	4	1	...	1	1	...	1	1	...	1	1	...	1	2	...	2	...	1	1	...	...	...	...	...	...	1	...	1	8	4	12	22
Two or more different Joints ...	23	...	...	...	1	2	3	...	...	...	...	...	...	...	1	1	...	...	...	1	...	1	2	...	2	1	...	1	...	...	...	...	...	...	5	3	8	23
Not classified	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	2	...	2	24
Abdominal — Intestines	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	4	...	...	...	...	4	4	...	...	...	...	...	...	...	...	...	...	6	6	25
Peritoneum	26	...	...	...	1	3	4	2	4	6	4	5	9	7	7	14	1	5	6	1	5	6	1	1	2	1	1	2	1	...	1	...	1	1	19	32	51	26
Mesenteric Glands ...	27	...	...	...	2	...	2	...	1	1	...	2	2	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	4	7	27
Genito-urinary — Bladder	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	1	...	1	...	...	...	1	1	2	28
Fallopian Tube	29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...	...	...	...	1	1	...	...	...	1	1	2	29
Kidney	30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	5	8	13	30
Prostate	31	...	...	...	...	...	...	...	...	...	1	...	1	...	1	1	...	3	3	1	3	4	2	...	2	1	1	2	...	...	...	...	...	...	...	2	2	31
Suprarenal	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32
Testicle and Epididymis	33	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	4	...	4	4	...	4	1	...	1	1	...	1	1	...	1	...	...	...	1	...	1	33
Not classified (two or more)	34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	1	1	1	1	2	...	...	...	...	...	...	1	...	1	2	3	5	34
Meningitis (Brain)	35	4	1	5	12	12	24	4	3	7	1	4	5	2	2	4	2	...	2	...	1	1	2	...	2	...	...	...	...	...	...	1	...	1	27	23	50	35
Miliary (Generalised) ...	36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	36
Skin (Lupus)	37	...	...	...	...	...	...	1	1	2	1	...	1	1	4	5	3	3	6	2	7	9	2	2	4	2	...	2	3	3	6	...	1	1	15	21	36	37
Peripheral Glands — Axillary	38	...	...	...	...	1	1	...	...	...	...	...	...	1	1	2	...	...	...	1	1	2	...	...	...	1	2	3	...	...	...	...	...	...	2	4	6	38
Cervical...	39	...	3	3	25	22	47	42	35	77	36	27	63	17	30	47	8	18	26	9	21	30	6	7	13	1	2	3	1	1	2	...	2	2	147	168	315	39
Inguinal	40	...	...	...	...	...	...	...	1	1	...	...	...	1	1	1	...	1	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	4	4	40
Miscellaneous	41	...	...	...	...	1	1	...	1	1	...	2	2	3	1	4	3	1	4	...	2	2	1	1	2	...	1	1	...	...	...	1	...	1	8	10	18	41
Non-Pulmonary Total ...	42	4	6	10	59	54	113	62	57	119	52	44	96	38	52	90	31	42	73	30	47	77	24	20	44	14	7	21	11	7	18	4	7	11	329	343	†672	42
GRAND TOTAL	43	4	6	10	65	60	125	70	63	133	66	65	131	99	111	210	128	163	291	182	224	406	169	111	280	136	59	195	92	52	144	38	14	52	1049	928	†1977	43

* Combined cases are included in pulmonary total, but are shown separately for purpose of reference.

† Corrected figures after deducting 48 pulmonary and 40 non-pulmonary cases notified in error by practitioners.

TABLE D.

ADMINISTRATIVE COUNTY OF LANCASTER.

PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS, 1930.

MALE AND FEMALE NOTIFIED CASES IN THE ADMINISTRATIVE COUNTY DURING THE YEARS 1915 TO 1935.

YEAR.	Sex.	PULMONARY TUBERCULOSIS.												Total* M. & F.	NON-PULMONARY TUBERCULOSIS.												Total* M. & F
		0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total.		0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total.	
1915 ...	M	5	47	97	79	127	138	305	303	235	117	34	1487	2872	39	109	113	93	61	46	50	29	14	5	3	562	1128
	F	*5*	*27*	*96*	*111*	*152*	*191*	*383*	*239*	*100*	*60*	*21*	*1385*		*26*	*88*	*107*	*88*	*84*	*53*	*61*	*33*	*15*	*7*	*4*	*566*	
1916 ...	M	1	31	71	77	121	157	331	296	190	96	36	1407	2689	20	127	135	99	65	42	47	34	12	13	5	599	1180
	F	*2*	*24*	*81*	*96*	*165*	*186*	*345*	*220*	*98*	*52*	*13*	*1282*		*8*	*68*	*122*	*114*	*85*	*46*	*65*	*41*	*19*	*11*	*2*	*581*	
1917 ...	M	4	20	77	62	113	104	262	268	190	90	30	1220	2375	21	116	109	105	61	23	42	30	8	9	1	525	1062
	F	*2*	*22*	*90*	*100*	*129*	*155*	*296*	*185*	*107*	*50*	*19*	*1155*		*7*	*79*	*97*	*98*	*89*	*59*	*49*	*25*	*23*	*6*	*5*	*537*	
1918 ...	M	3	35	55	59	140	108	300	317	232	98	28	1375	2534	14	75	103	65	60	19	29	16	14	7	2	404	885
	F	*1*	*24*	*69*	*74*	*139*	*166*	*297*	*207*	*117*	*52*	*13*	*1159*		*10*	*75*	*84*	*92*	*80*	*46*	*46*	*29*	*9*	*6*	*4*	*481*	
1919 ...	M	2	22	53	55	94	107	238	212	165	91	17	1056	2105	13	50	97	80	53	26	31	22	19	12	4	407	847
	F	*5*	*14*	*54*	*80*	*126*	*161*	*261*	*184*	*99*	*41*	*24*	*1049*		*10*	*59*	*98*	*76*	*61*	*43*	*41*	*29*	*11*	*7*	*5*	*440*	
1920 ...	M	2	24	56	63	94	120	281	249	160	90	14	1153	2084	31	62	107	108	68	26	35	23	16	11	5	492	968
	F	*2*	*20*	*53*	*71*	*115*	*122*	*264*	*147*	*84*	*36*	*17*	*931*		*12*	*66*	*86*	*78*	*62*	*46*	*52*	*34*	*23*	*16*	*1*	*476*	
1921 ...	M	1	17	43	47	94	133	222	225	162	84	19	1047	2044	12	60	110	84	53	32	41	23	17	6	4	442	899
	F	...	*12*	*53*	*77*	*132*	*160*	*255*	*156*	*82*	*50*	*20*	*997*		*15*	*62*	*89*	*81*	*65*	*41*	*53*	*15*	*21*	*9*	*6*	*457*	
1922 ...	M	3	16	38	47	83	120	227	190	148	99	27	998	1863	18	101	111	79	55	37	39	22	13	7	3	485	956
	F	*4*	*15*	*45*	*57*	*135*	*135*	*202*	*146*	*61*	*42*	*23*	*865*		*13*	*77*	*80*	*95*	*61*	*45*	*50*	*24*	*14*	*7*	*5*	*471*	
1923 ...	M	2	10	41	43	82	132	236	207	147	94	13	1007	1937	18	115	134	105	75	35	45	22	14	15	6	584	1188
	F	*1*	*14*	*43*	*60*	*115*	*149*	*251*	*149*	*83*	*49*	*16*	*930*		*14*	*103*	*110*	*107*	*68*	*60*	*64*	*31*	*28*	*14*	*5*	*604*	
1924 ...	M	...	27	37	52	105	110	203	199	197	97	18	1045	1972	19	123	92	92	95	35	43	25	17	12	3	556	1120
	F	*3*	*12*	*29*	*55*	*144*	*139*	*223*	*169*	*94*	*49*	*10*	*927*		*6*	*99*	*87*	*94*	*80*	*55*	*72*	*30*	*17*	*11*	*13*	*564*	
1925 ...	M	...	22	32	38	81	115	212	200	192	74	24	990	1846	17	108	106	73	58	37	53	26	15	12	5	510	1027
	F	*3*	*10*	*24*	*44*	*144*	*153*	*198*	*136*	*85*	*34*	*25*	*856*		*9*	*86*	*84*	*91*	*82*	*41*	*57*	*33*	*18*	*10*	*6*	*517*	
1926 ...	M	1	9	27	40	91	113	210	198	158	110	23	980	1828	10	90	97	76	75	29	35	32	16	7	3	470	953
	F	*2*	*12*	*41*	*47*	*114*	*169*	*224*	*120*	*68*	*38*	*13*	*848*		*19*	*83*	*94*	*51*	*67*	*56*	*51*	*34*	*17*	*6*	*5*	*483*	
1927 ...	M	1	11	47	39	115	111	197	187	185	85	19	997	1794	12	101	131	87	66	38	40	18	13	4	7	517	1045
	F	...	*13*	*37*	*49*	*129*	*128*	*195*	*113*	*71*	*51*	*11*	*797*		*15*	*84*	*95*	*81*	*61*	*47*	*75*	*33*	*20*	*11*	*6*	*528*	
1928 ...	M	1	7	31	20	70	106	187	163	176	82	27	870	1660	16	82	114	66	67	43	40	15	14	10	7	474	956
	F	...	*6*	*33*	*32*	*126*	*147*	*195*	*125*	*62*	*44*	*20*	*790*		*13*	*69*	*100*	*70*	*56*	*63*	*50*	*27*	*21*	*8*	*5*	*482*	
1929 ...	M	4	7	32	17	80	99	160	180	165	76	23	843	1517	17	98	99	67	52	37	40	22	16	7	5	460	913
	F	...	*7*	*18*	*23*	*111*	*130*	*186*	*99*	*53*	*28*	*19*	*674*		*3*	*65*	*92*	*51*	*54*	*48*	*63*	*36*	*22*	*15*	*4*	*453*	
1930 ...	M	1	5	14	27	66	106	189	174	159	82	22	845	1527	6	78	105	69	67	28	45	18	12	12	7	447	982
	F	...	*3*	*13*	*29*	*104*	*122*	*186*	*107*	*61*	*37*	*20*	*682*		*12*	*67*	*100*	*80*	*63*	*63*	*71*	*35*	*28*	*13*	*3*	*535*	
1931 ...	M	2	8	15	18	75	118	153	159	161	89	25	823	1460	13	67	78	63	63	34	40	15	20	10	7	410	862
	F	...	*7*	*10*	*27*	*99*	*120*	*149*	*109*	*57*	*38*	*21*	*637*		*8*	*55*	*77*	*62*	*69*	*55*	*55*	*37*	*16*	*12*	*6*	*452*	
1932 ...	M	1	2	14	20	73	105	183	146	142	108	20	814	1477	7	67	70	54	38	41	34	20	22	17	6	376	825
	F	...	*3*	*19*	*33*	*97*	*146*	*160*	*92*	*58*	*41*	*14*	*663*		*7*	*43*	*86*	*70*	*63*	*53*	*63*	*24*	*19*	*15*	*6*	*449*	
1933 ...	M	2	4	10	19	70	84	186	171	155	85	27	813	1453	10	94	76	41	36	34	41	23	10	13	5	383	780
	F	...	*4*	*10*	*26*	*85*	*101*	*201*	*102*	*61*	*29*	*21*	*640*		*1*	*65*	*69*	*70*	*40*	*37*	*60*	*32*	*9*	*6*	*8*	*397*	
1934 ...	M	1	3	4	8	47	99	161	156	139	73	25	716	1315	16	60	79	61	36	22	43	19	18	7	5	360	774
	F	*2*	*9*	*11*	*14*	*84*	*135*	*163*	*87*	*50*	*33*	*11*	*599*		*12*	*46*	*69*	*65*	*63*	*36*	*65*	*32*	*15*	*6*	*5*	*414*	
1935 ...	M	...	6	8	14	61	97	152	145	122	81	34	720	1305	4	59	62	52	38	31	30	24	14	11	4	329	672
	F	...	*6*	*6*	*21*	*59*	*121*	*177*	*91*	*52*	*45*	*7*	*585*		*6*	*54*	*57*	*44*	*52*	*42*	*47*	*20*	*7*	*7*	*7*	*343*	

* Corrected figures from 1922 after deducting the following cases found to be non-tuberculous and notifications cancelled:— 1922: 14 pulmonary, 12 non-pulmonary; 1923: 33 pulmonary, 31 non-pulmonary; 1924: 57 pulmonary, 38 non-pulmonary; 1925: 83 pulmonary, 49 non-pulmonary; 1926: 61 pulmonary, 41 non-pulmonary; 1927: 68 pulmonary, 51 non-pulmonary; 1928: 63 pulmonary, 52 non-pulmonary; 1929: 61 pulmonary, 44 non-pulmonary; 1930: 63 pulmonary, 55 non-pulmonary; 1931: 38 pulmonary, 49 non-pulmonary; 1932: 40 pulmonary, 45 non-pulmonary; 1933: 48 pulmonary, 51 non-pulmonary; 1934: 38 pulmonary, 51 non-pulmonary; and 1935: 48 pulmonary, 40 non-pulmonary.

Appendix II.

NOTIFICATION OF TUBERCULOSIS CASES.

Since 1st February, 1913, tuberculosis—both pulmonary and other forms—has been compulsorily notifiable under the Public Health (Tuberculosis) Regulations.

Tables B and C, here inserted, analyse the notifications received, giving the part of the body affected and the age-groups.

Table D, also inserted, compares the male and female notifications since 1915.

Table 37.—*Deaths of 216 persons notified as suffering from pulmonary tuberculosis in 1935 which took place within three months of the date of notification.*

Period between date of case notification and death.	Certified cause of death.			Total.
	Pulmonary.		Non-pulmonary	
	Primary.	Secondary.		
Under 1 week	47	2	11	60
1 to 2 weeks	21	—	—	21
2 to 3 weeks	17	2	—	19
3 to 4 weeks	22	—	—	22
1 to 2 months	45	3	1	49
2 to 3 months	43	—	2	45
Total under 3 months ...	195	7	14	216
	202			

Included in the above table are 44 deaths which occurred outside the County area.

In addition to the foregoing 216 deaths which occurred within three months of notification, in 11 instances (4 pulmonary and 7 non-pulmonary) death took place *before* the actual receipt of the notification, against 11 (7 pulmonary and 4 non-pulmonary) in the preceding year.

TABLE 38.—*Actual number of deaths from pulmonary and non-pulmonary tuberculosis since 1918 not previously notified under the Public Health (Tuberculosis) Regulations.*

Year.	Non-notified fatal cases.		
	Pulmonary tuberculosis.	Non-pulmonary tuberculosis.	Total.
1918	303	137	440
1919	221	104	325
1920	177	122	299
1921	135	96	231
1922	105	83	188
1923	85	74	159
1924	64	65	129
1925	67	57	124
1926	58	32	90
1927	54	42	96
1928	56	51	107
1929	62	61	123
1930	46	61	107
1931	61	51	112
1932	37	28	65
1933	45	31	76
1934	35	46	81
1935	**35**	**31**	**66**

The 66 deaths in 1935 of cases not previously notified under the Regulations are further analysed below :—

TABLE 39.

	Cause of death.			Total.
	Pulmonary.		Non-pulmonary.	
	Primary.	Secondary.		
Deaths of persons at private addresses	28	1	16	45
Deaths in County mental hospitals of persons belonging to County area ...	—	—	—	—
Deaths in Public Assistance hospitals of persons belonging to County area ...	3	—	9	12
Deaths in other public institutions of persons belonging to County area...	3	—	6	9
Total	34	1	31	66
	35			

During 1935, 118 pulmonary and 46 non-pulmonary deaths occurred outside the County area of persons usually residing in the Administrative County. Of these, 110 pulmonary and 46 non-pulmonary occurred in public institutions. In 46 instances no case notification could be traced. These are not included in Table 39.

N.B.—The tables mentioned in Appendix II have been prepared in the County public health department.

Appendix III.

Census of Tuberculous Cases on the dispensary registers on the 31st December, 1935 (inclusive of 914 patients in sanatoria and hospitals).

Dispensary area.	Sex.	Number of cases under supervision on 31-12-35.							Number of doubtful cases on 31-12-35.
		Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.	Number of cases per 1,000 of population.		
		Under 15 years of age.	15 years and over.	Under 15 years of age.	15 years and over.		Pulm.	Non-pul.	
No. 1 ...	M.	6	207	104	113	845	1·57	1·80	4
	F.	8	173	84	150				
No. 2 ...	M.	3	339	90	141	1,154	1·90	1·58	1
	F.	7	281	102	191				
No. 3 ...	M.	15	500	105	174	1,485	2·43	1·56	1
	F.	8	382	89	212				
No. 4 ...	M.	7	499	94	162	1,477	2·50	1·54	—
	F.	7	400	98	210				
No. 5 ...	M.	14	369	123	85	1,080	2·47	1·53	6
	F.	18	265	91	115				
Furness...	M.	9	68	14	28	249	4·15	2·39	2
	F.	13	68	21	28				
Fylde ...	M.	5	112	54	33	417	2·47	2·30	—
	F.	3	96	63	51				
Wigan County	M.	16	159	81	86	697	3·13	3·23	4
	F.	23	145	62	125				
Total ...	M.	75	2,253	665	822	7,404	2·32	1·74	18
	F.	87	1,810	610	1,082				
		4,225		3,179			4·06		

The populations of the dispensary areas are :—Area No. 1, 249,893 ; Area No. 2, 330,906 ; Area No. 3, 371,246 ; Area No. 4, 364,632 ; Area No. 5, 269,595 ; Furness Area, 38,066 ; Fylde Area, 87,256 ; Wigan County Area, 109,506 ; Total for County, 1,821,100.

Appendix III (contd.).

Analysis of Cases on the dispensary registers on the 31st December, 1935.

(*a*) PULMONARY TUBERCULOSIS.

Age-groups.	Sex.	T.B. minus.		T.B. plus 1.		T.B. plus 2.		T.B. plus 3.		Total.	
		Active.	Quies.	Active.	Quies.	Active.	Quies.	Active.	Quies.	Active.	Quies.
0–5 years ...	M.	2	1	1	—	—	—	—	—	3	1
	F.	3	—	—	—	—	—	—	—	3	—
5–15 years ...	M.	21	47	—	1	2	—	—	—	23	48
	F.	23	49	2	—	6	1	3	—	34	50
15–25 years ...	M.	54	124	33	21	131	33	27	1	245	179
	F.	76	110	40	21	170	37	21	6	307	174
25–35 years ...	M.	49	99	52	43	190	79	26	6	317	227
	F.	81	113	56	35	213	79	19	5	369	232
35–45 years ...	M.	46	97	42	50	180	66	31	9	299	222
	F.	43	82	33	27	98	52	22	6	196	167
45–55 years ...	M.	55	82	28	47	146	44	27	4	256	177
	F.	21	56	19	18	61	35	4	2	105	111
55–65 years ...	M.	45	46	14	17	81	26	14	7	154	96
	F.	16	26	6	10	34	12	3	4	59	52
65 and over ...	M.	14	15	3	2	28	15	2	2	47	34
	F.	6	9	3	3	8	5	4	—	21	17
All ages ...	M.	286	511	173	181	758	263	127	29	1,344	984
	F.	269	445	159	114	590	221	76	23	1,094	803
Grand Total ...		1,511		627		1,832		255		4,225	

(*b*) NON-PULMONARY TUBERCULOSIS.

Age-groups.	Sex.	Bones and joints (excluding spine).		Spine.		Abdomen.		Other organs.		Peripheral glands.		Skin.		Total.	
		Act.	Quies	Act.	Quies	Act.	Quies	Act.	Quies	Act.	Quies	Act.	Quies	Act.	Quies
0–5 years ...	M.	17	8	10	1	2	5	—	—	24	32	—	—	53	46
	F.	10	4	10	—	3	3	1	1	13	27	—	1	37	36
5–15 years ...	M.	61	54	19	19	16	48	—	4	92	233	10	10	198	368
	F.	40	59	14	21	7	33	4	4	75	258	11	11	151	386
15–25 years ...	M.	33	59	14	19	5	34	8	9	37	116	19	21	116	258
	F.	27	44	11	15	15	46	4	4	50	191	21	16	128	316
25–35 years ...	M.	25	36	14	14	3	10	7	12	18	46	22	9	89	127
	F.	19	32	12	15	11	24	8	10	28	96	38	18	116	195
35–45 years ...	M.	18	14	7	8	2	2	10	14	5	16	13	7	55	61
	F.	9	13	8	12	2	8	4	9	13	32	26	12	62	86
45–55 years ...	M.	11	8	10	7	3	—	5	3	1	7	4	2	34	27
	F.	12	11	5	5	4	5	4	4	4	10	19	10	48	45
55–65 years ...	M.	7	9	2	2	1	—	1	6	—	4	10	2	21	23
	F.	9	4	2	3	—	1	1	1	3	10	21	5	36	24
65 and over ...	M.	2	4	—	—	—	—	—	2	—	2	1	—	3	8
	F.	3	4	3	1	1	—	1	—	—	4	9	—	17	9
All ages ...	M.	174	192	76	70	32	99	31	50	177	456	79	51	569	918
	F.	129	171	65	72	43	120	27	33	186	628	145	73	595	1,097
Grand Total...		666		283		294		141		1,447		348		3,179	

Appendix IV.

Housing Conditions of patients in each dispensary area at the end of 1935.

	Pulmonary cases considered infectious.		Pulmonary cases considered not infectious.		Non-pulmonary cases.	
	Under 15 years.	15 years & over.	Under 15 years.	15 years & over.	Under 15 years.	15 years & over.
Patients occupying a separate bedroom :						
Area No. 1	1	173	4	100	44	96
Area No. 2	1	173	1	132	33	94
Area No. 3	3	285	3	209	36	99
Area No. 4	1	313	4	299	33	108
Area No. 5	3	218	3	146	49	56
Furness Area ...	—	29	6	48	11	26
Fylde Area ...	—	46	2	58	17	20
Wigan County Area	—	82	9	70	16	45
Total	9	1,319	32	1,062	239	544
Patients occupying a separate bed but not a separate bedroom :						
Area No. 1	—	23	7	13	68	26
Area No. 2	1	129	4	78	90	83
Area No. 3	2	139	5	104	91	96
Area No. 4	—	46	7	84	77	66
Area No. 5	2	68	12	59	107	52
Furness Area ...	1	11	11	16	20	18
Fylde Area ...	—	21	4	32	45	30
Wigan County Area	1	42	15	34	44	41
Total	7	479	65	420	542	412
Patients not occupying a separate bed :		*				
Area No. 1	—	6	2	65	76	141
Area No. 2	—	20	3	88	69	155
Area No. 3	—	22	10	123	67	191
Area No. 4	—	7	2	150	82	198
Area No. 5	—	34	12	109	58	92
Furness Area ...	—	3	4	29	4	12
Fylde Area ...	—	1	2	50	55	34
Wigan County Area	—	—	14	76	83	125
Total	—	93	49	690	494	948
GRAND TOTAL ...	16	1,891	146	2,172	1,275	1,904

* Of the adult infective patients without a separate bed, there were in sanatoria or pulmonary hospitals at the end of 1935 the following patients :—Area No. 2, 6 ; Area No. 3, 7 ; Area No. 4, 4 ; Area No. 5, 10 ; Furness Area, 2 ; and Fylde Area, 1 ; Total 30.

Appendix V.

Return showing the Work of the Dispensaries during the year 1935.

(Tables A and B of Memorandum 37/T (Revised) of the Ministry of Health).

Diagnosis.	Pulmonary.				Non-pulmonary.				Total.				Grand Total.
	Adults.		Children.		Adults.		Children.		Adults.		Children.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
A.—New cases examined during the year (excluding contacts):													
(a) Definitely tuberculous ...	551	439	10	16	122	171	154	127	673	610	164	143	1,590
(b) Diagnosis not completed	—	—	—	—	—	—	—	—	8	6	2	1	17
(c) Non-tuberculous... ...	—	—	—	—	—	—	—	—	1,040	1,015	345	284	2,684
B.—Contacts examined during the year:													
(a) Definitely tuberculous ...	14	20	5	9	—	—	—	3	14	20	5	12	51
(b) Diagnosis not completed	—	—	—	—	—	—	—	—	—	1	1	—	2
(c) Non-tuberculous... ...	—	—	—	—	—	—	—	—	170	266	214	214	864
C.—Cases written off the dispensary register as:													
(a) Recovered...	76	74	11	8	182	206	83	85	258	280	94	93	725
(b) Non-tuberculous (including any such cases previously diagnosed and entered on the dispensary register as tuberculous)	—	—	—	—	—	—	—	—	1,223	1,293	561	500	3,577
D.—Number of cases on dispensary register on 31st December, 1935:													
(a) Definitely tuberculous ...	2,253	1,810	75	87	822	1,082	665	610	3,075	2,892	740	697	7,404
(b) Diagnosis not completed	—	—	—	—	—	—	—	—	7	7	3	1	18

1.	Number of cases on dispensary register on 1st January, 1935	7,474	
2.	Number of cases transferred from other areas and cases returned after discharge under Head 3 in previous years	273	
3.	Number of cases transferred to other areas, cases not desiring further assistance under the scheme, and cases "lost sight of"	424	
4.	Cases written off during the year as dead (all causes)	807	
5.	Number of attendances at the dispensary (including contacts)	23,813	
6.	Number of insured persons under domiciliary treatment on the 31st December	1,280	
7.	Number of consultations with medical practitioners:—		
	(a) Personal	618	
	(b) Other	5,404	
8.	Number of visits by tuberculosis officers to homes (including personal consultations)		4,804
9.	Number of visits by nurses or health visitors to homes for dispensary purposes		39,821
10.	Number of		
	(a) Specimens of sputum, etc., examined		5,193
	(b) X-ray examinations made in connection with dispensary work		10,024
11.	Number of "recovered" cases restored to dispensary register, and included in A(a) and A(b) above		58
12.	Number of "T.B. plus" cases on dispensary register on 31st December ...		2,714
13.	Number of dispensaries for the treatment of tuberculosis (excluding centres used only for special forms of treatment):—		
	Provided by the Council		24
	Provided by voluntary bodies		—

Appendix VI.

Return showing the extent of Residential Treatment and Observation during the year 1935 in institutions (other than Poor Law institutions) approved for the treatment of tuberculosis.

(Table D of Memorandum 37/T (Revised) of the Ministry of Health).

			In institutions on Jan. 1.	Admitted during the year.	Discharged during the year.	Died in the institutions.	In institutions on Dec. 31.
Number of doubtfully tuberculous cases admitted for observation	Adults	M.	4	52	46	3	7
		F.	2	30	30	—	2
	Children.		7	29	28	—	8
	Total...		13	111	104	3	17
Number of patients suffering from pulmonary tuberculosis	Adults	M.	340	680	559	119	342
		F.	269	515	397	108	279
	Children.		35	37	39	4	29
	Total...		644	1,232	995	231	650
Number of patients suffering from non-pulmonary tuberculosis	Adults	M.	59	124	114	19	50
		F.	61	129	132	12	46
	Children.		134	168	142	9	151
	Total...		254	421	388	40	247
Grand Total			911	1,764	1,487	274	914

Appendix VII.

Return showing the extent of Residential Treatment provided during the year 1935 in Poor Law Institutions for persons chargeable to the Council.

(Table E of Memorandum 37/T (Revised) of the Ministry of Health).

			In institutions on Jan. 1.	Admitted during the year.	Discharged during the year.	Died in the institutions.	In institutions on Dec. 31.
Number of patients suffering from pulmonary tuberculosis	Adults	M.	15	96	54	40	17
		F.	12	49	34	17	10
	Children.		—	6	6	—	—
	Total...		27	151	94	57	27
Number of patients suffering from non-pulmonary tuberculosis ...	Adults	M.	5	18	8	7	8
		F.	5	22	6	9	12
	Children.		5	37	14	18	10
	Total		15	77	28	34	30
Grand Total			42	228	122	91	57

Appendix VIII.

Return showing the results of Observation of Doubtfully Tuberculous Cases discharged during the year 1935 from institutions approved for the treatment of tuberculosis.

(Table F of Memorandum 37/T (Revised) of the Ministry of Health).

Diagnosis on discharge from observation.	For pulmonary tuberculosis.						For non-pulmonary tuberculosis.						Totals.		
	Stay under 4 weeks.			Stay over 4 weeks.			Stay under 4 weeks.			Stay over 4 weeks.					
	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.
Tuberculous	6	5	—	8	7	—	2	4	4	4	1	8	20	17	12
Non-tuberculous	4	—	—	15	6	4	1	3	1	5	3	7	25	12	12
Doubtful	—	—	2	1	—	—	—	—	—	—	1	2	1	1	4
Died	2*	—	—	—	—	—	1†	—	—	—	—	—	3	—	—
Totals	12	5	2	24	13	4	4	7	5	9	5	17	49	30	28

* Diagnosis: (1) Cancer of lung;
(2) Acute endocarditis.

† „ : Retro-pharyngeal abscess (P.M.)

Appendix IX.

Return showing the Immediate Results of Treatment of definitely tuberculous patients discharged during the year 1935 from institutions approved for the treatment of tuberculosis.

(This table is based on Table G of Memorandum 37/T (Revised) of the Ministry of Health).

Classification on admission to the institution.		Condition at time of discharge.	Duration of residential treatment in the institution.															Grand totals.
			Under 28 days.			1–3 months.			3–6 months.			6–12 months.			More than 12 months.			
			M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	
Pulmonary Tuberculosis.	T.B. minus.	Quiescent	—	—	1	5	1	—	18	11	2	11	13	10	2	5	11	90
		Improved	5	3	1	11	13	2	43	19	1	8	10	—	1	2	2	121
		N. M. I.	8	4	1	4	2	—	5	1	1	2	1	—	2	2	—	33
		Died	1	3	1	5	4	1	—	1	—	3	—	—	1	—	—	20
	T.B. plus 1.	Quiescent	—	—	—	1	—	—	3	1	—	8	5	1	3	7	—	29
		Improved	1	1	—	10	7	—	11	6	—	14	9	—	7	1	—	67
		N. M. I.	1	3	—	2	4	—	1	2	—	3	1	—	1	—	—	18
		Died	2	—	—	1	1	—	1	—	—	1	2	—	1	1	—	10
	T.B. plus 2.	Quiescent	3	—	—	1	—	—	5	6	—	7	9	—	4	5	1	41
		Improved	10	4	—	28	13	—	69	44	—	74	68	—	29	24	1	364
		N. M. I.	9	3	—	24	17	1	13	15	—	11	13	—	11	8	—	125
		Died	17	11	—	22	21	1	13	14	—	8	19	—	8	6	1	141
	T.B. plus 3.	Quiescent	2	—	—	—	—	—	1	1	—	1	3	—	—	—	—	8
		Improved	1	—	—	8	2	—	20	7	1	8	5	1	6	3	—	62
		N. M. I.	9	2	—	8	4	—	2	4	—	—	2	1	4	1	—	37
		Died	12	5	—	5	7	—	6	10	—	6	2	—	6	1	—	60
Totals (pulmonary)			81	39	4	135	96	5	211	142	5	165	162	13	86	66	16	1,226
Non-Pulmonary Tuberculosis.	Bones and joints.	Quiescent	3	1	—	2	—	1	3	2	7	6	6	7	8	7	25	78
		Improved	7	8	1	8	2	2	5	2	3	6	2	1	2	3	4	56
		N. M. I.	7	5	2	3	4	3	1	1	—	1	—	2	2	2	—	33
		Died	1	—	1	2	2	2	2	1	—	2	1	—	5	1	5	25
	Abdominal.	Quiescent	1	1	—	2	2	6	2	3	4	3	3	4	—	—	3	34
		Improved	1	2	—	—	1	3	—	—	2	—	3	—	—	3	—	15
		N. M. I.	2	1	—	—	1	1	—	—	—	—	1	1	—	2	—	9
		Died	1	2	1	—	2	—	1	—	—	1	2	—	—	—	—	10
	Other organs.	Quiescent	3	1	—	1	1	1	—	2	1	1	1	2	1	—	2	17
		Improved	5	7	1	6	11	3	3	1	—	2	4	1	—	—	—	44
		N. M. I.	1	3	—	2	3	—	—	—	—	—	—	—	—	—	—	9
		Died	1	1	—	1	—	—	1	—	—	—	—	—	—	—	—	4
	Peripheral glands.	Quiescent	2	7	5	2	1	11	—	—	6	—	—	2	—	1	—	37
		Improved	5	17	9	3	1	6	1	—	4	1	2	2	—	—	1	52
		N. M. I.	—	1	1	—	—	2	—	—	—	—	—	—	—	—	—	4
		Died	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1
Totals (non-pulmonary)			40	57	21	32	31	41	19	12	27	24	25	22	18	19	40	428

N. M. I. = No material improvement. "Died" comprises deaths in the institution only.

Appendix X.

Definitions observed in Classifying Cases and recording results of treatment (in accordance with Memorandum 37/T (Revised) of the Ministry of Health, extracts from which are quoted below).

CLASSIFICATION OF PATIENTS SUFFERING FROM TUBERCULOSIS.

For the purpose of the Annual Returns required under this Memorandum, and of the case records necessary to enable these returns to be completed, the following system of classification of cases and of recording results should be used :—

I.—All patients should be grouped according to their sex and age ; patients under 15 years of age should be classed as children, and those of 15 years and upwards as adults.

II.—Patients should then be classified according to the organs or parts affected as follows :—

(1) Pulmonary tuberculosis (including tuberculosis of the pleura or intra-thoracic glands).

(2) Non-pulmonary tuberculosis.

Patients suffering from both pulmonary and non-pulmonary tuberculosis should be classified as pulmonary cases.

III.—Patients suffering from pulmonary tuberculosis should be divided into :—

Class T.B. minus, *viz.*, cases in which tubercle bacilli have never been demonstrated in the sputum, pleural fluid, fæces, etc., and

Class T.B. plus, *viz.*, cases in which tubercle bacilli have at any time been found. It should be noted that a patient originally in Class T.B. minus must be transferred to Class T.B. plus at any stage in the course of treatment if and when tubercle bacilli are found, while on the other hand a patient who is once placed in Class T.B. plus can never be included in Class T.B. minus. Class T.B. plus should be further sub-divided into three groups as follows:—

Group 1.—Cases with slight constitutional disturbance, if any ; *e.g.*, there should not be marked acceleration of pulse nor elevation of temperature except of very transient duration ; gastro-intestinal disturbance or emaciation, if present, should not be excessive.

The obvious physical signs should be of very limited extent as follows : either present in one lobe only, and in the case of an apical lesion of one upper lobe, not extending below the second rib in front or not exceeding an equivalent area in any one lobe ; or where these physical signs are present in more than one lobe, they should be limited to the apices of the upper lobes, and should not extend below the clavicle and the spine of the scapula.

No complication (tuberculous or other) of prognostic gravity should be present. A small area of dry pleurisy should not exclude a case from this group.

Group 3.—Cases with profound systemic disturbance or constitutional deterioration, with marked impairment of function, either local or general, and with little or no prospect of recovery.

All cases with grave complications (*e.g.*, diabetes, tuberculosis of intestine, etc.), whether those complications are tuberculous or not, should be classified in this group.

Group 2.—All cases which cannot be placed in Groups 1 and 3.

APPENDIX X (contd.).

IV.—Patients suffering from non-pulmonary tuberculosis should be classified according to the site of the lesion as follows :—

(1) Tuberculosis of bones and joints.

(2) Abdominal tuberculosis (*i.e.*, tuberculosis of peritoneum, intestines or mesenteric glands).

(3) Tuberculosis of other organs.

(4) Tuberculosis of peripheral glands.

Patients suffering from multiple lesions should be classified in one sub-group only, *viz.*, in that applicable to the case which stands highest in the immediately preceding list.

RESULTS OF TREATMENT.

The following terms should be used to describe the results of treatment :—

"QUIESCENT."—Cases which have no symptoms of tuberculosis and no signs of tuberculous disease, except such as are compatible with a completely healed lesion, and in which sputum, if present, is free from tubercle bacilli.

"ARRESTED."—Cases in which, if pulmonary, the disease has been "quiescent" for a period of at least two years, or, if non-pulmonary, the disease is "quiescent" and there is reason to believe that it is unlikely to recur.

"RECOVERED."—Cases in which arrest of the disease has been maintained for at least three years.

Appendix XI.

Number of Beds Occupied by County Patients undergoing residential treatment for pulmonary and non-pulmonary tuberculosis on the 31st December, 1935.

Institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
(a) *Institutions for pulmonary tuberculosis.*					
Aitken Sanatorium, near Bury	47	—	—	—	47
Chadderton Pulmonary Hospital, near Oldham	44	1	—	—	45
Crossley Sanatorium, Frodsham, Cheshire	1	—	—	—	1
Eastby Sanatorium, near Skipton	—	9	—	5	14
East Lancashire Tuberculosis Colony, Barrowmore Hall, near Chester	35	—	—	—	35
Eccleston Hall Sanatorium, St. Helens	7	2	—	—	9
Elswick Sanatorium, near Kirkham	67	—	—	—	67
Eversfield Chest Hospital, Hastings	1	—	—	—	1
Halifax Sanatorium, Shelf	8	—	—	—	8
Heath Charnock Pulmonary Hospital, near Chorley	33	—	—	—	33
Hefferston Grange Sanatorium, Weaverham, Cheshire	2	—	—	—	2
High Carley Sanatorium, near Ulverston	109	1	—	—	110
Lancaster Pulmonary Hospital	34	—	—	—	34
Oubas House Children's Sanatorium, Ulverston	—	10	—	1	11
Papworth Village Settlement, Papworth Hall, Cambridge	1	—	—	—	1
Peel Hall Pulmonary Hospital, Little Hulton	55	—	—	—	55
Pemberton Pulmonary Hospital, Wigan	4	—	—	—	4
Rufford Pulmonary Hospital, near Ormskirk	49	1	—	—	50
Springfield Sanatorium, Rochdale	18	—	—	—	18
Westmorland Sanatorium, Meathop, Grange-over-Sands	6	—	—	—	6
Wilkinson Sanatorium, near Bolton	5	—	—	—	5
Withnell Pulmonary Hospital, near Chorley	42	—	—	—	42
Wolstenholme Pulmonary Hospital, Norden, Rochdale	24	—	—	—	24
Total	592	24	—	6	622
(b) *Training colonies.*					
British Legion Village, Preston Hall, Kent	2	—	—	—	2
Burrow Hill Sanatorium Colony, Frimley, Surrey	1	—	—	—	1
Derwen Cripples' College, Oswestry	—	—	5	—	5
Papworth Village Settlement, Papworth Hall, Cambridge	3	—	—	—	3
Total	6	—	5	—	11
(c) *Institution with accommodation for combined tuberculosis.*					
Wrightington Hospital, near Wigan	20	5	—	—	25
(d) *Beds occupied by observation cases.*					
Elswick Sanatorium, near Kirkham	1	—	—	—	1
High Carley Sanatorium, near Ulverston	5	—	—	—	5
King Edward VII Sanatorium, Midhurst, Sussex	1	—	—	—	1
Oubas House Children's Sanatorium, Ulverston	—	4	—	—	4
Peel Hall Pulmonary Hospital, Little Hulton	1	—	—	—	1
Royal Liverpool Children's Hospital, Heswall, Cheshire	—	—	—	1	1
Wrightington Hospital, near Wigan	—	—	1	3	4
Total	8	4	1	4	17

Appendix XI (contd.).

Institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
(*e*) *Institutions for non-pulmonary tuberculosis.*					
Ethel Hedley Hospital for Crippled Children, Windermere	—	—	—	1	1
Leeds General Infirmary	—	—	1	—	1
Liverpool Open-Air Hospital, Leasowe, Cheshire ..	2	—	8	30	40
Manchester and Salford Hospital for Skin Diseases, Manchester	—	—	1	—	1
Preston Royal Infirmary	—	—	1	—	1
Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry	—	—	5	1	6
Royal Liverpool Children's Hospital—					
Heswall, Cheshire	—	—	—	11	11
Myrtle Street, Liverpool	—	—	—	1	1
Salford Royal Hospital	1	—	—	—	1
Warwickshire Orthopaedic Hospital for Children, Coleshill	—	—	—	3	3
Warrington Infirmary	—	—	—	1	1
Wrightington Hospital, near Wigan	—	—	75	97	172
Total	3	—	91	145	239
Grand Total	629	33	97	155	914
	662		252		

N.B.—The number of beds occupied fluctuates during the course of the year, there being a greater demand for beds in the summer than in the winter. In July, 1935, the beds occupied totalled 1,018, and in July, 1936, 976.