Annual report : 1933/34 / King Edward VII Sanatorium, Midhurst.

KING EDWARD VII SANATORIUM MIDHURST

(FOUNDED BY H.M. KING EDWARD VII IN 1903 WITH FUNDS PROVIDED BY THE LATE SIR ERNEST CASSEL)

PRESIDENT:

HIS MAJESTY THE KING

TWENTY-EIGHTH ANNUAL MEDICAL REPORT

JULY 1933 to JUNE 1934

Copies of this report may be obtained on application to

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King Edward VII Sanatorium, Midhurst.
South Elevation of Patients' Block.

Frontispiece.

KING EDWARD VII SANATORIUM

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KING EDWARD VII SANATORIUM MIDHURST

Twenty-eighth Annual Report

JULY 1933 to JUNE 1934

SINCE the publication of the 27th Annual Medical Report, Richard Robertson Trail, M.C., M.A., M.D., F.R.C.P., resigned his post as Medical Superintendent after ten years of loyal service. Dr. Trail carried out his administrative duties with tact and enthusiasm, and kept abreast of all recent scientific and clinical developments in relation to pulmonary tuberculosis, of which he availed himself in his treatment of patients at the Sanatorium with marked success.

Geoffrey S. Todd, M.B., Ch.M., M.R.C.P., has been appointed Medical Superintendent in succession to Dr. Trail.

During the year under review, 294 patients were admitted to the Sanatorium, 51 of these being readmissions.

In the same period, 282 patients were discharged. Of these, 47 were readmissions and will be considered separately from new patients discharged during the year. One readmission case died in the Sanatorium. Thirty patients remained for less than 9 weeks' treatment and have not been entered in the Sanatorium records.

Excluding these 30 and the readmissions, the patients discharged during the year totalled 205. These were classified on admission, in accordance with the conditions of grouping which are to be found on a later page, as follows :—

Group I	38
Group II	85
Group III	66
Group IV	16

The applications for particulars of admission numbered 302, and the average waiting list has been 13–14 for men and 13–14 for women—an increase on the previous year, especially as regards women.

Seventy-six applicants were examined by the Medical Superintendent, 69 (90·7 per cent.) being accepted, and 7 (9·3 per cent.)

being rejected as unsuitable for admission under the rules of the Sanatorium. It is gratifying to note that very few cases of the wrong type were admitted, of all those who live outside the prescribed radius of 50 miles from London and so are exempt from examination by the Medical Superintendent. This is due to the fact that all local practitioners are asked to submit X-rays of these prospective patients, if any have been taken. Of the 16 cases classified in Group IV as having no definite evidence of pulmonary tuberculosis, in 5 nothing definite was found and 11 had thickened pleura.

Artificial pneumothorax has been employed in 24 cases during the year, bringing the total of cases treated in this way in the last 10 years up to 197.

During the year under investigation, the operating theatre, the generous gift of the Rt. Hon. The Lord Woolavington, G.C.V.O., was opened. Work commenced on 3rd February, 1934, and by 30th June, 14 Phrenic Evulsions, 2 Phrenic Crushes, 2 Thoracoplasties and 2 minor operations were performed.

A description of this theatre and the work done appears on a later page.

Classes of embroidery and basket-work were held, as in previous years, and the attendance has proved them to be a useful and interesting contribution to Sanatorium life.

The talking picture programmes continued to be provided during the winter months, every Friday evening; and light concerts were given at intervals.

Additional facilities for purchasing their ordinary requirements have been secured for the patients, by the rebuilding and enlarging of the Sanatorium shop.

The library has been considerably increased, and in future we hope to obtain many of the latest novels for distribution among the patients.

GENERAL STATISTICS.

The following tables show an analysis of the 205 new patients discharged during the year, under the following headings :—

(1) Place of Residence.
(2) Occupation.
(3) Age and Sex.
(4) Married or Single.
(5) Mode of Onset of Disease.
(6) Duration of Disease.

Table I.—Place of Residence.

Place of Residence	Number of Patients	Place of Residence	Number of Patients
London	83	Middlesex	3
Surrey	19	Warwickshire	3
Hampshire	12	Bedfordshire	2
Irish Free State	11	Scotland	2
Kent	11	Suffolk	2
Lancashire	10	Cambridgeshire	1
Buckinghamshire	6	Channel Islands	1
Hertfordshire	6	Derbyshire	1
Sussex	6	Dorset	1
Devon	5	Gloucestershire	1
Yorkshire	5	Herefordshire	1
Northern Ireland	4	Monmouth	1
Essex	3	Nottinghamshire	1
Glamorganshire	3	Somerset	1
			205

Table II.—Occupation.

Occupation	Number of Patients	Occupation	Number of Patients
Clerks	34	Clergymen	2
Nil	22	Dancing Teachers	2
Housewives	19	Directors	2
Managers	10	Estate Agents	2
Civil Servants	7	Merchants	2
Schoolchildren	7	Printers	2
Nurses	6	Retired	2
Students	6	Tailors	2
Agents	5	Tea-tasters	2
Brokers	5	Air Pilots	1
Engineers	5	Architects	1
Secretaries	5	Bank Cashiers	1
Commercial Travellers	4	Boarding-house Keepers	1
Medical Practitioners	4	Builders	1
Royal Navy	4	Carpenters	1
Saleswomen	4	Dental Surgeons	1
School Teachers	4	Licensees	1
Book-keepers	3	Masseuses	1
Hairdressers	3	Pharmacists	1
Insurance Officials	3	Poultry Instructresses	1
Manufacturers	3	Royal Air Force	1
Shop-owners	3	Salesmen	1
Accountants	2	Ship's Pursers	1
Army	2	Warehousemen	1
Civic Guards	2		205

Table III.—Age and Sex.

Years	Males	Females	Total
Under 20	4	11	15
20-25	21	22	43
26-30	29	16	45
31-35	18	22	40
36-40	18	7	25
41-45	9	6	15
46-50	8	4	12
Over 50	7	3	10
	114	91	205

Table IV.

Married	87
Single	118
Total	205

Table V.—Mode of Onset of Disease.

Mode of Onset.	Number of Cases.	Percentage.
Cough	79	38·54
Pleurisy	29	14·15
Lassitude	22	10·73
Haemoptysis	20	9·76
Influenza	19	9·27
Loss of Weight	9	4·39
Pneumonia	6	2·93
Other modes	21	10·24
	205	—

Table VI.—Duration of Disease.

Average duration	1 year, 8 months, 1 week.
Extremes	4 weeks—22 years.

TABLE VII.—GENERAL RESULTS OF TREATMENT AS SHOWN BY THE CONDITION OF THE PATIENTS ON ADMISSION AND ON DISCHARGE FROM THE SANATORIUM DURING THE YEAR 1933–1934.

Group on Admission	Number of Cases	Arrested	Much Improved	Improved	Stationary or Worse	Died in Sanatorium
I	38	27	8	3	—	—
II	85	20	48	13	4	—
III	66	3	22	17	24	—
All cases ..	189	50	78	33	28	—
IV ..	Patients in whom no definite evidence of Pulmonary Tuberculosis was found	Number of Cases. 16	11	4	1	—

GROUPS.—As in previous Annual Reports, the Turban-Gerhardt classification has been used to indicate the clinical condition of patients on admission. This classification, based on physical signs, is as follows :—

Group I.—Disease of slight severity, limited to small areas of one lobe on either side which, in the case of affection of both apices, does not extend beyond the spine of the scapula or the clavicle, or in the case of affection of the apex of one lung, does not extend below the second rib in front.

Group II.—Disease of slight severity, more extensive than Group I, but affecting at most the whole of one lobe; or severe disease extending at most to the half of one lobe.

Group III.—All cases of greater severity than Group II, and all those with considerable cavities.

By "disease of slight severity" is to be understood, disseminated foci characterised by slight dullness, indefinite rough or weak vesicular, vesico-bronchial, or broncho-vesicular breathing, and fine and medium crepitations.

By "severe disease" is meant massive infiltration, recognised by definite dullness, broncho-vesicular or bronchial breathing, with or without crepitations.

Cases with signs of considerable excavation, giving rise to tympanitic percussion with amphoric or cavernous breathing and numerous coarse consonating râles, come under Group III.

Pleuritic dullness, if only of slight extent, is to be left out of account; if it is considerable, pleuritis should be specially mentioned under tuberculous complications.

The following terms are used to describe the condition of patients on discharge from the Sanatorium :—

"DISEASE ARRESTED."—General health completely restored in every respect, without any sign of disease of the lungs except such as is compatible with a completely healed lesion ; sputum, if still present, free from tubercle bacilli.

"MUCH IMPROVED."—General health good ; physical signs of disease in the lungs, though much diminished, not entirely cleared up, *e.g.*, limited to a few crepitations on cough only ; tubercle bacilli still to be detected in the sputum.

"IMPROVED."—General health improved, but not restored ; physical signs of disease in the lungs still present, though less marked than on admission.

"STATIONARY."—No appreciable improvement in the condition of the lungs or in the general health.

"WORSE."—General or local condition worse.

TABLE VIII.—DEMONSTRATION OF T.B. IN SPUTUM.

On Admission.		On Discharge.	
Positive	99	Positive..	57
Negative	66	Negative	88
No Sputum	24	No Sputum	44
Group IV cases	16	Group IV Cases ..	16
	205		205

Number of Patients whose sputum became T.B. Negative in the Sanatorium = 42.

TABLE IX.—WEIGHT.

Weight	Group I	Group II	Group III	Group IV	Totals
Gained	31	66	40	11	148
Lost	6	11	13	4	34
No Change	—	7	2	1	10
Not Weighed ..	1	1	11	—	13
All Cases ..	38	85	66	16	205

Readmission Cases.

This year we are adding tables to demonstrate the condition of return cases both on readmission and discharge during the year 1933–1934 :—

Table I.

	Number of Cases.	
	On Previous Discharge.	On Readmission.
Group I	8	3
Group II	32	28
Group III	6	15
Group IV	2	2
	48	48

The most notable feature of the above table is that, although 8 were discharged as Group I, only 3 had remained in the same condition ; and the most notable increase was in Group III, which had risen from 6 to 15.

When one, however, studies Table II, it is noted that out of the total of 48 readmissions, 7 were arrested, 21 much improved and 11 improved—*i.e.*, 39 out of the 48 cases benefited considerably from their further Sanatorium treatment.

Table II.

Group	Arrested	Much Improved	Improved	Stationary or Worse	Died in the Sanatorium	Totals
I ..	2	—	—	1	—	3
II ..	5	14	7	2	—	28
III ..	—	6	3	5	1	15
IV ..	—	1	1	—	—	2
All cases	7	21	11	8	1	48

In going fully into the history of these readmissions, we were struck by the fact that in nearly all cases the re-activation was due to the patient having relaxed the rules suggested for leading a quiet and well-regulated life after leaving.

The value of this regulation of life cannot be too strongly stressed—as may be seen by a study of Table II, which shows that when a regular routine was adopted the great majority of the patients responded favourably.

REPORTS OF SPECIAL DEPARTMENTS.

REPORT OF THE THROAT DEPARTMENT.

The larynx of each patient discharged during the year ending 30th June, 1934, was examined by Sir St. Clair Thomson. Of these, 21 had definite tuberculous disease of the larynx. The results of treatment are shown in Tables I, II and III.

TABLE I.—SHOWING THE RESULT ON DISCHARGE OF TREATMENT IN PATIENTS SUFFERING FROM TUBERCULOSIS OF THE LARYNX IN WHOSE SPUTUM TUBERCLE BACILLI WERE DEMONSTRATED IN THE SANATORIUM.

Classification	Number of Cases.	Cured	Much Improved	Improved	Stationary or Worse	Remarks
Group I	—	—	—	—	—	For cases treated with Galvano-Cautery, *see* Table III
Group II	2	2	—	—	—	
Group III	10	1	1	4	5	
All Cases	12	3	1	4	5	

TABLE II.—SHOWING THE RESULT ON DISCHARGE OF TREATMENT IN PATIENTS SUFFERING FROM TUBERCULOSIS OF THE LARYNX IN WHOSE SPUTUM TUBERCLE BACILLI WERE NOT DEMONSTRATED IN THE SANATORIUM.

Classification	Number of Cases	Cured	Much Improved	Improved	Stationary or Worse	Remarks
Group I	1	—	—	1	—	For cases treated with Galvano-Cautery, *see* Table III
Group II	1	—	—	1	—	
Group III	2	—	1	—	1	
All cases .. —	4	—	1	2	1	

TABLE III.—SHOWING RESULT ON DISCHARGE OF TREATMENT WITH THE GALVANO-CAUTERY IN PATIENTS SUFFERING FROM TUBERCULOSIS OF THE LARYNX.

Classification	Number of Cases	Cured	Much Improved	Improved	Stationary or Worse	Remarks
Group I	—	—	—	—	—	All cases had T.B. Positive sputum.
Group II	—	—	—	—	—	
Group III	5	1	1	2	1	
All cases	5	1	1	2	1	

ARTIFICIAL PNEUMOTHORAX, PHRENIC EVULSION AND THORACOPLASTY CASES.

As stated in last year's report, of the 173 cases in which Artificial Pneumothorax was attempted during the period 1925–33, 128 were successful.

Of these 128, 102 (79·6 per cent.) are now alive; and the following table indicates the reports received of them this year, with reference to sputum and continuance of refills :—

TABLE I.

Refills	No Sputum	T.B. Negative	T.B. Positive	Not Tested	Totals
Ceased refills	40	24	11	11	86
Continuing refills ..	10	5	1	—	16
All cases ..	50	29	12	11	102

Artificial Pneumothorax was attempted in 24 cases during the year under review, 18 of these being successful.

All cases have been grouped as follows :—

Choice I.—Cases with involvement of not more than half of one lung, with signs of activity.

Choice II.—Cases in which the whole of one lung is affected, or the upper half of one with slight infiltration in the other.

Choice III.—Cases with bilateral disease, but with a possibility of benefit by a limited pneumothorax on the more active side.

Cases *in extremis*, *e.g.*, with haemoptysis.

As may be seen from Table II, which gives an analysis of cases in which Artificial Pneumothorax was successfully induced during the year 1933–34 and which are continuing refills, the results from this form of treatment in suitable cases are very encouraging. It was also noted that in cases in which there was tuberculosis of the larynx as well, a marked improvement in the condition of the larynx took place.

TABLE II.

Classification	Larynx Healed	Sputum on Admission		Sputum on Discharge.	
		No Sputum or T.B. Negative	T.B. Positive	No Sputum or T.B. Negative	T.B. Positive
Choice I	—	—	3	2	1
Choice II	1	2	8	7	3
Choice III	—	2	1	2	1
All cases	1	4	12	11	5

Of the 18 successful cases, 1 had to be abandoned owing to re-expansion, and 1 obliterated after the formation of fluid. The sputum of one of these cases became negative in the Sanatorium, but the other remained T.B. Positive.

Of the 24 cases attempted, 6 failed owing to there being no space or a pocket only.

As previously mentioned, the operating theatre was opened for work on 3rd February, 1934. It has proved of inestimable value, as it is now possible to perform all necessary operations in the Sanatorium and thus save patients the added hardship of travel to London.

The theatre is fully equipped with all the latest devices for the treatment of cases of surgical pulmonary tuberculosis. For those interested in the general lay-out, pictures are reproduced in this report.

In the short time between the opening of the theatre and the last date to which this report applies—30th June, 1934—Phrenic Evulsion has been performed 14 times and Phrenic Crush twice. Of the 14 Phrenic Evulsion cases, 2 have since proceeded to the major operation of Thoracoplasty.

In our experience we have found Phrenic Evulsion to be of value in helping to obliterate apical cavities. The cavity has been completely obliterated in 2 cases, the X-ray plates of one of these being reproduced in another section of this report. The other type of disease for which it has been found extremely useful has been soft infiltration at the apex, which, if left alone, has been

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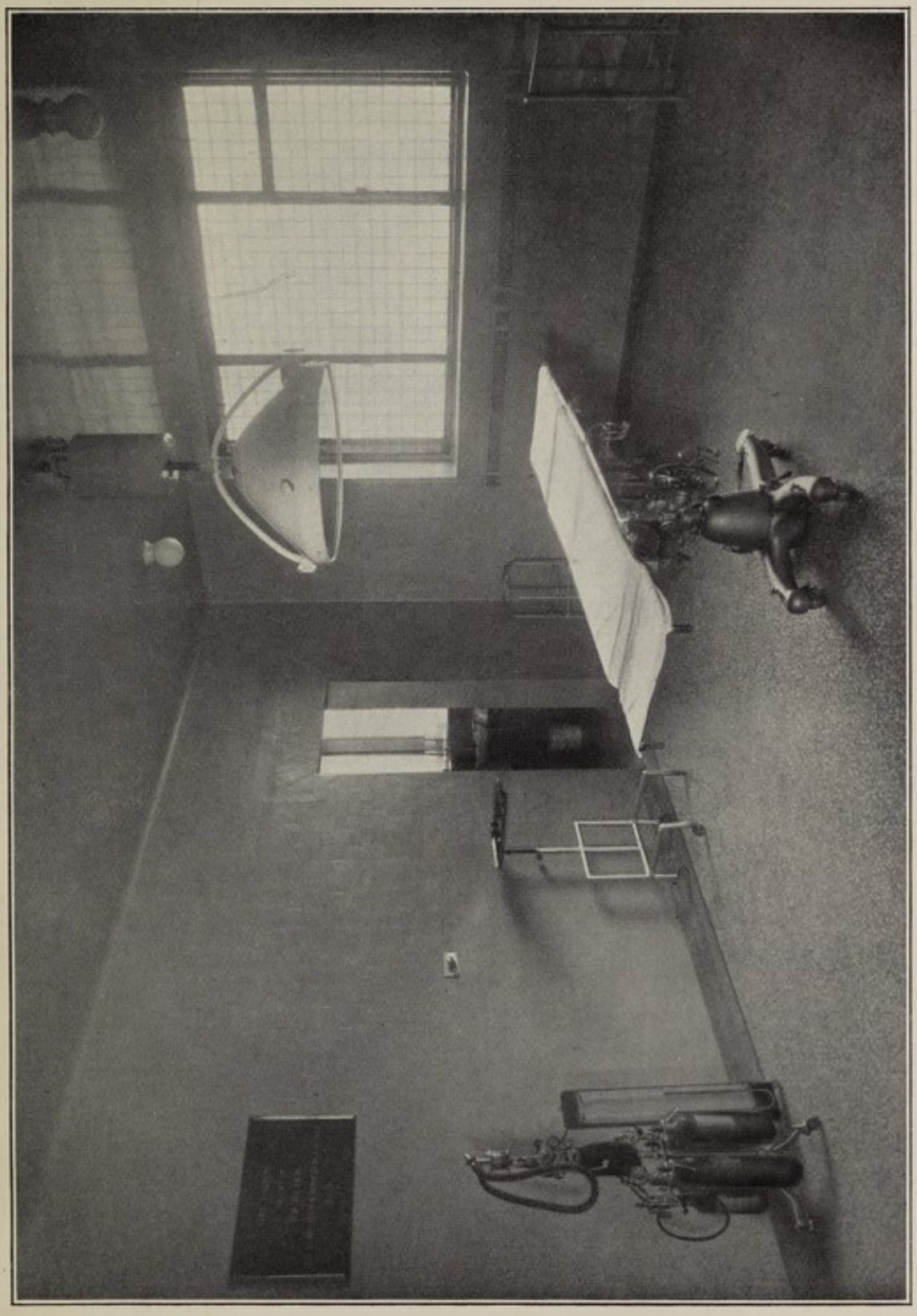
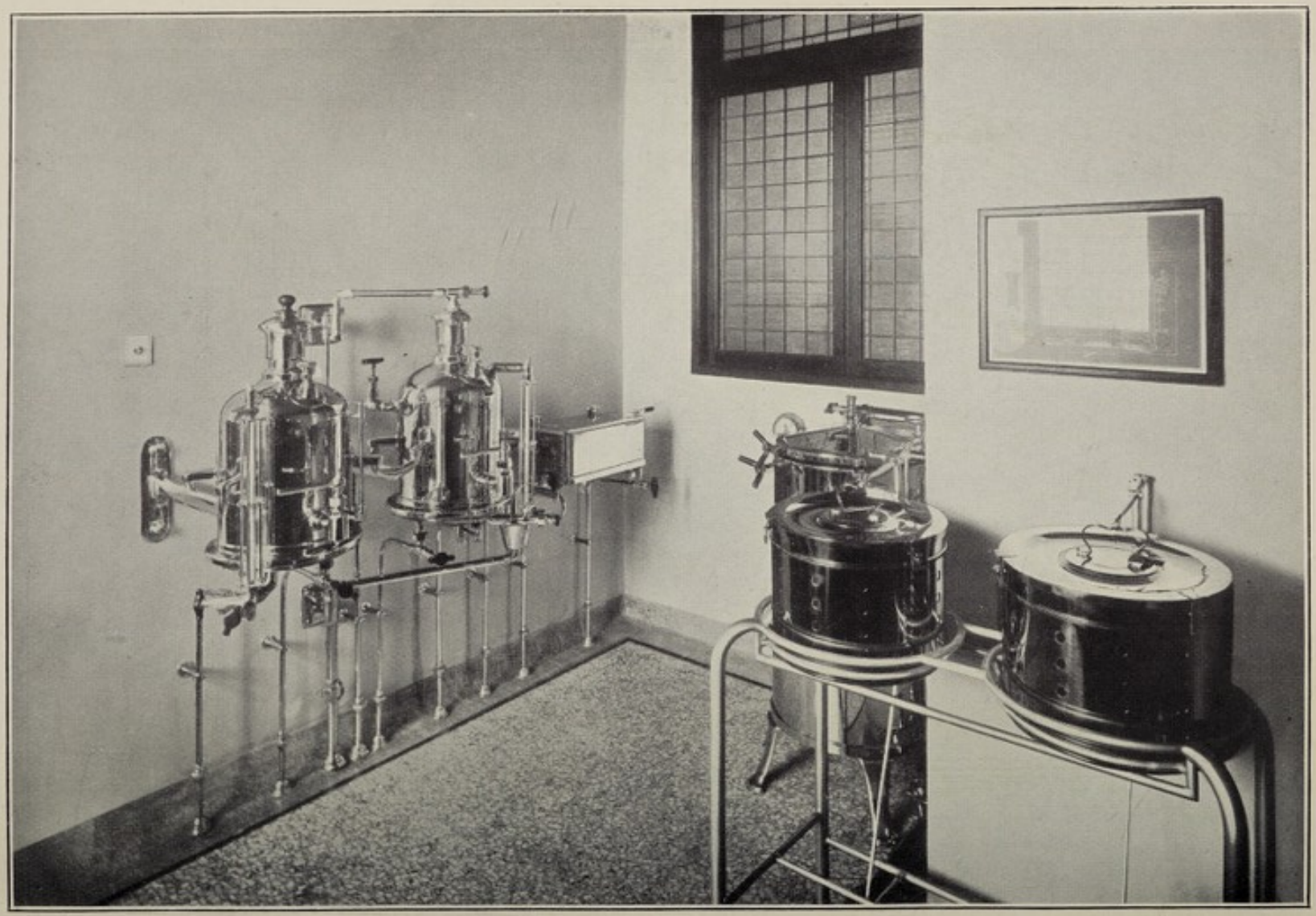


General View of Operating Theatre.



Operating Theatre.

Sterilising Equipment.

found, in a considerable number of cases, to excavate. If Phrenic Evulsion is done, however, fibrosis takes place more rapidly and cavitation appears to be prevented.

A table is appended, showing the blood sedimentation rate and sputum findings of the Phrenic Evulsion and Phrenic Crush operation cases before and after the operations (which were all carried out in the Sanatorium).

Group	Blood Sedimentation Rate		Sputum	
	Before Operation	After Operation	Before Operation	After Operation
	Per cent.	Per cent.		
II	28	1	T.B. Negative	T.B. Negative
II	36	8	T.B. Positive	T.B. Negative
II	44	5	T.B. Positive	T.B. Negative
II	26	12	T.B. Positive	T.B. Positive
II	Not taken	No taken	T.B. Positive	Not tested
III	45	18	T.B. Positive	T.B. Positive
III	40	53	T.B. Positive	T.B. Negative
II	34	11	T.B. Negative	T.B. Negative
III	26	26	T.B. Positive	T.B. Positive
II	10	15	T.B. Positive	T.B. Positive
III	20	20	T.B. Positive	T.B. Positive
I	6	7	T.B. Negative	T.B. Negative
II	27	14	T.B. Positive	No sputum
II	32	1	T.B. Positive	T.B. Negative
I	17	17	T.B. Positive	T.B. Negative
II	38	8	T.B. Negative	No sputum

In all, 90 operations of Phrenic Evulsion have been performed over a period of 6 years, to date. Of these cases, 76 (84·4 per cent.) are now alive.

Mr. Tudor Edwards has carried out Thoracoplasty in 18 cases during the same period—17 survive, and of these 8 are known to have no sputum and 5 T.B. Negative sputum.

Until 30th June, 1934, only two first-stage Thoracoplasties were performed in the Sanatorium theatre. It is hoped in the next report to give a detailed account of these and further Thoracoplasty cases to be carried out, in their various stages.

All the operations mentioned as having been performed in our theatre were done by Mr. Tudor Edwards, our Honorary Consulting Surgeon, and we are greatly indebted to him for his valued advice in the selection and treatment of the patients.

Sanocrysin.

The after-history of the 77 cases who had gold treatment in previous years has been followed up—19 are now dead, and of the

remaining 58 it is known that 22 have no sputum and 16 have T.B. Negative sputum.

During the course of this year under review, 46 cases were treated with gold, and the following table is inserted to indicate a comparison of the results of sputum examination on admission and discharge.

On Admission			On Discharge		
No Sputum	T.B. Negative	T.B. Positive	No Sputum	T.B. Negative	T.B. Positive
2	9	35	6	19	21

Of the above, in 1 case (which became T.B. Negative) the gold was combined with Artificial Pneumothorax, in 7 cases with Phrenic Evulsion (4 of which became T.B. Negative) and in 1 case with Thoracoplasty (this case remaining T.B. Positive).

In our next report it is hoped to give a full account of an increased routine treatment of Sanocrysin after completed Thoracoplasties performed both here and at Brompton Hospital, as it has been found that this treatment helps fibrosis to take place in these cases.

With regard to the remaining cases the treatment was given to those patients who were beginning to heal but who had either (1) a slight but persistent temperature above normal but below 100°, or (2) a T.B. Positive sputum, although clinical findings were satisfactory.

REPORT OF THE X-RAY DEPARTMENT.

We regret to announce that during the year our Consulting Radiologist, Dr. Stanley Melville, passed away. His loss is keenly felt, and his many visits and helpful suggestions will be greatly missed.

Dr. J. V. Sparks, of Victoria Park Hospital, has been appointed Honorary Radiologist in his place.

During the past year the work of the X-ray Department has considerably increased, the total number of radiographs taken being 1,141, as compared with 628 carried out in 1932–33. This increase is principally due to a new routine having been adopted during the last six months, whereby every patient is X-rayed on admission, again one month later, and subsequently at six- to

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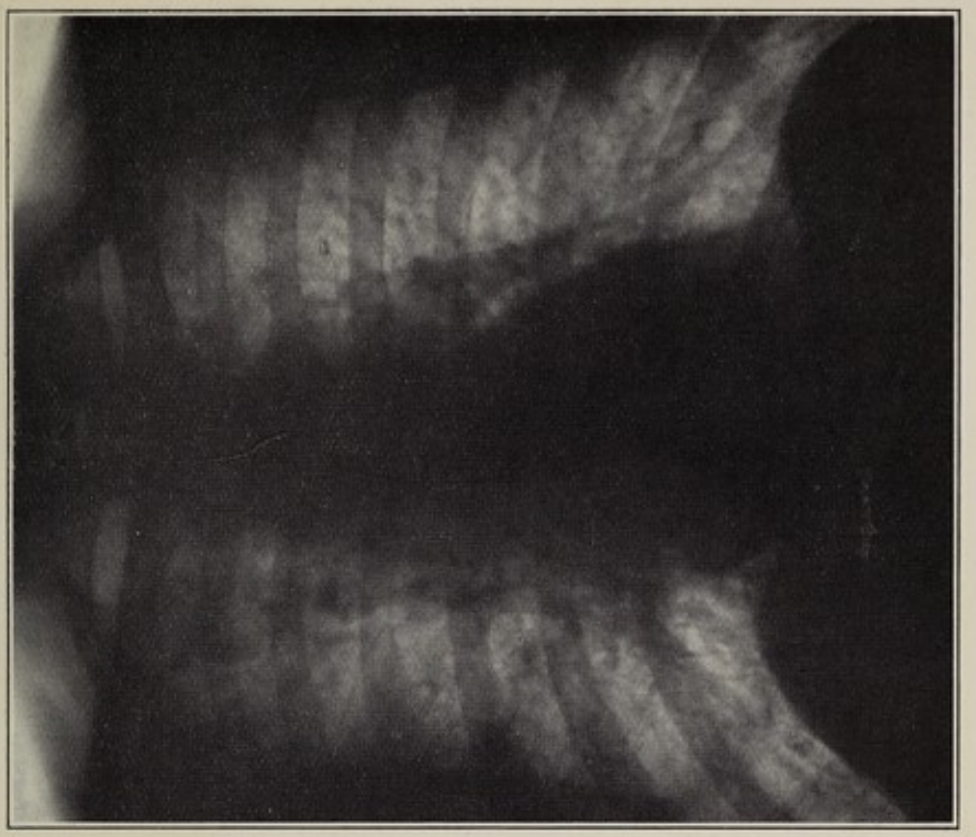

FIG. 2.

FIG. 1.

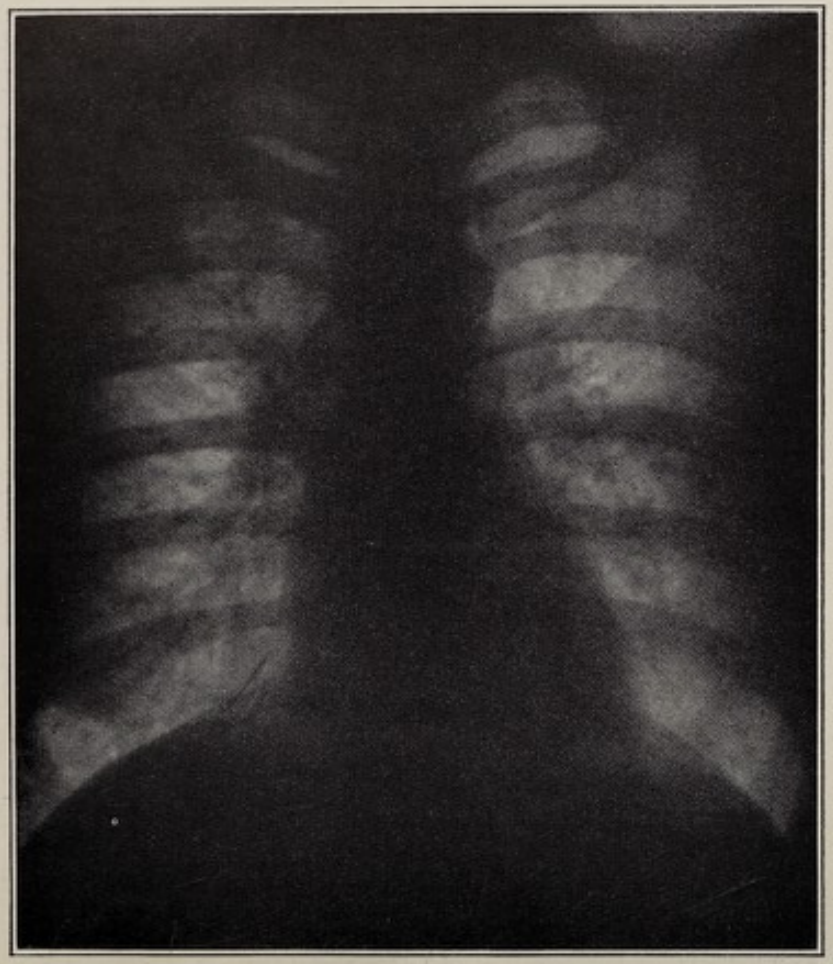

Fig. 3.

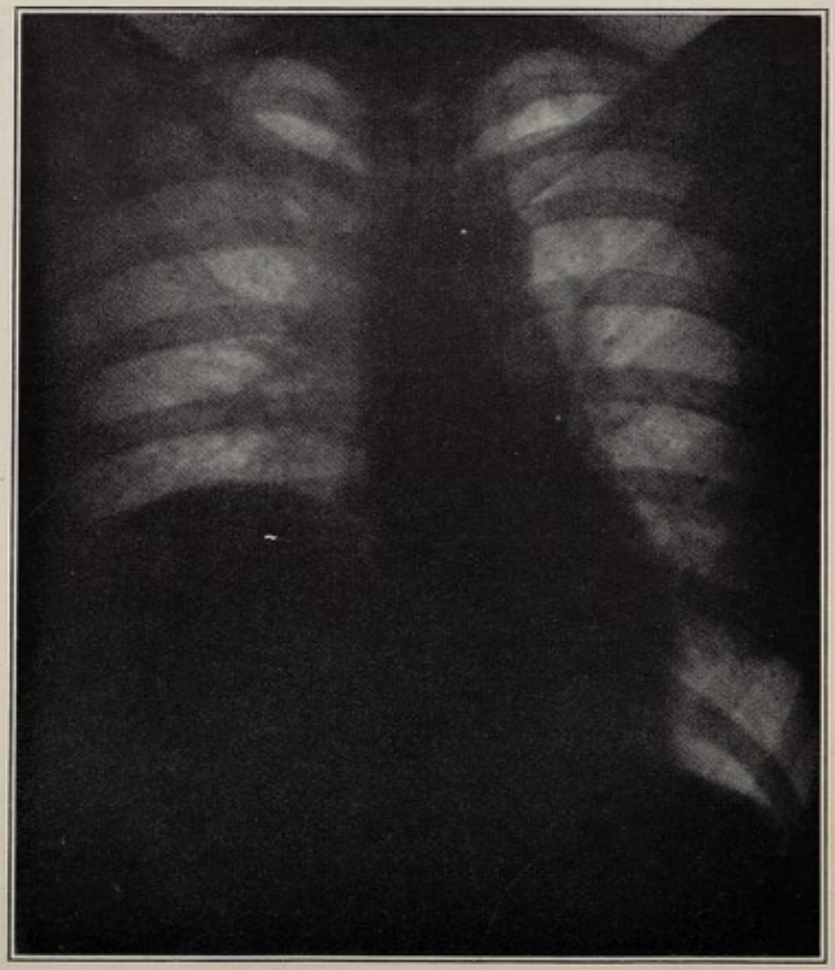

Fig. 4.

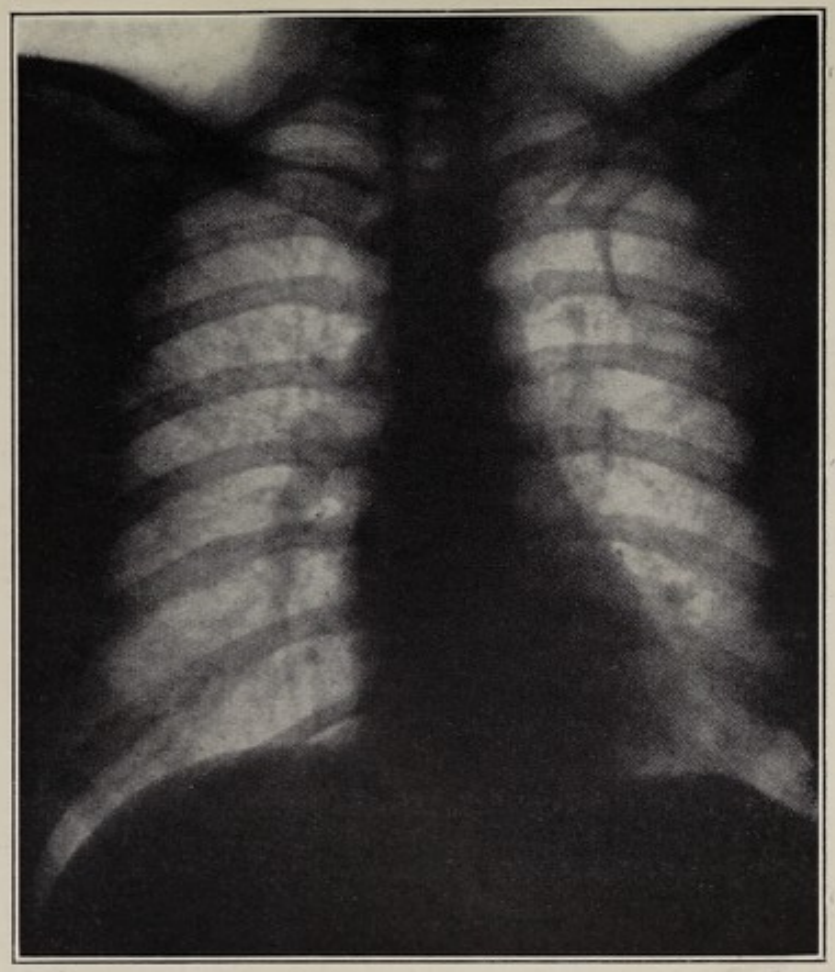

Fig. 5.

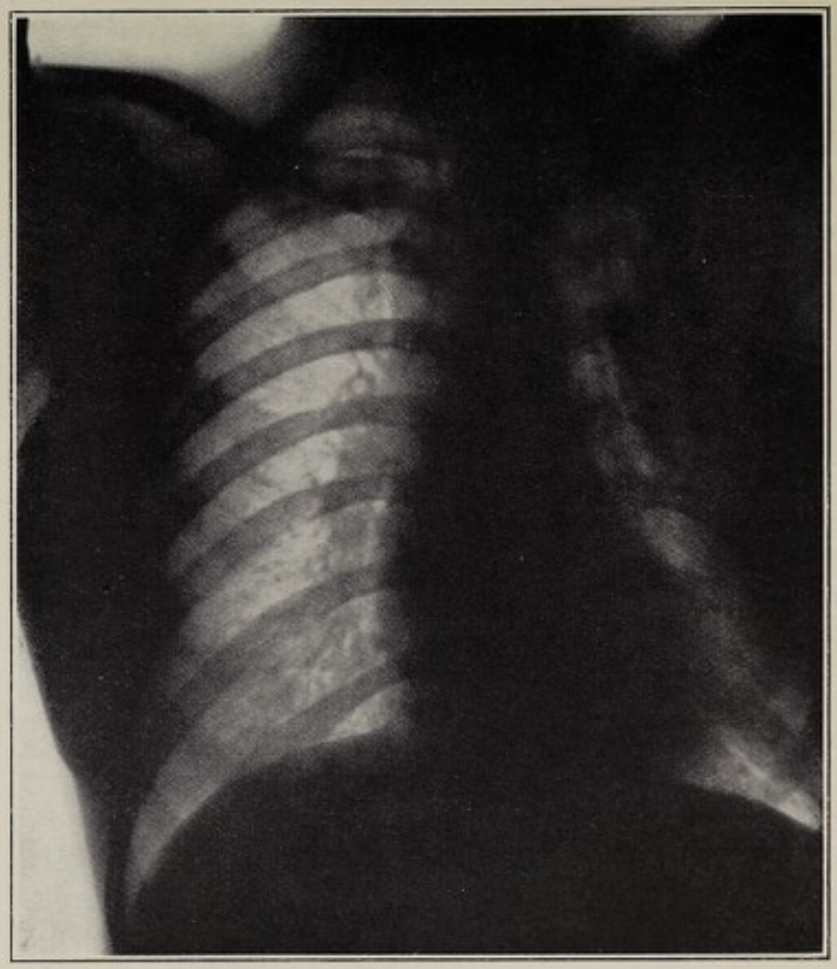

Fig. 6.

eight-weekly intervals, dependent upon the clinical findings from time to time; lastly, a final radiograph is taken just prior to discharge.

Every effort has been made to obtain results up to the best possible standard; and, with this end in view, the exposure necessary for each individual is noted, so that all subsequent plates are of the same penetration. By this means, as comparable a series of plates as possible is obtained on each patient.

To ensure the plant being mechanically perfect, it is inspected quarterly by an engineer from a firm of manufacturers of X-ray apparatus.

Recently all the films have been stored in a specially constructed fire-proof room and, during the change-over, an opportunity was taken to adopt a new filing system, whereby every plate was card-indexed in such a manner that it is now possible to obtain full details relating to each radiograph without loss of time.

The value of serial X-rays in association with regular clinical examination of all cases cannot be too strongly stressed. This is well illustrated by the following examples :—

Case I.—L. K., male, aged 42, was admitted with physical signs in the upper third of both lungs, with a cavity in the right lung. He had no sputum. A radiograph showed infiltration in the upper and middle zones of the right lung, with a cavity in the upper zone; and old scattered infiltration in the upper and middle zones of the left lung (Fig. 1).

He was kept at strict rest for one month, after which time all the physical signs were diminished, and further X-ray examination showed the cavity in the right lung to have almost completely contracted and to be surrounded by an area of fibrosis (Fig. 2).

Case II.—A. E., female, aged 36, was admitted with physical signs in the upper third of the right lung, and a T.B. Positive sputum. X-ray examination showed infiltration in the upper and middle zones of the right lung, with a cavity in the upper zone; and some calcareous foci in the middle zone of the left lung (Fig. 3).

She was treated along ordinary sanatorium routine lines, with the addition of a course of Sanocrysin, given in weekly injections of 0·1 gm. After the third of these, she developed a severe rash, and, in consequence of this, this method of treatment was abandoned.

Following a stay in the Sanatorium of five months, she was discharged as being much improved. Three months later, however, she came back to the Sanatorium, owing to the persistence of the sputum, and a further radiograph showed that the cavity in the right lung was increasing in size.

A phrenic evulsion was carried out on the right side by Mr. Tudor Edwards; and an X-ray examination made two months later showed the right side of the diaphragm to be high in position. The cavity previously noted in the upper zone of the right lung was shown to be completely obliterated and replaced by an area of fibrosis (Fig. 4). Her sputum is now Negative for T.B.

Case III.—B. P., female, aged 21, was admitted with physical signs in the upper half of both lungs and a cavity in the upper zone of the left lung, her sputum being T.B. Positive. A radiograph showed her to have scattered infiltration throughout the left lung, with a large cavity in the upper zone; and scattered infiltration in the upper and middle zones of the right lung (Fig. 5).

In view of the fact that she made no material improvement after five months of sanatorium treatment, and as she commenced to have repeated small haemoptyses, it was considered advisable to close the cavity in the left lung by means of an upper stage thoracoplasty. This was successfully carried out by Mr. Tudor Edwards; and an X-ray examination made six weeks after the operation showed the cavity to be completely obliterated (Fig. 6), and her sputum is now T.B. Negative.

These cases—only three examples out of a large number of similar radiographs—support the principle of frequent and regular X-ray, as well as clinical, examination of all patients, and demonstrate the value of the extra work being carried out in the department.

REPORT OF THE DENTAL DEPARTMENT.

The following dental treatment has been carried out during the year :—

Fillings	124
Extractions	69
Scaling	22
Root treatment	5
Radiographs	2
Repairs	8
Dentures	6
Refixing Crown	1

REPORT OF THE PATHOLOGICAL DEPARTMENT.

The routine work for the year ending 30th June, 1934, has been as follows :—

Sedimentation tests	2,164
Wassermann Reactions	224
Urine examinations..	207
Blood counts	33
Miscellaneous	45
Pleural fluid examinations	12
Vaccines	29
	2,714

Milk was tested twice monthly.

Sputum examinations amounted to 2,259.

The sputum tests are in future to be carried out once a month. When three successive negatives in any one patient are recorded the fourth will be concentrated. Many patients for special reasons—such as, for example, those having gold treatment—have their sputum examined at much shorter intervals.

In future, periodical bacteriological examination of the water supply will be undertaken.

The Blood Sedimentation Test.

Stimulated by the increasing number of inquiries about this test, the method used and its degree of usefulness in following the progress of cases, we think that a description of the technique used here, its advantages and faults, together with a few remarks on the subject as a whole, might be of interest.

We would like to point out that the various factors concerned in this test are still so little understood that we do not put it forward as irrefutable and to be used without recourse to the routine clinical and radiological examinations. We do claim, however, that, as it has in our experience followed closely what clinical and radiological evidence has shown us to be happening in any given case of Pulmonary Tuberculosis, one must be very careful before calling a case satisfactory if it is found to have a rising test.

Twice in the year under consideration we have sent home a case which appeared to be healing normally in every respect and was apparently well, but which had an abnormal blood sedimentation rate. Later we heard that a spread had occurred in the other lung within one month of the increased rate, in both cases.

Technique of Red-Cell Sedimentation Estimation.

Apparatus required :—

1. Bottle of Ether for cleaning the skin.
2. Stabbing needle, with eye impaled on a cork and kept in alcohol, frequently renewed. Needle recommended is a No. 12 sailmaker's needle, triangular in cross-section and sharpened on a fine oil stone.
3. Sterilised cotton wool.
4. Thin rubber sheet (about 1 ft. 6 in. square) to cover lap.
5. Grease Dermatograph pencil (Geo. Romney & Co.).
6. One foot of thin rubber tubing.
7. Rubber teats to fit dropping pipettes.
8. Small test tubes, about 5 cm. long and 0·9 cm. wide.
9. Rubber stoppers to fit these test tubes.
10. Wooden block, with holes bored to hold these tubes.
11. Rubber bands, size $3\frac{1}{2}$ in. by $\frac{3}{8}$ in. (These must be well stretched before use.)
12. Dropping pipettes—one for each patient—made out of soft glass, drawn in a Bunsen flame, from tubing about 8 mm. outside diameter, so that the small end is about 2 mm. across outside and 1·5 mm. inside. Gauge by passing end through a 2 mm. hole in a thin brass plate and cutting with a diamond at that level. Two drops of citrate solution, plus 8 drops of blood, as measured with such a pipette held vertically, will deliver about 0·33 c.c.
13. Pipettes of thick glass, about 6 in. long, holding a measured volume of 0·1 ml. (Hawkesley's make these to within a tolerance of 0·005 ml.) and graduated in millimetres to 100, so that each column of citrated blood is identical in volume and in height (bore of tube, 1·13 mm.). These are kept at 37° Centigrade, ready for use, on a warm plate or in an Opsonic-Index incubator.
14. Water-bath, kept at 37° Centigrade.
15. Metal rack to fit above, to hold the small test tubes and the pipettes with their rubber bands on.
16. Warm tray or Opsonic-Index incubator, kept at 37° Centigrade, to hold the graduated pipettes.
17. Sodium citrate solution 3·8 per cent. in distilled water. (It is recommended that this be kept in a screw-capped bottle, in which it can be autoclaved when first made up.)

Put two drops of citrate solution into one of the small test tubes with a dropping pipette. Clean the patient's thumb with wool and ether. Entrap blood in the end of the thumb with the rubber tubing. Shake off alcohol from the needle. Stab thumb at either side just proximal to the upper level of the nail, then, keeping the exuding drop from "running," squeeze the blood out gently with the left hand and, at the same time, suck up (with the same pipette with which the citrate was measured) and drop

into the test tube eight drops of blood—not necessarily in one "go." Shake the tube to mix the contents. Cork the tube. Write the patient's name on the tube with the grease pencil.

If the next step is going to be done at once, place the citrated blood in the water bath for two minutes. Remove from the bath and shake about twenty times, without forming bubbles. (This is best done by holding the corked tube in the left hand and "flipping" from the wrist. It is advisable to handle the test tubes with one hand only, and the pipettes with the other, so that the upper ends of the pipettes which are sucked may be kept free from any infection.) Put back into warm bath while removing the cork. Remove the cork and plunge in a warmed graduated pipette, suck up and down to mix still more, wetting the entire graduated portion with the citrated blood. Fill the pipette to the upper mark. Keep the forefinger on the upper end. Hold the pipette horizontally. Wipe clean. Slip a rubber band over the ends to seal. Set vertically in the warm bath.

To read.

At the end of half an hour note the length of clear plasma above the red cells; this in millimetres is the sedimentation percentage rate. Reading is best done by viewing the column against an electric light. If "zoning" occurs, as is frequent in the intermediate percentage readings, the upper limit of the red cells is counted from where the column is opaque. If, due to improper filling of the pipette, the column of clear plasma extends above the o mark, add on this length in millimetres to the percentage reading. If, however, it is below the o mark, deduct the unfilled graduated length from the percentage reading on the scale. (The actual length of the clear column is the number required; the length of the original column, within the errors of filling, makes very little difference to the answer.)

Timing.

Make a mark on the face of a watch with a grease pencil, opposite the minute hand, when the first pipette is set up vertically in the bath. Do likewise when the last pipette has been set up. Make corresponding marks diametrically opposite (*i.e.*, half an hour later). Sub-divide the arc with the pencil at equal intervals with as many strokes as there are remaining pipettes. These marks may be rubbed off in rotation as the pipettes are read.

Cleaning.

The simplest way to use the dropping pipettes, small test tubes and rubber stoppers, again and again, is to drop them into a bowl of water immediately they are finished with. Remove all traces

of blood with a small jet of high-pressure water, shake them one by one and rinse in distilled water. Remove from this and place in some sort of drying oven. The grease pencil marks are easily removed when the tubes are warm.

The graduated pipettes.

Remove the rubber bands, rinse through with water and stand in distilled water. A suction pump is necessary to deal with many ; suck through with distilled water, alcohol and ether, and dry. With some waters silica deposits are formed on the inside of the pipettes. Should this occur they should be cleansed only with distilled water.

Comments on technique.

It is important, if time will allow, that two pipettes be set up, each filled one after the other from the same citrated sample of blood. The reading of the pipette which shows the maximum " drop " is the figure recorded. This will be seen in the first pipette slightly more often than in the second, and very much more in the first if unheated pipettes and samples are used, particularly on cold days.

It has been noted that it is the second pipette as often as the first which records the higher reading when wide differences have been observed. Careful cleaning of the pipettes is essential, but the wide differences recorded between parallel tests occur with pipettes that were most carefully cleaned and in samples that were well mixed. Examination of the pipette that has " hung up," also, shows no obvious gross clumping of its column of blood when the heating technique has been adopted (except on rare occasions). Perhaps the leucocyte content or platelet content of the sample produces these results, due to aggregates of these particles sticking to the pipette walls, but we do not think that this is a likely explanation. It is possible that by using pipettes with bores twice as large there would be less errors ; but the volume being four times that required to fill the smaller ones, this means that twelve large drops of blood would be necessary to fill one. This is approaching the limit of practical usefulness of this " Micro " technique.

It is also possible that 37° Centigrade may not be the best temperature in which to carry out this test. It was selected quite arbitrarily, except in so far as it might not be expected to affect changes which were produced at or near this temperature, and also because it is available in most laboratories where incubators and water-baths are used.

Parallel Sedimentation Tests.

Table I.

Value of Difference Recorded in Millimetres	Number of Times Difference was Recorded.			
	1 hour at Room Temperature. Everything cold	½ hour at 37° Centigrade. Cold Pipettes	½ hour at 37° Centigrade. Heated Pipettes	½ hour at 37° Centigrade. Heated Pipettes. Heated Samples
	A Per cent.	B Per cent.	C Per cent.	D Per cent.
0	38 = 19·0	9 = 18	7 = 14	155 = 31·0
1	57 = 28·5	14 = 28	19 = 38	144 = 28·8
	47·5	46	52	59·8
2	45 = 22·5	11 = 22	9 = 18	77 = 15·4
3	25 = 12·5	5 = 10	7 = 14	46 = 9·2
4	13 = 6·5	4 = 8	2 = 4	29 = 5·8
5	6 = 3·0	2 = 4	4 = 8	19 = 1·8
6	6 = 3·0	2 = 4		12 = 2·4
7	2 = 1·0	1 = 2	2 = 4	9 = 1·8
8	2 = 1·0	1 = 2		2 = 0·4
9	3 = 1·5			3 = 0·6
10	1 = 0·5			1 = 0·2
11	2 = 1·0			1 = 0·2
12				
13				
14				1 = 0·2
15				
16				
17				
18				
19				1 = 0·2
	200 Tests	50 Tests	50 Tests	500 Tests

	A		B		C		D	
	Times	Per cent.	Times	Per cent.	Times	Per cent.	Times	Per cent.
1st Pipette read higher ..	107 = 53·5		32 = 64		25 = 50		184 = 36·8	
2nd Pipette read higher ..	55 = 27·5		9 = 18		18 = 36		165 = 33·0	
They were equal	38 = 19·0		9 = 18		7 = 14		151 = 30·2	

	A	B	C	D
Total difference column in Millimetres	429 = 214·5 in 100 tests or 2·14 per test.	114 = 228 in 100 tests or 2·28 per test.	100 = 200 in 100 tests or 2·0 per test.	979 = 195·8 in 100 tests or 1·99 per test.

A study of the foregoing table shows that when parallel tests are performed at blood heat the difference between them is less than when they are done at room temperature, and for any one test the difference is most marked in cold weather. Note that although the tests in series A do not show a very great difference between parallel tests, often both are false. With reference to this see Table II.

It is difficult to explain the marked differences that occur occasionally in the heated series. It was observed that when the two outstanding differences of 14 and 19 were noted the day temperature was low; and it is possible that chilling of the citrated sample before being set up may account for these wide variations. It does not account for many of the lesser differences, because many were placed, within a few moments of withdrawal, into the warm bath, and differences were still observed.

Wide differences observed between parallel tests from the same sample of citrated blood at 37° Centigrade, when read in thirty minutes, become very much less when re-read after sixty minutes.

It is possible that one-hour readings would give, besides less variable results, more reliable indications of abnormality in cases in which the abnormality was slight. In cases in which the rate is rapid, the half-hour reading would probably provide the necessary information.

The reason why half-hour readings were adopted as a routine was because the figures recorded were comparable to the original one-hour readings in the cold. Before one-hour readings at blood heat can contribute useful information, it will be necessary to compile statistics of considerable magnitude from data derived from observations on both normal controls and on patients. We are aware that some workers adopt the graphic method of recording their results. This has not been adopted here because there is no evidence to show that any further information may be gained thereby, owing to the fact that curves which are dissimilar have practically always different end points.

The problem is to select the most suitable end point—the end point which gives the maximum amount of information and which shows with the most constant regularity the instability of the suspension, and to find a method that will enable this observation to be made in a simple and accurate manner.

It is unlikely that more than two readings will ever be necessary for practical purposes.

TABLE II.—COMPARISON BETWEEN HALF-HOUR READINGS AT BLOOD HEAT (37° CENTIGRADE) AND ONE HOUR AT ROOM TEMPERATURE (54° to 63° FAHRENHEIT).

0·1 ml. Pipettes (not heated).

No.	Room Temperature after one hour	Water Bath after ½ hour	Difference
1	1	1	None
2	31	29	− 2
3	24†	46	+ 22
4	27	24	− 3
5	29	38	+ 9
5	5	5	None
7	9	12	+ 3
8	30	32	+ 2
9	2	1	− 1
10	25	20	− 5
11	6	15	+ 9
12	8	16	+ 8
13	6	10	+ 4
14	24†	34	+ 10
15	5	11	+ 6
16	32†	38	+ 6
17	8	8	None
18	24	29	+ 5
19	16	19	+ 3
20	6	6	None
21	30	36	+ 6
22	34†	44	+ 10
23	25†	32	+ 7
24	18	20	+ 2
25	20	26	+ 6
26	20	22	+ 2
27	4	5	+ 1
28	5	5	None
29	1	1	None
30	18	26	+ 8
31	9	13	+ 4
32	2	7	+ 5
33	7	15	+ 8
34	34	38	+ 4
35	26*	45	+ 19
36	3*	13	+ 10

* Marked gross clumping *not* seen.
† Marked gross clumping of red cells seen on inspecting the column.

TABLE III.—COMPARISON BETWEEN THE MICRO SEDIMENTATION METHOD AND WESTERGREN'S METHOD.

Micro method as already described, except that the pipettes were not heated.

Westergren's method—200 millimetre column of venous blood citrated 1 to 4, set up in tubes holding a volume of 1 c.c. in 200 millimetres.

Read after one hour at room temperature.

No.	Micro method : Capillary blood— ½ hour at 37° C.	Micro pipette : Venous blood— ½ hour at 37° C.	Westergren's method : 1 hour at 67°–69° F.	Difference between A series and C series.
	A	B	C	D
1	7	8	4	+ 3
2	7	11	3	+ 4
3	8	9	5	+ 3
4	39*	42*	48	− 9
5	6	5	4	+ 2
6	24	30	28	− 4
7	25	20	19	+ 6
8	35	18	14	+ 21
9	26	21	19	+ 7
10	24	15	11	+ 13

* It is possible that the actual sedimentation rate in this patient was higher in the venous blood.

The average increase of the Micro method over Westergren's method is 4·6 per cent.

This series is, of course very short, but it would lead one to believe that the Micro method is quite as reliable as Westergren's method (if it is not more so), and very much more easily performed.

When we review the data of many clinical observations together with a (now) vast number of sedimentation records, we are reminded very strongly of the words of Professor Pembry, when he was writing of fever and put forward the suggestion that the sedimentation rate may be in many cases an indication of "a complex response or reaction to infection (and also to injury), and as such is to be regarded as protective mechanism or one of the defences of the body and (possibly) closely connected with the development of immunity (and repair)."

This definition is, of course, only applicable to the broad principles, and much remains to be proved. Until precise knowledge of this very complicated phenomenon, or rather phenomena, is forthcoming, the "sedimentation rate" must be considered merely as a pointer reading of change or changes of which as yet little is known.

In cases of apparently uncomplicated Pulmonary Tuberculosis, the sedimentation rate follows (literally follows, as it is usually several days behind) fairly faithfully the condition of the patient as observed clinically, provided a correct interpretation be given to it. Without knowing why the blood change takes place it is, of course, impossible to say with certainty what interpretation should be given ; nevertheless prolonged clinical observations lead us to believe that usually the magnitude of a given rate represents the product of the amount of tissue involved and the rapidity with which that involvement is taking place. An exception to this general rule is seen at the onset of a pleural effusion (and quite probably effusions into other serous cavities), which gives rise to percentage readings whose numerical magnitude bears no relation whatever to the amount of breaking-down tissue ; and, unless complications occur, such as spread of disease, secondary infection, etc., the readings rapidly return to their former level. Thus a patient may have an inactive, sterile pyo-pneumothorax, with a rate of 4 per cent. He is, of course, potentially in a dangerous condition, and yet no hint is given by this test. One must remember, however, that co-relating such findings does help to assess his general condition.

It can be definitely stated, however, that when a normal sedimentation rate is found in a case of active tuberculosis, the lesion is always small ; and, if it continues to spread, produces a rising rate on repetition, with perhaps a hundred per cent. degree of regularity. Such cases are not common.

In known cases of tuberculosis, isolated tests are of little value. If abnormal, they merely indicate that something is wrong ; if normal, that (1) for the time being the patient is not ill or (2) is ill, but the change in the blood has not had time to take place. This test, as with any laboratory finding, is meaningless until co-related with all the other known facts about the patient.

Many minor febrile conditions of doubtful origin sometimes produce a very small rise in previously healthy adults during convalescence ; similar symptoms in a tubercular patient, which in reality indicate a spread of disease, are quite readily distinguished by the fact that his rate rises and stays up.

It would be a foolish physician who would pronounce a case arrested, in the face of a rising sedimentation rate, unless there was an obvious extraneous cause for this. It requires the acme of clinical and radiological experience to be able to say in every case that the disease has at last been arrested and healing begun. A record of decreasing sedimentation-rate numbers would be a most comforting endorsement in some cases ; true, in many it would be unnecessary.

Sedimentation Tests on the Staff.

In order to determine what might be considered normal values for this method of performing the sedimentation rate, it was decided to submit the staff of this institution, doctors, nurses, maids, porters, gardeners and engineers, to this test.

		Number of Tests.
Men	73	188
Women	75	188
Totals	148	376

From the information derived from an examination of these individuals and their sedimentation rates, together with that derived from experience with this test among the patients, it would appear that the normal limits for—

Men—lie between 0·5 per cent. to 4 per cent.

Women—lie between 1 per cent. to 8 per cent., or possibly 10 per cent.

These tests were also exceedingly useful in drawing attention to various disorders amongst the staff, of which often they were unaware. Some of the outstanding examples may be given :—

	Sedimentation Rate. Per cent.
One case of secondary Syphilis	25
Two cases of Pulmonary Tuberculosis ..	24 and 17
One case of Anaemia with 50 per cent. Hb. due to Oxyuris Vermicularis ..	24

It is now considered highly desirable to have this test performed on all members of the staff when joining. Also it appears to us that it would prove useful in factories, shops, etc., where large numbers of working people are employed.

Remarks on Records of Thoracoplasty Cases.

The change in the capillary blood appears to follow fairly definite specific injuries in a more or less constant way; for instance, the readings following the severe operation of Thoracoplasty are, taken as a whole, remarkably constant.

The time interval between the operation and the maximum "peak" readings appears to be unrelated to the percentage rate figure before operation, although there is, as might be expected, some relation to the time taken to return to normal.

PEAK READINGS OF SEDIMENTATION RATES IN SIX CASES OF THORACOPLASTY.

Case.	NUMBER OF DAYS AFTER OPERATION. 1st stage. Days.	2nd stage. Days.	3rd stage. Days.
1	2·5	3·5	4·5
2	2·5	3·5	—
3	4·5	3·0	4·5
4	4·5	—	—
5	3·5	3·5	—
6	4·5	3·5	—

One interesting case observed was that of a female, aged 19, on the staff. On 1st February her sedimentation rate was 9 per cent. and one month later, on 1st March, was 6 per cent. At the time of the second examination the patient was feeling and looking ill. On investigation she was found to have follicular tonsillitis, with considerable enlargement. Four days later her sedimentation rate was 53 per cent., and in a week was 60 per cent. This was the peak reading, but the rate remained high for months and did not become normal until May, long after the local condition had become quiescent and the patient was feeling and looking well. What caused the persistence of this blood rate? Almost certainly it was not breaking down tissue, and perhaps almost equally surely it was not an effusion.

FINAL COMMENTARY.

After careful consideration of all the foregoing facts, we have come to the conclusion that much remains to be learnt in assessing the value of the blood sedimentation test. Our investigations are being continued, and we hope in future reports to add further experiments and observations of a useful nature.

REPORT OF THE STATISTICAL DEPARTMENT

The work of the Statistical Department has been carried out on the same lines as in previous years (*see* Annual Reports V, XI and XII). The number of patients discharged from the Sanatorium up to date is 6,262. This number does not include Group IV cases, readmissions or patients who were in residence too short a time to be included in the records. Those about whom information could not be obtained number 177, or 2·82 per cent.

The statistics of the ultimate results of the enquiry are shown in the following tables:—

Table A1.—Statistics of Ultimate Results

Cases in the Sputum of which T.B. were *demonstrated in the Sanatorium*

All cases considered together

Year of Discharge	Number Discharged	Number reported "Well" or "Alive" in each successive year after Discharge																										Number Dead in 1934	Number lost sight of in 1934
		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934		
1906/07	125	94	82	73	65	56	42	38	47	46	42	42	38	39	34	36	34	34	33	31	30	30	29	29	28	28	26	26	95	4
1907/08	206	—	149	129	112	94	71	72	70	70	75	72	63	59	58	54	54	55	52	50	46	44	44	42	41	41	40	40	160	6
1908/09	205	—	—	154	110	93	70	64	55	64	67	62	60	56	55	52	48	48	47	45	45	43	42	41	41	39	39	38	163	4
1909/10	192	—	—	—	138	112	90	75	69	73	71	69	60	61	56	53	51	49	48	47	43	42	39	37	36	35	34	34	153	5
1910/11	197	—	—	—	—	133	92	88	74	73	72	69	61	56	48	47	47	44	39	38	36	35	32	31	29	29	29	25	165	7
1911/12	198	—	—	—	—	—	111	95	81	76	72	68	55	54	50	46	44	43	40	34	33	32	31	31	31	30	28	28	160	10
1912/13	160	—	—	—	—	—	—	113	94	78	75	167	49	52	49	48	45	42	40	35	35	33	33	33	32	29	29	29	129	2
1913/14	177	—	—	—	—	—	—	—	118	84	86	82	75	75	68	60	55	49	47	46	43	43	38	37	37	37	35	35	137	5
1914/15	193	—	—	—	—	—	—	—	—	123	117	104	83	83	75	71	68	61	61	55	53	49	45	44	42	41	40	39	151	3
1915/16	154	—	—	—	—	—	—	—	—	—	105	93	68	65	57	51	48	41	38	35	35	33	30	29	28	26	26	25	125	4
1916/17	212	—	—	—	—	—	—	—	—	—	—	166	127	116	105	99	89	79	79	74	73	69	67	65	64	63	60	57	152	3
1917/18	184	—	—	—	—	—	—	—	—	—	—	—	118	115	95	82	80	69	70	62	64	62	58	54	52	51	50	48	129	7
1918/19	198	—	—	—	—	—	—	—	—	—	—	—	—	165	136	121	112	102	99	92	86	84	81	79	78	74	71	68	122	8
1919/20	196	—	—	—	—	—	—	—	—	—	—	—	—	—	165	140	126	110	100	91	85	81	74	72	70	68	62	61	132	3
1920/21	197	—	—	—	—	—	—	—	—	—	—	—	—	—	—	156	141	116	96	89	81	74	73	73	70	69	65	64	129	4
1921/22	176	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	150	127	111	92	76	69	62	53	51	51	49	47	128	1
1922/23	165	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	135	114	100	89	80	74	67	63	60	54	52	112	1
1923/24	166	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	124	112	99	91	81	73	65	63	59	53	111	2
1924/25	128	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	106	90	79	72	66	60	52	49	46	81	1
1925/26	114	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	97	89	80	73	67	62	61	53	59	2
1926/27	127	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	115	109	101	96	89	84	76	49	2
1927/28	121	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	103	94	84	79	74	68	52	1
1928/29	118	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	104	90	81	70	69	48	1
1929/30	155	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	136	124	112	103	51	1
1930/31	134	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	124	118	104	29	1
1931/32	125	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	116	97	27	1
1932/33	141	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	119	22	—

Table A2.—Statistics of Ultimate Results

Cases in the Sputum of which T.B. were *demonstrated in the Sanatorium*

Group I considered separately

Year of Discharge	Number Discharged	Number reported "Well" or "Alive" in each successive year after Discharge																										Number Dead in 1934	Number lost sight of in 1934
		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934		
1906/07	30	27	23	21	20	20	15	14	17	17	19	18	16	18	14	15	14	14	14	13	12	12	12	12	12	12	12	12	16	2
1907/08	45	—	43	40	35	31	27	28	30	29	32	32	27	28	27	25	26	26	24	24	24	23	23	22	22	22	22	22	21	2
1908/09	28	—	—	26	23	20	16	16	12	15	15	15	15	14	14	14	13	13	13	13	14	14	14	14	14	14	14	14	14	—
1909/10	43	—	—	—	39	37	34	27	25	29	30	30	25	27	25	25	23	22	22	21	19	19	17	16	16	16	15	15	25	3
1910/11	45	—	—	—	—	41	47	31	28	30	29	30	28	25	22	22	22	20	17	17	17	15	13	13	12	12	13	10	33	2
1911/12	33	—	—	—	—	—	27	21	20	20	20	19	15	16	13	13	12	12	12	10	10	10	10	10	10	10	10	10	21	2
1912/13	15	—	—	—	—	—	—	14	14	12	11	10	9	7	8	8	8	8	8	6	6	6	6	6	6	6	6	6	9	—
1913/14	19	—	—	—	—	—	—	—	17	14	16	17	14	15	13	10	11	11	10	10	10	9	8	8	8	8	7	7	10	2
1914/15	20	—	—	—	—	—	—	—	—	16	17	16	12	13	11	12	12	12	12	10	10	9	9	9	8	8	7	7	11	2
1915/16	16	—	—	—	—	—	—	—	—	—	15	14	11	13	12	11	11	11	11	11	11	11	10	9	8	8	8	8	6	2
1916/17	24	—	—	—	—	—	—	—	—	—	—	24	22	23	22	22	22	20	20	19	18	16	17	17	16	15	14	14	9	1
1917/18	15	—	—	—	—	—	—	—	—	—	—	—	12	14	12	11	11	11	12	12	12	12	11	10	8	8	8	7	7	1
1918/19	10	—	—	—	—	—	—	—	—	—	—	—	—	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	—	1
1919/20	29	—	—	—	—	—	—	—	—	—	—	—	—	—	29	27	25	26	24	22	20	20	20	20	20	20	18	17	12	—
1920/21	45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42	30	38	34	34	32	30	29	29	29	28	28	28	16	1
1921/22	25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25	23	22	21	21	19	18	15	15	15	15	14	11	—
1922/23	29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28	28	27	25	24	22	21	19	19	18	17	12	—
1923/24	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21	20	19	18	18	17	17	17	17	16	6	—
1924/25	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	13	12	11	10	10	10	10	10	4	1
1925/26	11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	11	10	10	8	8	9	8	3	—
1926/27	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22	22	21	21	20	19	19	3	—
1927/28	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	15	15	15	13	12	3	—
1928/29	13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13	12	12	11	9	4	—
1929/30	33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	33	32	31	29	3	1
1930/31	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18	17	17	1	—
1931/32	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	8	2	—
1932/33	13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	2	—

TABLE A3.—STATISTICS OF ULTIMATE RESULTS

Cases in the Sputum of which T.B. were *demonstrated in the Sanatorium*

Group II considered separately

Year of Discharge.	Number Discharged	Number reported "Well" or "Alive" in each successive year after Discharge.																										Number Dead in 1934.	Number lost sight of in 1934.
		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934		
1906/07	57	50	45	40	37	31	22	18	24	23	18	19	18	17	17	17	17	17	16	15	15	15	14	14	13	13	12	12	43	2
1907/08	85	—	69	51	56	47	32	32	31	33	35	32	28	24	25	24	23	24	23	22	19	18	18	17	16	16	15	15	67	3
1908/09	94	—	—	82	59	48	34	37	32	38	40	36	34	34	33	31	31	31	31	29	28	26	25	24	24	22	23	22	68	4
1909/10	99	—	—	—	69	59	44	38	36	36	33	32	28	26	26	24	25	25	24	25	23	22	21	21	20	19	19	19	78	2
1910/11	100	—	—	—	—	68	43	49	40	37	37	35	29	28	23	22	22	21	19	18	16	16	16	15	14	14	13	13	82	5
1911/12	110	—	—	—	—	—	65	59	49	43	41	38	34	33	32	29	29	28	25	22	21	21	20	20	20	19	17	17	87	6
1912/13	101	—	—	—	—	—	—	77	68	53	51	45	33	38	35	35	32	29	28	25	25	25	25	25	24	22	22	22	78	1
1913/14	95	—	—	—	—	—	—	—	74	54	55	54	51	50	47	42	40	34	32	31	28	29	26	24	24	24	23	23	69	3
1914/15	99	—	—	—	—	—	—	—	—	74	74	69	57	57	51	46	43	38	39	36	36	33	30	29	28	27	27	26	72	1
1915/16	71	—	—	—	—	—	—	—	—	—	54	49	35	33	28	24	22	17	14	12	12	12	10	10	10	9	9	8	62	1
1916/17	99	—	—	—	—	—	—	—	—	—	—	89	72	65	62	56	50	44	46	43	43	42	40	39	39	39	37	34	64	1
1917/18	86	—	—	—	—	—	—	—	—	—	—	—	63	65	54	50	48	40	41	36	38	38	36	34	34	33	32	32	50	4
1918/19	98	—	—	—	—	—	—	—	—	—	—	—	—	86	72	69	64	60	59	56	55	53	50	48	47	45	44	42	53	3
1919/20	69	—	—	—	—	—	—	—	—	—	—	—	—	—	63	55	48	46	43	42	39	35	31	30	30	29	26	26	42	1
1920/21	62	—	—	—	—	—	—	—	—	—	—	—	—	—	—	56	47	38	31	28	26	24	24	24	24	23	21	21	39	2
1921/22	48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43	35	31	27	23	23	19	17	15	15	15	15	33	—
1922/23	28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27	24	23	21	21	18	17	17	16	15	14	13	1
1923/24	29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26	25	22	21	17	15	14	14	14	13	15	1
1924/25	59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	52	50	43	39	35	33	28	27	25	34	—
1925/26	46	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42	40	38	35	33	31	31	28	18	—
1926/27	69	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	66	63	61	59	56	53	46	23	—
1927/28	69	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	61	60	55	51	50	48	20	1
1928/29	86	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	79	71	65	57	56	30	—
1929/30	103	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	90	84	73	68	35	—
1930/31	99	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	93	91	80	18	1
1931/32	82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	81	73	9	—
1932/33	92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	86	6	—

Table A4.—Statistics of Ultimate Results

Cases in the Sputum of which T.B. were *demonstrated in the Sanatorium*

Group III considered separately

Year of Discharge	Number Discharged	Number reported "Well" or "Alive" in each successive year after Discharge																										Number Dead in 1934	Number lost sight of in 1934
		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934		
1900/07	38	17	14	12	8	6	5	6	6	6	5	5	4	4	3	4	3	3	3	3	3	3	3	3	3	2	2	36	—
1907/08	76	—	37	28	22	18	12	12	9	8	8	8	7	7	6	5	5	5	5	4	3	3	3	3	3	3	3	72	1
1908/09	83	—	—	40	31	22	13	12	11	11	12	11	11	8	8	7	4	4	3	3	3	3	3	3	3	3	2	81	—
1909/10	50	—	—	—	25	16	12	10	8	8	8	7	6	5	4	4	3	2	2	1	1	1	1	—	—	—	—	50	—
1910/11	52	—	—	—	—	17	9	8	6	6	6	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	2	50	—
1911/12	55	—	—	—	—	—	19	15	12	13	11	11	5	5	5	4	3	3	4	2	2	1	1	1	1	1	1	52	2
1912/13	44	—	—	—	—	—	—	22	12	13	13	12	6	7	6	5	5	5	3	4	4	2	2	2	2	1	1	42	1
1913/14	63	—	—	—	—	—	—	—	27	16	15	11	10	10	8	7	4	4	5	5	5	5	4	5	5	5	5	58	—
1914/15	74	—	—	—	—	—	—	—	—	33	26	19	14	13	13	13	13	11	10	9	7	7	6	6	6	6	6	68	—
1915/16	67	—	—	—	—	—	—	—	—	—	36	30	22	19	17	16	15	13	13	12	12	10	10	10	10	9	9	57	1
1916/17	89	—	—	—	—	—	—	—	—	—	—	53	33	28	21	21	17	15	13	12	12	11	10	9	9	9	9	79	1
1917/18	83	—	—	—	—	—	—	—	—	—	—	—	43	36	29	21	20	18	17	14	14	12	11	10	10	10	10	72	2
1918/19	90	—	—	—	—	—	—	—	—	—	—	—	—	69	54	42	39	33	31	27	22	22	22	22	22	20	18	69	4
1919/20	98	—	—	—	—	—	—	—	—	—	—	—	—	—	73	58	53	38	33	27	26	26	23	22	20	19	18	78	2
1920/21	90	—	—	—	—	—	—	—	—	—	—	—	—	—	—	58	54	40	31	27	23	20	20	20	17	18	16	74	1
1921/22	103	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	82	69	58	44	32	27	25	21	21	28	19	84	1
1922/23	108	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	80	62	50	43	35	34	29	27	25	21	87	—
1923/24	115	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	77	67	58	52	46	41	34	32	28	90	1
1924/25	54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39	27	24	22	21	17	14	12	43	—
1925/26	57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	44	38	32	28	26	23	21	38	2
1926/27	36	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27	24	19	16	13	12	23	2
1927/28	37	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27	19	14	13	11	29	—
1928/29	19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	7	4	2	14	1
1929/30	19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13	8	8	13	—
1930/31	17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13	10	10	—
1931/32	33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25	16	1
1932/33	36	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22	14	—

Table A5.—Statistics of Ultimate Results

Cases in the Sputum of which T.B. were not *demonstrated in the Sanatorium*

All cases considered together

Year of Discharge	Number Discharged	Number reported "Well" or "Alive" in each successive year after Discharge																										Number Dead in 1934	Number lost sight of in 1934
		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934		
1906/07	24	23	20	19	19	18	15	14	16	18	19	21	21	19	18	18	18	18	16	17	18	18	16	14	15	16	16	15	5	4
1907/08	51	—	49	47	45	40	33	34	35	37	40	39	38	37	35	36	34	34	33	33	32	32	31	30	29	28	27	24	21	6
1908/09	66	—	—	57	45	41	33	47	40	38	40	44	43	44	44	42	43	43	43	39	37	39	40	39	38	38	36	36	24	6
1909/10	59	—	—	—	54	49	44	48	42	47	49	49	43	43	42	42	42	41	40	39	38	37	36	36	35	35	34	31	20	8
1910/11	48	—	—	—	—	42	32	38	37	40	38	37	34	34	33	31	30	32	31	31	30	30	30	30	30	28	26	26	18	4
1911/12	48	—	—	—	—	—	36	32	36	34	36	36	29	31	27	27	27	27	27	27	27	27	25	25	25	25	25	24	20	4
1912/13	31	—	—	—	—	—	—	29	28	25	28	28	24	26	25	24	25	24	23	23	23	23	22	22	22	21	20	20	9	2
1913/14	41	—	—	—	—	—	—	—	37	31	37	36	33	35	33	32	33	33	34	34	34	32	32	33	32	32	30	29	8	4
1914/15	35	—	—	—	—	—	—	—	—	28	30	29	31	24	23	20	22	22	21	20	20	21	20	20	20	20	17	18	13	4
1915/16	59	—	—	—	—	—	—	—	—	—	53	51	47	47	44	45	44	43	44	43	42	41	40	37	37	36	36	35	20	4
1916/17	58	—	—	—	—	—	—	—	—	—	—	56	53	53	47	50	47	48	48	50	49	49	47	47	47	45	44	44	12	2
1917/18	117	—	—	—	—	—	—	—	—	—	—	—	108	105	102	95	98	97	97	98	95	92	89	89	89	85	84	83	25	9
1918/19	119	—	—	—	—	—	—	—	—	—	—	—	—	115	112	109	107	104	103	102	101	99	99	96	96	92	92	87	23	9
1919/20	78	—	—	—	—	—	—	—	—	—	—	—	—	—	75	74	72	71	68	68	66	65	63	62	61	61	59	58	19	1
1920/21	66	—	—	—	—	—	—	—	—	—	—	—	—	—	—	66	66	64	64	63	61	60	62	63	63	62	61	60	3	3
1921/22	93	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	92	84	82	81	79	78	75	73	73	71	68	67	22	4
1922/23	51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	46	44	44	43	40	38	36	35	35	35	34	16	1
1923/24	68	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	65	63	60	59	58	56	55	53	52	52	14	2
1924/25	72	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	71	68	66	62	62	60	60	59	59	10	3
1925/26	70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	67	67	65	63	61	60	59	57	10	3
1926/27	41	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39	39	39	39	36	36	34	6	1
1927/28	55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	54	54	50	47	46	44	10	1
1928/29	53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	50	50	48	47	46	5	2
1929/30	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	33	33	33	31	4	—
1930/31	44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43	42	38	5	1
1931/32	64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	62	58	6	—
1932/33	56	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	53	3	—

Table A6.—Statistics of Ultimate Results

Cases in the Sputum of which T.B. were not *demonstrated in the Sanatorium*

Group I considered separately

Year of Discharge	Number Discharged	Number reported " Well " or " Alive " in each successive year after Discharge																									Number Dead in 1934	Number lost sight of in 1934
		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934		
1906/07	16	16	14	14	14	13	10	10	11	13	13	15	15	14	13	13	14	14	13	14	14	14	12	11	12	13	13	12	2	2
1907/08	31	—	30	30	29	25	23	23	22	24	26	25	24	24	22	23	23	23	23	23	23	23	22	22	21	21	19	18	10	3
1908/09	39	—	—	36	28	27	19	31	25	23	25	28	27	28	29	27	28	28	28	26	25	26	27	26	25	25	23	23	11	5
1909/10	42	—	—	—	39	36	32	36	30	34	35	35	32	33	32	32	32	31	31	30	30	29	28	28	27	27	26	24	11	7
1910/11	37	—	—	—	—	33	25	30	29	31	29	29	27	27	26	24	24	25	24	24	23	24	24	24	24	23	22	22	12	3
1911/12	26	—	—	—	—	—	22	22	23	20	21	21	20	20	18	18	18	18	18	18	19	19	19	19	19	19	19	19	7	—
1912/13	19	—	—	—	—	—	—	18	17	16	18	17	14	15	14	15	15	15	14	14	14	14	13	13	13	13	12	12	5	2
1913/14	28	—	—	—	—	—	—	—	26	21	28	27	25	26	25	24	25	25	26	26	26	24	24	25	25	25	23	22	3	3
1914/15	17	—	—	—	—	—	—	—	—	13	15	14	9	13	11	11	12	12	12	11	11	12	12	12	12	12	9	10	5	2
1915/16	32	—	—	—	—	—	—	—	—	—	31	32	29	29	27	28	27	27	28	29	29	29	28	26	26	26	26	25	6	1
1916/17	34	—	—	—	—	—	—	—	—	—	—	33	31	33	28	31	29	31	30	32	32	32	29	30	30	30	29	29	5	—
1917/18	51	—	—	—	—	—	—	—	—	—	—	—	47	48	46	42	44	45	45	46	46	45	44	44	44	41	41	41	5	5
1918/19	35	—	—	—	—	—	—	—	—	—	—	—	—	34	34	33	33	32	34	33	34	33	32	30	31	31	31	31	2	2
1919/20	50	—	—	—	—	—	—	—	—	—	—	—	—	—	47	48	47	45	44	43	42	41	41	41	41	41	39	39	10	1
1920/21	48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	48	48	47	47	46	44	43	45	47	47	47	47	47	1	—
1921/22	51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	50	49	48	47	46	46	46	45	45	44	42	41	8	2
1922/23	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	33	32	32	31	29	28	27	26	26	26	25	9	1
1923/24	43	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43	42	40	39	39	39	38	38	37	37	5	1
1924/25	49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	48	46	45	42	42	40	40	40	41	5	3
1925/26	44	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43	43	43	43	42	41	40	40	2	2
1926/27	25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24	24	24	24	23	24	23	2	—
1927/28	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35	35	33	31	30	28	6	1
1928/29	32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	32	32	31	30	29	1	2
1929/30	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20	20	20	19	1	—
1930/31	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20	20	19	—	1
1931/32	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35	35	—	—
1932/33	27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26	1	—

TABLE A7.—STATISTICS OF ULTIMATE RESULTS

Cases in the Sputum of which T.B. were not *demonstrated in the Sanatorium*
Group II considered separately

Year of Discharge	Number Discharged	Number reported "Well" or "Alive" in each successive year after Discharge																											Number Dead in 1934	Number lost sight of in 1934
		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934		
1906/07	7	6	5	5	5	5	5	4	5	5	6	6	6	5	5	5	4	4	3	3	4	4	4	3	3	3	3	3	2	2
1907/08	18	—	18	15	14	13	10	11	12	13	13	13	13	12	12	12	10	10	10	10	9	9	9	8	8	7	7	6	10	2
1908/09	25	—	—	20	16	13	14	15	14	14	14	15	15	15	14	14	14	14	14	12	11	12	12	12	12	12	12	12	12	1
1909/10	15	—	—	—	13	11	10	10	11	12	12	12	9	9	9	9	9	9	8	8	8	8	8	8	8	8	8	7	7	1
1910/11	10	—	—	—	—	8	8	8	8	9	9	8	7	7	7	7	6	7	7	7	7	6	6	6	6	5	4	4	5	1
1911/12	20	—	—	—	—	—	14	9	12	13	14	14	8	10	9	8	8	8	8	8	8	8	6	6	6	6	6	5	11	4
1912/13	9	—	—	—	—	—	—	9	9	7	8	8	8	8	8	6	7	7	7	7	7	7	7	7	7	7	7	7	2	—
1913/14	11	—	—	—	—	—	—	—	9	9	8	8	7	8	7	7	7	7	7	7	7	7	7	7	6	6	6	6	4	1
1914/15	14	—	—	—	—	—	—	—	—	13	13	13	10	9	10	8	9	9	9	9	9	9	8	8	8	8	8	8	5	1
1915/16	23	—	—	—	—	—	—	—	—	—	19	16	15	16	15	15	15	14	14	12	12	11	11	10	10	9	9	9	11	3
1916/17	24	—	—	—	—	—	—	—	—	—	—	23	22	20	19	19	18	17	18	18	17	17	18	17	17	15	15	15	7	2
1917/18	59	—	—	—	—	—	—	—	—	—	—	—	55	51	50	48	48	47	47	47	45	43	41	41	41	40	39	39	16	4
1918/19	71	—	—	—	—	—	—	—	-	—	—	—	—	68	67	68	68	66	64	64	62	61	63	62	61	57	57	52	13	6
1919/20	20	—	—	—	—	—	—	—	—	—	—	—	—	—	20	20	20	20	18	19	19	19	18	18	17	17	17	16	4	—
1920/21	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	14	13	13	13	13	13	13	12	12	11	10	9	2	3
1921/22	28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28	26	27	27	26	25	22	21	21	20	19	19	7	2
1922/23	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	7	7	7	6	6	5	5	5	5	5	4	—
1923/24	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	14	14	14	14	14	13	13	13	13	1	1
1924/25	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18	18	17	16	16	16	16	16	15	3	—
1925/26	19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19	19	17	15	14	14	14	13	6	—
1926/27	11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	10	10	10	9	9	8	2	1
1927/28	18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17	17	15	14	14	14	4	—
1928/29	19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17	17	16	16	16	3	—
1929/30	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	12	12	11	3	—
1930/31	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22	21	18	4	—
1931/32	27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26	22	5	—
1932/33	26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26	—	—

TABLE A8.—STATISTICS OF ULTIMATE RESULTS

Cases in the Sputum of which T.B. were not *demonstrated in the Sanatorium*

Group III considered separately

Year of Discharge	Number Discharged	Number reported "Well" or "Alive" in each successive year after Discharge																											Number Dead in 1934	Number lost sight of in 1934
		1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934		
1906/07	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	—	1	—
1907/08	2	—	2	2	2	2	0	0	1	0	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	1	—	1	1
1908/09	2	—	—	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	—
1909/10	2	—	—	—	2	2	2	1	1	2	2	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	—	2	—
1910/11	1	—	—	—	—	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	—	1	—
1911/12	2	—	—	—	—	—	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	—	2	—
1912/13	3	—	—	—	—	—	—	2	2	2	2	3	2	3	3	3	3	2	2	2	2	2	2	2	2	1	1	1	2	—
1913/14	2	—	—	—	—	—	—	—	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	—
1914/15	4	—	—	—	—	—	—	—	—	2	2	2	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0	—	3	1
1915/16	4	—	—	—	—	—	—	—	—	—	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	3	—
1916/17	0	—	—	—	—	—	—	—	—	—	—	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	—	—	—
1917/18	7	—	—	—	—	—	—	—	—	—	—	—	6	6	6	5	5	5	5	5	4	4	4	4	4	4	4	3	4	—
1918/19	13	—	—	—	—	—	—	—	—	—	—	—	—	13	11	8	6	6	5	5	5	5	4	4	4	4	4	4	8	1
1919/20	8	—	—	—	—	—	—	—	—	—	—	—	—	—	8	6	6	6	6	6	5	5	4	3	3	3	3	3	5	—
1920/21	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4	4	4	4	4	4	4	4	4	4	4	4	—	—
1921/22	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	9	7	7	7	7	7	7	7	7	7	7	7	—
1922/23	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	5	5	5	5	4	4	4	4	4	4	3	—
1923/24	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	7	6	6	5	4	3	2	2	2	8	—
1924/25	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	4	4	4	4	4	4	3	3	2	—
1925/26	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	5	5	5	5	5	5	4	2	1
1926/27	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	5	5	5	4	3	3	2	—
1927/28	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	2	2	2	—	—
1928/29	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	1	1	1	—
1929/30	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	1	—	—
1930/31	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	1	—
1931/32	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	—
1932/33	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2	—

Table Bi.—Statistics of Ultimate Results

Cases in the Sputum of which T.B. were *demonstrated in the Sanatorium*

Condition on Admission	Condition on Discharge	Discharged during the Year 1906/07	1907/08	1908/09	1909/10	1910/11	1911/12	1912/13	1913/14	1914/15	1915/16	1916/17	1917/18	1918/19	1919/20	1920/21	1921/22	1922/23	1923/24	1924/25	1925/26	1926/27	1927/28	1928/29	1929/30	1930/31	1931/32	1932/33	Condition in 1934
Group I	Disease Arrested	8	9	12	4	5	5	2	2	2	5	7	—	3	10	21	9	9	10	7	7	9	9	7	26	14	6	9	Alive
		6	12	2	8	6	8	6	4	6	2	5	2	—	1	2	4	8	1	2	2	1	1	2	2	—	1	1	Dead
		2	2	—	1	—	1	—	1	1	1	—	1	—	—	1	—	—	—	1	—	—	—	—	1	—	—	—	—	Lost sight of
	Much Improved	4	11	2	10	5	4	3	4	4	1	7	5	5	6	7	5	8	4	2	—	6	1	1	2	—	2	2	Alive
		9	6	9	12	22	12	3	4	4	4	2	4	—	9	12	6	4	4	—	1	1	1	—	1	—	—	1	Dead
		—	—	—	1	1	1	—	1	1	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Improved	—	2	—	—	—	—	—	—	—	—	—	1	1	1	—	—	—	1	1	1	4	1	1	1	2	—	—	Alive
		—	1	1	3	1	—	—	1	1	—	1	—	—	2	1	1	—	1	1	—	1	—	1	—	—	1	—	Dead
		—	—	—	1	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Stationary or Worse	—	—	—	1	—	1	—	1	1	2	—	1	—	—	—	—	—	1	—	—	—	1	—	—	1	—	—	Alive
		1	2	2	2	4	1	1	1	—	—	1	1	—	—	1	—	—	—	1	—	—	1	1	—	1	—	—	Dead
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
II	Disease Arrested	3	—	7	6	5	7	9	5	5	2	5	2	8	8	7	4	7	8	5	4	13	14	16	15	12	19	33	Alive
		3	3	4	7	10	13	16	9	8	5	5	3	—	1	5	4	3	2	5	1	3	2	5	4	—	—	—	Dead
		—	—	2	1	2	1	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Much Improved	8	14	13	10	6	6	11	14	17	5	26	22	30	14	13	11	6	5	15	11	14	16	13	23	26	21	20	Alive
		23	31	23	34	42	38	25	34	37	31	38	30	33	33	28	21	10	12	12	2	5	6	5	3	1	3	2	Dead
		1	3	1	—	3	1	1	2	—	—	1	3	2	1	2	—	1	1	—	—	—	—	—	—	1	—	—	Lost sight of

Group	Improved	1	—	2	3	1	3	2	4	1	—	1	7	3	4	1	—	1	—	4	11	16	13	23	23	24	20	23	Alive
		11	15	23	21	12	16	18	8	8	13	10	8	13	6	4	7	—	1	15	7	12	5	9	17	8	2	2	Dead
		—	—	1	1	—	2	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Stationary or Worse	—	1	—	—	1	1	2	—	3	1	2	1	1	—	—	—	—	—	1	2	3	5	4	7	18	13	10	Alive
		6	18	18	16	18	20	19	18	19	13	11	9	7	2	2	1	—	—	2	8	3	7	11	11	9	4	2	Dead
		1	—	—	—	—	2	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	Lost sight of
Group III.	Disease Arrested	—	—	—	—	—	1	—	—	—	—	—	—	—	2	3	4	2	6	1	—	1	—	—	—	—	—	—	Alive
		—	—	2	—	—	1	1	1	—	1	1	—	—	1	2	4	3	2	—	—	—	1	—	—	—	1	—	Dead
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Much Improved	2	1	—	—	1	—	—	3	1	8	6	8	15	9	8	9	16	18	3	7	1	3	—	1	—	1	5	Alive
		8	18	10	11	10	6	6	6	19	15	27	27	32	28	28	54	50	48	8	4	2	5	2	1	—	—	1	Dead
		—	1	—	—	—	1	—	—	—	1	1	1	2	1	—	1	—	1	—	—	—	—	—	—	—	1	—	Lost sight of
	Improved	—	2	2	—	—	—	—	—	2	1	—	—	2	7	4	5	1	—	7	8	9	4	2	2	3	10	7	Alive
		11	21	27	18	17	13	11	10	17	13	26	21	19	30	36	21	25	31	25	24	11	9	6	4	4	5	1	Dead
		—	—	—	—	—	1	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Stationary or Worse	—	—	—	—	1	—	1	2	3	—	3	2	—	—	—	—	2	—	—	2	—	1	2	3	4	5	10	Alive
		17	33	42	21	23	32	24	41	32	28	25	24	19	19	8	5	9	9	10	10	10	14	6	8	6	10	12	Dead
		—	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	2	2	—	1	—	—	—	—	Lost sight of
	Summary	26	40	38	34	25	28	29	35	39	25	57	49	68	61	64	47	52	53	46	53	76	68	69	103	104	95	119	Alive
		95	160	163	153	165	160	129	137	151	125	152	129	122	132	129	128	112	111	81	59	49	52	48	51	29	27	22	Dead
		4	6	4	5	7	10	2	5	3	4	3	6	8	3	4	1	1	2	1	2	2	1	1	1	1	1	—	Lost sight of
	TOTAL	125	206	205	192	197	198	160	177	193	154	212	184	198	196	197	176	165	166	128	114	127	121	118	155	134	125	141	

Table B2.—Statistics of Ultimate Results

Cases in the Sputum of which T.B. were not *demonstrated in the Sanatorium*

Condition on Admission	Condition on Discharge	Discharged during the Year 1906/07	1907/08	1908/09	1909/10	1910/11	1911/12	1912/13	1913/14	1914/15	1915/16	1916/17	1917/18	1918/19	1919/20	1920/21	1921/22	1922/23	1923/24	1924/25	1925/26	1926/27	1927/28	1928/29	1929/30	1930/31	1931/32	1932/33	Condition in 1934
Group I	Disease Arrested	10	15	18	22	21	18	9	6	5	24	17	33	23	32	44	39	20	30	33	32	21	23	22	18	17	33	25	Alive
		2	7	10	9	12	7	3	—	1	6	3	5	2	7	1	8	6	5	3	2	2	3	1	—	—	—	1	Dead
		2	3	5	7	2	—	2	—	1	—	—	3	1	—	—	—	1	1	2	1	—	1	1	—	—	—	—	Lost sight of
	Much Improved	2	3	2	1	1	—	—	14	3	1	12	7	7	2	1	—	4	5	7	4	—	2	4	—	—	2	—	Alive
		—	2	1	1	—	—	2	3	4	—	2	—	—	3	—	—	2	—	2	—	—	2	—	1	—	—	—	Dead
		—	—	—	—	—	—	—	2	1	1	—	1	1	1	—	2	—	—	1	—	—	—	1	—	—	—	—	Lost sight of
	Improved	—	—	2	—	—	1	—	2	2	—	—	1	—	4	2	2	1	1	1	4	1	2	2	1	1	—	1	Alive
		—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	Dead
		—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	Lost sight of
	Stationary or Worse	—	—	1	1	—	—	3	—	—	—	—	—	1	1	—	—	—	1	—	—	1	1	1	—	1	—	—	Alive
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Dead
		—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	Lost sight of
II	Disease Arrested	2	4	5	4	3	2	3	1	1	6	6	10	20	8	7	16	3	8	8	7	4	9	6	5	12	15	18	Alive
		2	3	2	2	3	4	1	1	—	5	3	6	6	4	2	5	4	—	1	4	1	1	2	1	2	1	—	Dead
		1	1	1	—	—	3	—	—	—	1	—	3	1	—	2	1	—	1	—	—	—	—	—	—	—	—	—	Lost sight of
	Much Improved	1	2	3	2	—	3	1	1	7	1	7	23	26	3	—	2	—	3	5	2	2	3	3	1	5	4	7	Alive
		—	5	6	5	2	5	1	2	3	3	3	4	3	—	—	1	—	—	—	1	1	1	—	1	—	—	—	Dead
		1	1	—	1	1	1	—	1	1	1	1	1	4	—	1	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of

Group	Improved	—	—	3	—	—	—	1	3	—	—	2	4	5	5	1	1	2	1	2	3	2	2	5	4	1	2	1	Alive
		—	1	2	—	—	1	—	1	1	1	—	4	1	—	—	1	—	—	1	1	—	—	—	—	—	2	—	Dead
		—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	Lost sight of
	Stationary or Worse	—	—	1	1	1	—	2	1	—	2	—	2	3	—	1	—	—	1	—	1	—	—	2	1	—	1	—	Alive
		—	1	2	—	—	1	—	—	1	2	1	2	2	—	—	—	—	1	1	—	—	2	1	1	2	2	—	Dead
		—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
Group III	Disease Arrested	—	—	—	—	—	—	1	—	—	—	—	—	1	1	2	5	3	2	1	2	—	—	—	—	—	—	—	Alive
		—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	4	1	4	—	—	1	—	—	—	—	—	—	Dead
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	Lost sight of
	Much Improved	—	—	1	—	—	—	—	1	—	1	—	2	1	2	1	1	1	—	2	1	1	2	—	—	—	—	1	Alive
		1	1	1	1	—	1	2	—	1	—	—	3	4	4	—	—	1	1	1	—	—	—	—	—	—	—	—	Dead
		—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Improved	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	1	—	—	—	1	2	—	1	1	1	1	—	Alive
		—	—	—	1	1	1	—	—	—	2	—	—	2	1	—	3	1	3	—	2	1	—	—	—	—	1	—	Dead
		—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Stationary or Worse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Alive
		—	—	—	—	—	—	—	1	2	1	—	—	3	—	—	—	—	—	1	—	—	—	1	—	1	—	2	Dead
		—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Lost sight of
	Summary	15	24	36	31	26	24	20	29	18	35	44	83	87	58	60	67	34	52	59	57	34	44	46	31	38	58	53	Alive
		5	21	24	20	18	20	9	8	13	20	12	25	23	19	3	22	16	14	10	10	6	10	5	4	5	6	3	Dead
		4	6	6	8	4	4	2	4	4	4	2	9	9	1	3	4	1	2	3	3	1	1	2	—	1	—	—	Lost sight of
	TOTAL	24	51	66	59	48	48	31	41	35	59	58	117	119	78	66	93	51	68	72	70	41	55	53	35	44	64	56	

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