

Tuberculosis (International Congress of 1905) : copy of report of C. Theodore Williams ... and H. Timbrell Bulstrode ... the delegates of His Majesty's Government to the International Congress on Tuberculosis, held at Paris from the 2nd to the 7th October, 1905 / presented to both Houses of Parliament by command of His Majesty.

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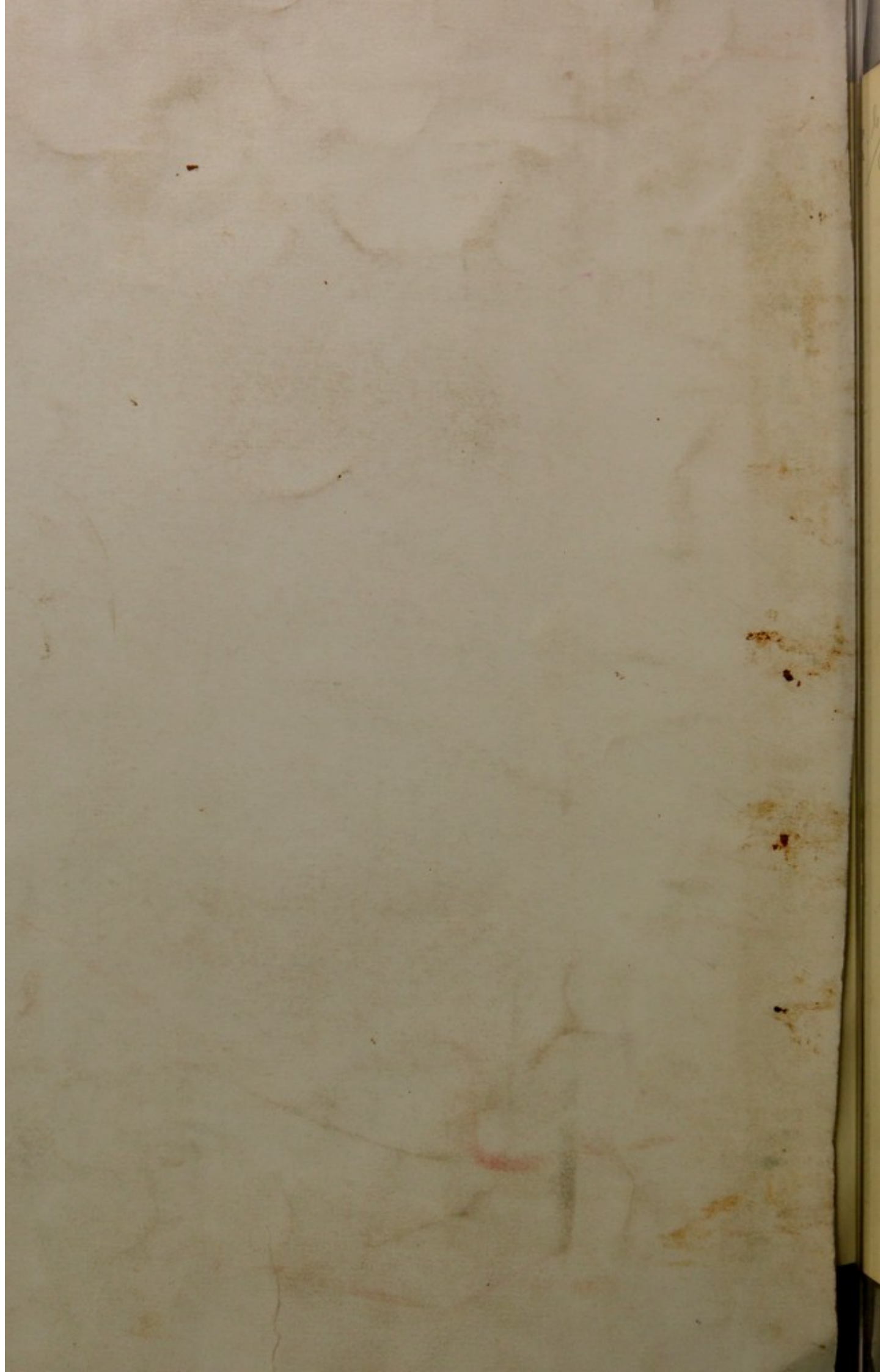
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TUBERCULOSIS (INTERNATIONAL CONGRESS of 1905).

COPY of REPORT of C. THEODORE WILLIAMS, Esq., M.A., M.D.,
F.R.C.P., and H. TIMBRELL BULSTRODE, Esq., M.A., M.D., D.P.H.,
the Delegates of His Majesty's Government to the Inter-
national Congress on Tuberculosis, held at Paris from
the 2nd to the 7th October, 1905.

Presented to both Houses of Parliament by Command of His Majesty.



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REPORT of the Delegates of His Majesty's Government on the International Congress on Tuberculosis held at Paris from 2nd to 7th October, 1905.

LONDON, *March*, 1906.

MY LORD,

We have the honour to report that in accordance with instructions from your Lordship's predecessor, the Marquess of Londonderry, we attended the International Congress on Tuberculosis which assembled at Paris in October last, and we have to express our great regret that, owing to a serious and prolonged illness contracted by one of us while in the French capital, we have been prevented from presenting this joint report at an earlier date.

The Congress was opened by M. Emile Loubet, President of the French Republic, at the Inaugural Meeting held at the Grand Palais of the Champs Elysées on the afternoon of Monday, October 2nd, 1905, and as an indication of the interest taken in the Congress by the Government of the Republic, it may be added that the President was supported by M. Leon Bourgeois; the Premier, M. Rouvier; M. Etienne, Minister of the Interior; and M. Bertram, Minister of War. Many members of the Diplomatic Corps were also present. The French Government made a substantial subvention towards the expenditure of the Congress.

The Congress consisted of delegates from Foreign Governments, from Universities, and from Special Associations and Committees, while, in addition, there was a very large number of representatives of the medical, surgical, and veterinary professions, as also of local administrative authorities in France and other countries.

In addition to ourselves, there were present from Great Britain delegates of the Local Government Boards of Scotland and Ireland, physicians from Consumption Hospitals and Sanatoria, together with numerous representatives of local administrative bodies and of the general medical profession. Sir William Broadbent, at the Subscription Banquet of the Congress, had the honour of conveying to those present a welcome message which he had received from H.R.H. the Prince of Wales, who, as President of the National Association for the Prevention of Consumption, expressed satisfaction that the Congress was so well attended by British representatives, and trusted that important results would follow its labours and deliberations.

The number of persons attending the Congress amounted to 3,500, and largely exceeded those of former Congresses on Tuberculosis.

Members were of two kinds, (1) titular members qualified to take part in all the proceedings of the Congress, to vote and to

receive the published transactions, and (2) associated members, including wives and relatives of the titular members, who could attend the sections without taking part in the proceedings, and who were admitted to all fêtes and excursions.

As the Government representatives of Great Britain, we were honoured with invitations from Professor Hérard, the venerable President of the Congress, to take part in the opening ceremony, in common with the Government delegates from almost every European State, the United States of America, and the Empire of China.

At this inaugural ceremony addresses were delivered by one of the official representatives of each of the Powers sending delegates to the Congress, and one of us had the honour of conveying to the President of the Republic expression of the cordial sympathy of Great Britain with the work of the Congress. In the eloquent opening address which was delivered by M. Loubet, he pointed out that since 1892, when he was President of the Council and Minister of the Interior, he had been endeavouring to bring about the Congress which was now being inaugurated, as during his term of office as Minister of the Interior he had been impressed with the fact that the first duty of the State was to watch over the health of its subjects. He trusted that by pursuing the proper preventive measures the tuberculosis death-rate in France would decline in the same fashion as had been the case in England for many years past.

The Paris Press devoted much of its space to the proceedings of the Congress, and several of the leading French journals, the "Figaro," the "Matin," and the "Journal," entertained the members of the Congress in most hospitable fashion.

The Municipality of Paris extended its sympathy to the Congress by inviting the members to a reception at the Hôtel de Ville.

It was clear, indeed, from the interest which was taken in the Congress by the Press and by the public of France that the ravages caused by tuberculosis in that country are being regarded in a very serious light.

On the closing day of the Congress we had the honour of receiving a command to dine with the President of the Republic and Madame Loubet at the Elysée Palace, and to attend afterwards the brilliant reception given there to the members of the Congress.

The work of the Congress was divided up into four separate sections, each of which met for some six hours daily in the Grand Palais of the Champs Elysées.

These sections were as follows:—

Section I.—Medical Pathology—presided over by Professor Bouchard.

Section II.—Surgical Pathology—presided over by Professor Lannelongue.

Section III.—Preservation and Assistance of Children—presided over by Professor Grancher.

Section IV.—Preservation and Assistance of Adults, Social Hygiene—presided over by Professor Landouzy and Senator Strauss.

Honorary Presidents were selected from the delegates of foreign Governments, and one of us (Dr. Theodore Williams) was nominated Honorary President of Section I. and presided during one sitting.

The communications to the sections consisted of—

1. Carefully prepared reports on various important questions by *rapporteurs* selected from the different nations and published beforehand.
2. Special papers on the above subjects by members of the Congress.
3. Discussions and contributions.

The number of official reports was forty and there were several hundreds of papers.

By way of illustrating the work of the Congress and of interesting visitors in the subject of tuberculosis, there was a well-arranged museum, which was divided into sections. This museum was kept open throughout the whole month of October, and addresses were delivered in the Grand Palais with the view of diffusing knowledge and interest in the disease which creates such havoc among all classes, notably the poor, of France, in which country, unfortunately, the official statistics fail to indicate any such decline in the disease, as is taking place in England and several other countries.

The museum contained valuable contributions not only from the French but also from other European countries, and from the United States of America, the collections exhibited by Germany and Switzerland being especially worthy of notice. One of us had the honour of exhibiting some of the earliest stethoscopes of Lænnec, the discoverer of auscultation.

Among the exhibits in the Pathological Section, we may mention those of the Museum of the Imperial Health Office of Berlin, the Pathological Institutes of Berlin University and of Munich, the Pasteur Institutes of Paris and Lille, and the Veterinary Schools of Alfort and Lyons.

Many pathological specimens illustrated the action of the tubercle bacillus on almost every organ and tissue of the human economy. There were, too, numerous specimens indicating the widespread influence of tuberculosis in the animal kingdom generally, and a most interesting collection bearing and shedding light upon the much-debated question of the precise relationship obtaining between bovine and human tuberculosis. These latter, as a whole, left no doubt but that human tuberculosis can under certain conditions be transferred to the bovine animal, and that what is termed the bacillus of bovine origin can at times be discovered in the human subject. There would seem, in fact, to be a very strong body of evidence pointing to this conclusion, namely, that human and bovine types of the tubercle bacillus are merely varieties of one species, not

different species, a conclusion which, if accepted, at once indicates the desirability of preventive measures being extended to bovine animals affected by tuberculosis. Indeed, the only question which is left over for subsequent determination would appear to be that as to the *degree of facility* with which bovine tuberculosis can be transmitted to the human organism, and as to this we shall doubtless learn more when the final report of our own Royal Commission on Tuberculosis is issued. The transactions, too, of the Congress will, when published, contain papers of very great importance in relation to this subject. It will be seen subsequently in this report that the papers read before the Congress* and the resolutions passed thereat insisted upon the necessity of taking adequate precautions against the conveyance of bovine tuberculosis to the human being.

In connection with this subject some highly instructive specimens were shown by Drs. Calmette and Gervais, of the Pasteur Institute at Lille, who have worked very largely with the goat as the experimental animal, this animal having been selected on account of its well-known resistant powers to the tubercle bacillus. One of the results of their researches is to show that when *adult* goats were fed by means of an œsophageal tube with fresh bovine tuberculous material finely triturated and diluted with a small quantity of sterile water, they contracted a severe pulmonary tuberculosis which was rapidly fatal, the animals showing after death no intestinal tuberculous lesions.

These series of experiments also showed, in so far as *young* goats are concerned, that—contrary to the views of Dr. Behring in relation to the human subject—*adult* goats contract pulmonary tuberculosis more easily by the intestines than do *young* goats.

The whole of this evidence indicates, say the experimenters, that the *rôle* of the inhalation of dust in the spread of tuberculosis has been obviously exaggerated and that dust containing tubercle bacilli is infective not by reason of its being breathed but by reason of its being swallowed, and the lesson which they draw from their researches is that the tuberculous subject must be taught to expectorate his sputum and never to swallow it. Obviously, however, the experiments in question have an influence more far-reaching than this upon the question of the source of pulmonary tuberculosis, and we shall in Sections I. and III. refer to other considerations in connection with the matter.

Dr. Lydia Rabinowitsch and Dr. Max Koch, of the Pathological Institute of Berlin University, exhibited numerous specimens illustrating casual and experimental tuberculosis of birds presenting lesions in the bones, liver, intestine, lungs, and other organs.

In another part of the museum there were illustrations and models of sanatoria both in France and other countries, and

* See Section I., pages 15 and 16 and Section III., page 21.

charts showing the incidence of tuberculosis on nations, classes age groups, and sexes, radiographs of tuberculosis, models of healthy and unhealthy rooms, etc.

Several nations, especially Germany, furnished for the benefit of members valuable reports relative to the behaviour of tuberculosis in each country, and it may be added that during the Congress there was a plentiful supply of literature placed at the disposal of the members through the courtesy of our hosts. Abstracts of many of the papers read were furnished in French, German, and English, while the communications of the *rapporteurs* were supplied in the form of a thick paper volume. There were also several guide-books, one of which gave an account of the several institutions, societies, etc., in France which could be regarded as having any concern with the subject of tuberculosis.

The "Assistance Publique" issued a special report dealing with their share in the work against tuberculosis, and one of us who visited the Bureau of that Department was afforded very valuable assistance.

The whole of Thursday, October 5th, was devoted to excursions to sanatoria or other institutions connected with the control of tuberculosis, and throughout the Congress opportunities were afforded for visiting the numerous Paris hospitals, the anti-tuberculous dispensaries, the Pasteur Institute in the Rue Dutot, and other public institutions.

The excursions of Thursday comprised visits to the Marine Sanatoria for children at Berck-sur-Mer on the north coast of France, and to the hospitals for consumptive children at Ormesson, Villiers-sur-Marne, and Noisy-le-Grand. Visits were also made to the sanatoria at Bligny (Seine-et-Oise) and Agincourt (Oise) and other places, while at Montigny-en-Ostrevert in the Department of the Nord the President of the Republic opened a sanatorium which was founded by the Ligue du Nord contre la Tuberculose. The peculiar feature about this sanatorium is that in addition to the two main pavilions and the usual administrative offices (an old chateau) of which it is composed, it comprises twelve small villas or cottages, each of which can be utilised for the accommodation of tuberculous patients, who, while desiring the advantages of sanatorium life, are unwilling to be separated from their families.

Each of these small villas (villas de cure) is divided into two parts, each division having a separate entrance. In other words, each section is a sort of separate sanatorium (a family sanatorium) with its own garden and its own cooking and sanitary arrangements.

Each section is composed of a dining-room, a bedroom each for the patient (looking south), his wife or other adults, and for the children. In these villas the patients and their families learn how to lead a healthy life and how to gain a livelihood by occupation other than that in exercise of which the patient developed his illness.

Most of the cases sent to this sanatorium are to be early cases capable of cure—cases which have been sought out through the inquiry of the anti-tuberculous dispensaries, to which fuller reference will be made later on.

The daily charge to those using these cottages is 4s. for the patient and 1s. 8d. for any other adult accompanying such patient, the charge for children being 5d. for those under five years of age and 1s. 3d. for those between five and fifteen.

It will perhaps convey the best idea of the proceedings of the Congress if attention be drawn, under the heading of each of the four sections, to the more notable matters dealt with.

It would be impracticable, and, indeed, it would be superfluous, to give a detailed account of each section. It may, however, prove useful if a copy of the principal resolutions which were passed at each section is furnished.

It will be seen that in certain sections, notably the fourth, the number of resolutions was very great, and it was, therefore, unlikely that all of such resolutions should have received equal care and consideration.

But although some of these resolutions must be regarded as rather the personal opinions of those who put them forward, the resolutions as a whole may be accepted as a very fair criterion of the disposition of the Congress and as a form of compromise between the extreme views of the several partisans.

Some of the resolutions, it will be seen at once, would be ill-adapted to and uncalled for in an English community; for instance, we have in this country long since dispensed with the window tax against which one of the resolutions in the fourth section is directed. Moreover, we possess—of course, only relatively speaking—a fairly satisfactory system of registration and statistical records.

There is, however, no doubt as to the need for the general adoption in all civilised countries of a uniform nomenclature and of an approved statistical system such as would render the statistics of each nation comparable with those of any other. Until these desiderata are achieved comparisons as to the behaviour of pulmonary tuberculosis in one and another country are apt to be misleading.*

In some countries no differentiation statistically is made between tuberculosis of the bones, glands, intestines, and other organs of the body and tuberculosis of the lungs. Hence, it is found that comparisons are often being made between the general tuberculosis rates of one country and the pulmonary tuberculosis rates of another. Similarly, diseases of the lungs other than tuberculosis are at times grouped statistically with pulmonary tuberculosis. In particular countries, too, death registration is only partial and imperfect, so that the total rates are

* A committee of the Central International Bureau for the Prevention of Consumption has been appointed to consider the subject of the nomenclature of tuberculosis, and will in due course report.

made up by applying arbitrarily known average rates to districts where no proper registration obtains.

Before, however, dealing with the proceedings of the several sections, it will be desirable to say something as to the behaviour of tuberculosis in France and as to the special methods adopted in that country for controlling it, seeing that at least some of the discussions and resolutions were directed mainly to the conditions obtaining in that country.

In the case of France, the conditions as regards tuberculosis prevalence have been and are somewhat peculiar and remarkable. The tuberculosis death-rate has shown, according to the official statistics, no such a diminution as has been demonstrated in England and Germany; indeed, the French rates have been up to recently regarded as stationary, if not increasing.

As the tuberculosis statistics of France may be found useful for reference purposes, we insert a table which we have drawn up from the official statistical returns.

Death-rate from Pulmonary Tuberculosis in Paris and certain Groups of French Towns from 1887-1904, expressed in Rates per 10,000 of the Population.

Years.	Paris.	Towns with from 100,001 to 492,000 inhabitants.	Towns with from 30,001 to 100,000 inhabitants.	Towns with from 20,001 to 30,000 inhabitants.	Towns with from 10,001 to 20,000 inhabitants.	Total above 10,000 inhabitants.	Towns with from 5,001 to 10,000 inhabitants.	Total above 5,000 inhabitants.
1887-90 . . .	43·7	30·4	23·7	20·1	19·2	28·7	—	—
1891-95 . . .	40·9	28·1	23·2	20·7	19·2	27·5	16·7	25·5
1896 . . .	38·9	28·0	25·1	20·9	18·5	27·3	17·1	25·5
1897 . . .	36·4	27·0	24·1	19·6	17·3	25·9	15·8	24·1
1898 . . .	37·2	26·4	24·2	18·8	17·7	26·0	16·7	24·3
1899 . . .	37·6	28·3	23·7	20·0	18·5	26·7	17·5	25·0
1900 . . .	37·7	28·7	25·1	19·9	19·1	27·2	18·0	25·5
1901 . . .	39·4	29·4	26·5	24·8	20·4	29·0	17·5	27·0
1902 . . .	38·8	29·2	26·7	26·4	20·7	29·1	18·5	27·2
1903 . . .	38·3	29·5	26·7	25·5	21·3	29·0	18·7	27·2
1904 . . .	38·3	28·5	26·9	26·2	21·8	29·0	19·2	27·3

We may also refer to some comments made by one of us in another place in which the Report of the French Commission on Tuberculosis which was issued in 1900 was dealt with.* According to this report, the statistics of the Minister of the Interior related at that time to only some 12,000,000 of the total 38,000,000 persons of which the population of France was then composed; and Professor Brouardel, in a most interesting essay contained in the report, pointed out that medical practitioners at times recorded death from pulmonary tuberculosis under the euphemism of "chronic bronchitis," and that while in some towns there was no official "phthisis," but a very high figure from "chronic bronchitis," in others there was little "chronic bronchitis" and much "phthisis." One large town yielded a death-rate from tuberculosis of only 0.5 per 10,000, and a "chronic bronchitis" rate of 51.4 per 10,000, while another town yielded a death-rate of only 3 per 10,000 from "chronic bronchitis" and 53 per 10,000 from "phthisis."

Professor Brouardel also stated that in addition to these obvious fallacies about one-fourth of the total number of deaths from all causes have a place under this heading "Other and unknown causes of death."

The following table, which is taken from the Report of the French Commission already referred to, suggests that when "tuberculosis" is grouped with "chronic bronchitis" there was for the periods covered by the table some reduction of deaths.

Showing the Death-rate per 10,000 from Tuberculosis and Chronic Bronchitis combined in the Towns of France.

Towns.		1888-90.	1891-95.	1896-97.	Mean rate for 1888-97.
Pop. over	50,000	55.1	49.3	46.0	49.9
" of from	10,000-50,000	40.7	41.0	37.5	39.8
" "	5,000-10,000	—	36.8	35.0	35.7
" less than	5,000	—	33.3	33.3	33.3

From certain papers which were read at the Congress, and which will appear in the "Transactions," there are indications of some decrease in the tuberculosis death-rate, especially in the case of the children, in certain of the large towns sending children to seaside sanatoria.

But whatever may be the precise facts with regard to the behaviour of tuberculosis in France, there can be no doubt as to the very high mortality occasioned by the disease, and at this juncture France is making what must be termed a

* "The Causes, Prevalence, and Control of Pulmonary Tuberculosis," Milroy Lectures, 1903, by Dr. H. T. Bulstrode, "Lancet," July 23, 1903.

gigantic social effort to effect some reduction in the heavy death-rate from tuberculosis which oppresses her people. It will be shown in describing the proceedings of the third and fourth section what means she is adopting to this end.

In the battle against tuberculosis in France the dominant idea is the security of the infant.

The statistical records of France have borne witness for many years past to a steadily declining birth-rate and to a high infantile mortality, and although there has been, apparently, some improvement of the birth-rate within the last few years, the preservation of the infant population is a matter of supreme importance to the French people. Apart, however, from this aspect of the question, the French have been impressed with the idea of their illustrious compatriot, Pasteur, as set forth in his "*Maladies des vers à soie*," that "*pour sauver une race menacée par une maladie contagieuse le mieux est de préserver la graine*" (in this case the infant).

Consequently, France is now employing all means at her disposal to improve the resistance of the child against disease in general and against tuberculosis in particular, and, with a view to diminish the chances of infection, to inculcate measures which are calculated to promote the health of the child generally, and to render it eventually a useful adult citizen and soldier. What may be called the theoretical French plan of campaign as regards children, although it is as yet but partially developed, is to *seek out* the child predisposed either by inheritance or by surroundings to tuberculosis, or who may already be the subject of the malady in a latent or "closed"* form, and to send it to one of the numerous institutions which abound in France for the improvement of the child's health, and for its security against infection. It has, however, to be observed that some of the institutions referred to are intended, not so much for actually tuberculous children, as for those who, if left in existing surroundings, would be in danger of developing disease of this class.

This work has been much stimulated of late by "The Society for the Protection of Children against Tuberculosis," which was founded by Professor Grancher in November, 1903. Its main object is the removal from infected households of children who are healthy, or who have already "closed" or latent tuberculosis. These children are sent to the country, and kept there so long as the sources of infection continue in their homes.

The greater number of institutions under consideration refuse children who are the actual subjects of pulmonary tuberculosis or consumption, the cases which are admitted being tuberculosis of the glands, bones, joints, etc., or children in anæmic or other conditions which, by impairing their health, are likely to unfit them for the battle of life. In fact, many of these institutions are what we in England should call convalescent homes

* By *closed* tuberculosis is implied tuberculous lesions unassociated with any discharge containing, or liable to contain, tubercle bacilli; by *open* tuberculosis, lesions which are associated with discharges containing, or liable to contain, such bacilli.

Since the year 1887 some 60,000 children have been treated at these institutions, and it was stated by Dr. Armaingaud, who read a communication on Marine Sanatoria, and whose name is intimately associated with this movement, that "cures" were effected in some 59 per cent., and marked improvement in an additional 25 per cent. It is, of course, necessary to observe that these figures relate to conditions of debility, and to tuberculosis of the glands, bones, etc., and not to tuberculosis of the lungs. The figures would appear, too, to have reference to the condition of the children immediately on discharge, and not to the after-results of the treatment, although these results are stated to be for the most part of a lasting nature. There can, however, be no question as to the enormous advantages of sending debilitated children, or children affected with "closed" tuberculosis, to Marine Sanatoria. As regards the treatment of tuberculous joints, etc., it may be of interest to note, again on the authority of Dr. Armaingaud, that suppurative osteitis and joint disease always terminated fatally at the sanatorium at Berck-sur-Mer (one of the most important Marine Sanatoria) in former years, but that they always heal now; this remarkable improvement being attributed to the fact that formerly "tubercular foci were always opened; they are never opened now."*

At the present time there are in France 23 public seaside sanatoria for children, with a total of 5,385 beds, together with 12 other sanatoria and climatic stations, also for children. There are 27 convalescent homes or "houses of rest," with 708 beds, and, finally, there are in existence nearly 170 holiday colonies, receiving each year more than 22,000 children. These colonies take children from the town and give them a three weeks' holiday, either on the sea coast, in the mountains, or elsewhere in the country. The cost is about 3 francs per day per child. It will be seen from this list that a very large number of children are afforded annually in France favourable opportunities for fortifying their resistance to the tubercle bacillus, and this whether they are suffering from a predisposition to the disease or whether they are already the victims of it.

Anti-Tuberculous Dispensaries.

Even as the conservation of the infant is a special feature of the French system with reference to children, so must the "anti-tuberculous dispensary" be regarded as the peculiar feature of that system as regards adults, and a few general observations with reference to these institutions are here necessary. It has, however, to be observed that dispensaries of this nature are now to be found in considerable numbers in other countries, and it

* In connection with this statement reference may be made to an article by Mr. Bertram Thornton, Senior Surgeon to the Royal Sea-Bathing Hospital, Margate, on "The importance of early climatic treatment in Surgical Tuberculosis," in which he observes: "Fifteen years' constant work in the wards of the Royal Sea-Bathing Hospital at Margate (150 beds) has brought home to me the conviction that the knife plays a very subsidiary rôle to climatic and general considerations."—*Tuberculosis*, April 1902.

would appear from a paper read before the Congress by Dr. R. W. Philip, that work of a nature similar to that carried out at the "anti-tuberculous dispensary" has been in operation for the last eighteen years at the Royal Victoria Dispensary at Edinburgh. It has, too, to be borne in mind that the out-patient departments of our consumption hospitals are, in a sense, analogous to the anti-tuberculous dispensaries of France.

In so far as France is concerned the first of these dispensaries, the Emile Roux Dispensary, was opened at Lille in December, 1902, through the instrumentality of Professor Calmette, Director of the Pasteur Institute in that city. At the present time there are in France sixty-two anti-tuberculous dispensaries, of which thirty-eight are in the region of the French capital. One of the main objects of these institutions is to give medical advice, food and clothing to the patients; but they seek also, in principle, to search out the tuberculous and the "pre-tuberculous," to send the early cases to the sanatoria, and the more advanced to the hospital, and to help, so far as may be practicable, that large body of patients who, under existing circumstances, can go to neither of these institutions.

These dispensaries, by keeping in touch with sanatoria and charitable organisations, are able to aid the patients in numerous ways, to facilitate the return of the "pre-tuberculous" to the country, and to secure them a more suitable employment; to bring about the disinfection of infected dwellings, and to draw the attention of the authorities to insanitary houses. This they are able to do largely through the instrumentality of lady visitors who are attached to several of these dispensaries, and who make it their duty to visit the patients at their own homes, and to inculcate into them the elements of hygiene. Although, as will be seen by the papers, discussions, and resolutions relative to these institutions, opinions differ materially as to their value, they must, we think, be regarded, if properly organised, as a valuable means of disseminating knowledge as regards health and prevention of disease and as useful agents in the anti-tuberculous armament. One of the most recent institutions of this nature in Paris is the "Dispensaire Anti-tuberculeux Jacques Siegfried et Albert Robin," which was founded by Messieurs Jacques Siegfried and Robin at the Beaujon Hospital in January, 1905. Although its functions are those already referred to, its special feature is the diagnosis of the "pre-tuberculous" state by means, mainly, of an examination by chemistry* of the respiratory changes of the suspected subject, a study to which M. Robin and M. Binet, one of the directors, have paid special attention. The premises on which this dispensary is situated belong to the "Assistance Publique," but the organisation of the institution is entirely independent of that body, which has, however, by decree, recognised the institution as of public utility.

* See Section I., page 16.

The most recent dispensary in France is the Emile-Loubet Dispensary, which was opened by the President of the Republic during the Congress, on Wednesday, 4th October, 1905.

This institution is the outcome of a subscription got together by the Mutualities of France, with the view of offering a souvenir to M. Emile Loubet. The individual subscriptions were fixed at 10 centimes, and 140,000 Mutualists responded. M. Loubet, on hearing of the proposal, asked that the amount collected should be utilised towards the foundation of a dispensary.

In addition to the dispensaries here referred to, France possesses 13 public sanatoria (establishments which are either free or of which the daily charge does not exceed 5 francs) with 724 beds; 21 sanatoria with more than 800 beds; hospital services in all the great centres; workmen's gardens, air cures, houses of rest, and convalescent asylums. There are, moreover, numerous leagues, associations, and societies devoting themselves in one or another fashion to the control of tuberculosis.

We visited certain of these sanatoria on the Thursday during the Congress, and one of us who was able to extend his stay in Paris for a few days was enabled to see the tuberculosis wards in the Paris hospitals, several of the anti-tuberculous dispensaries, and to visit the well-known sanatorium at Villemin. We have, too, on other occasions visited several of the sanatoria on the Riviera, including the recently-erected, luxurious establishment, Mont-des-Oiseaux, near Hyères.

THE SECTIONS.

SECTION I.

This section, which was concerned with Medical Pathology, treated of a great variety of subjects, of which the following appeared the most important:—

I. *The relation of tubercle bacilli to other acid-fast bacilli.*—This question, which was largely discussed, arises from the fact that certain other bacilli, as the Timothy grass bacilli of Moeller and the Petri-Rabinowitsch butter bacillus give the same reaction as the Koch bacillus under the well-known Ziehl-Weigert-Ehrlich test. Fortunately, these last-named bacilli rarely appear in the sputum of consumptive patients, and can be differentiated from the tubercle bacillus by cultivations in appropriate media.

II. *The early diagnosis of tuberculosis by new methods* was the subject of three reports, of which one was contributed on behalf of this country by one of the delegates of Great Britain,* and of innumerable papers. The general conclusion arrived at was that the Roentgen Rays, in the form of Radioscopy and Radiography, had proved an important aid in the diagnosis of early and definite pulmonary lesions, especially in the presence of emphysema, and that these were also useful in defining the extent to which the lungs had become affected.

The detection of Koch's bacillus in the sputum and other secretions was generally regarded as most valuable, but often where the lesion was early and very limited, or where lung fibrosis had taken place, this test is not available, on account of the absence of expectoration.

The blood agglutination test has been largely practised in France, but its results are still somewhat doubtful. The employment of tuberculin on man in order to produce, as in cattle, a characteristic reaction, which arises from necrosis of tubercular masses, is not generally recommended, and the conclusion arrived at was that physical signs, *i.e.*, auscultation and percussion, were still the most trustworthy modes of diagnosis, though it was necessary to associate with them radioscopy and examination of the sputum.

III. The comparative study of the various forms of tuberculosis and of the relations between human and bovine tuberculosis were discussed jointly by Section I. (Medical Pathology) and Section II. (Surgical Pathology), and the conclusions arrived at were interesting in view of those of our own Royal Commission, which, in its interim report, be it remembered, found

* C. Theodore Williams, M.D., F.R.C.P.

that tubercular disease set up in the bovine animal by human tubercle was identical with that set up in bovine animals by tubercle of bovine origin. Arloing states that human and bovine tuberculosis are of the same nature and intertransmissible, and that the transmissibility of bovine tuberculosis to man is no longer questioned.

Kossel and Ravenel both recognise two types of the tubercle bacillus, *typus humanus* and *typus bovinus*, the latter, according to Ravenel, being far more virulent than the former. The human tubercle bacillus, as a rule, has a low pathogenic power for cattle, but some cultures have been found to infect them.

The bovine tubercle bacillus has the power of invading the human body and producing all the lesions of tuberculosis.

Human tuberculosis, according to these authorities, is due primarily to infection by bacilli of the *typus humanus*, which are transmissible from man to man, and the part played by tuberculous infection of animal origin is in their view small compared with that arising from the infection of consumptive patients.

The general conclusion arrived at was, however, that there might be differences in virulence between the various forms of the tubercle bacillus, but that they all belonged to the same species and to some extent were intertransmissible.

The two Sections (I. and II.) passed the following resolution, which was later on adopted by the Congress:—

“The Congress declares that it is not only indispensable to avoid the contagion of tuberculosis from human beings, but that it is also necessary to secure the prevention of bovine tuberculosis in continuing to take administrative and hygienic measures against the possible communication of bovine tuberculosis to the human species.”

The evidence of our Royal Commission and of the reports of the Paris Congress proves how unfounded were Professor Koch's statements made to the Congress of Tuberculosis in London in 1901, and it was fortunate for our own country and others that these were not accepted, and that measures against bovine tuberculosis have been persevered with.

A most elaborate and interesting series of investigations have been recently made in Sweden by a Government Commission on the relations of bovine and human tuberculosis, the results of which have been published in a handsome volume, entitled “*La Lutte contre la Tuberculose en Suède, 1905*,” edited by Professor Henschen.

IV. *Predisposing conditions of tuberculosis*.—Albert Robin notes that in tuberculosis the rate of respiratory exchange is increased from 25 per cent. to 80 per cent., and that this feature is to be found in both acute and chronic cases and in all stages of the disease. This interesting fact, which was confirmed by a good deal of evidence from French medical men, appears likely to prove useful in the detection of the disease.

V. *The treatment of pulmonary tuberculosis* was largely dealt with, especially the various forms of alimentation of tuberculous patients, and some interesting experiments by Messrs.

Lannelongue, Achard, and Gaillard on guinea-pigs which had been inoculated with tubercle showed that in animals whose food is feebly nitrogenous the addition of fatty and saccharine matters, such as sugar and butter, to the dietary did not increase the resisting power to tuberculosis in the same way or to the same extent as gluten and nitrogenous matters.

The treatment of consumption by different kinds of anti-tuberculous serum was considered, and several new sera were described. The serum used by Messrs. Lannelongue, Achard, and Gaillard was derived from donkeys, and appeared to give some protection to guinea-pigs, but had never been tried upon human beings. The serum of the animals rendered tolerant of the toxine appeared to possess, the authors thought, curative properties.

Another serum introduced by Beraneck was recommended for direct injection into the tuberculous foci of surgical tuberculosis, as having more influence than when used hypodermically. It consisted of extra-cellular toxine and intra-cellular toxine extracted from the bacillus by a solution of orthophosphoric acid (1 per 100), and was proved to possess an immunizing power for the guinea-pig.

A third serum introduced by Cuguillère was recommended for forms of surgical tuberculosis by several French medical men, but the particulars of the preparation were not given.

A fourth was described by Denys of Louvain as obtained from a transparent liquid procured from a bouillon culture of the tubercle bacillus. This bouillon, when injected under the skin, produced the same symptoms as did the old tuberculin of Koch when used in smaller doses. According to the author, the dose ought to be so small ($\frac{1}{100000}$ m. to $\frac{1}{1000000}$ m.) as to avoid every reaction except the mildest, and it can then be increased according to tolerance. The author commenced with a $\frac{1}{1000000}$ th of a milligram, and by gradually increasing the dose claims to have obtained a considerable number of cases of improvement, if not of cure.

It cannot, however, be said that these serums as a rule professed to be absolutely curative of the disease, and some were still clearly in the experimental stage.

Marmorek's well-known serum was the subject of considerable discussion, and the author maintained that in the large majority of cases the injection of the serum had produced considerable amelioration of the symptoms, reduction of fever and dyspnoea, diminution in the number of tubercle bacilli in the expectoration, and improvement of the general condition.

Where the rise of temperature was due to the tubercle bacillus alone good results are said to have always followed the use of the serum, but where there was a mixed infection, the combined use of the anti-tubercular and anti-streptococcic serum had been found satisfactory by some observers.

The acute forms of the disease responded better than the more chronic varieties. The cases in which definite relief was obtained amounted to about three-quarters of the whole

number, and in no case was there any bad result. The effects on the various forms of surgical tuberculosis were still more satisfactory.

Twelve members of the Congress spoke more or less favourably of the effects of Marmorek's serum, especially Dr. Ernest Levin of Stockholm and Dr. Stephani of Montana.

Dr. Habershon furnished the evidence from the Brompton Hospital. Marmorek's serum was first tried in cases of early pulmonary tuberculosis, which had remained at least three months in the hospital without definite improvement. These cases frequently presented an advanced stage of the disease, although on admission only an incipient condition had existed. Among them several deaths occurred, and the remainder, although definite improvement was noted, left the hospital with the disease not arrested and with tubercle bacilli still in the sputum.

The next class of cases dealt with were early cases which had been treated by ordinary methods for three or four weeks without improvement. In this class Dr. Habershon recorded after the use of the serum a distinct improvement as regards appetite, gain of weight, reduction of fever, and diminution in the amount of sputum. But none of these patients left the hospital with complete arrest of the pulmonary disease, although in several instances, in which two or three lobes were affected with early infiltration, the physical signs over one lobe had disappeared.

Dr. Habershon urged a further trial of the treatment in early cases, though all patients did not tolerate it, and he advocated using a smaller dose than that employed in surgical tuberculosis.

Professor Von Behring gave some account of a new curative principle which plays a part in the immunizing action of the Professor's own bovo-vaccine, which he stated had proved of practical value against bovine tuberculosis during four years. The principle depends on the impregnation of living cells by a substance derived from the virus of tuberculosis, which he calls T. C. When T. C. forms an integral part of the cells, it becomes metamorphosed, and the product is called T. X.

T. C. possesses a formative and a fermentative function, while it assumes a selective absorption, and also has, under certain conditions, assimilative qualities. T. C. is the cause of the hypersensibility towards Koch's tuberculin and of the protective reaction against tuberculosis.

Professor Von Behring claims to have succeeded in changing the "active" immunization into a "passive" one. He says "in order to liberate T. C. it is necessary to distinguish three substances produced by the bacilli. The first of these is only soluble in water, and possesses a fermentative and a catalytic action. It contains the toxic portion of Koch's tuberculin, and has all the chromophilic, physical, and chemical qualities of Meyer's Volutine, and is called T. V. One gram of T. V. is more powerful than 1 litre of tuberculin.

The second substance is a globulin and is soluble only in neutral saline solution, and is called T. G. L. It is likewise toxic in the sense of tuberculin.

The third substance, or group of substances, is soluble in alcohol, ether, and chloroform, and is non-toxic.

Having removed the three groups, there remains the body of the bacillus, which Von Behring calls the "rest-bacillus," which retains the shape and tinctorial qualities of the tubercle bacillus. By means of suitable preparation this can be modified into an amorphous substance, which is directly reabsorbable by the lymphatic cells of the guinea-pig, sheep, goat, ass, and horse.

The state of immunity of the organism evolves itself parallel with the metamorphosis of the cells under the influence of T. C. The fundamental fact is that T. C. possesses the power of giving rise to tubercles which do not caseate or break down.

Von Behring is convinced that T. C. can be prepared *in vitro* in such a form that it can be employed safely in human therapeutics. Von Behring stated that he did not wish to describe the nature and mode of action of his new treatment at present, but that the therapeutic portion of the work would appear next year, when its harmlessness and therapeutic value had been demonstrated by clinicians of repute. Doubtless, therefore, Von Behring's researches are of the highest interest, and his conclusions deserve all the consideration due to so distinguished a pathologist, but until the full particulars of the preparation he alludes to are given, and a complete clinical trial of the remedy has been attempted on man, it cannot, of course, be admitted into practical therapeutics.

The treatment of Lupus by new methods was the subject of several papers and of two reports, and the results given by Finsen's method, and by the Roentgen Rays, and by high-frequency currents have shown these all to be more or less effective in appropriate cases. French, German and Danish observers all record a large number of successes, so that the new forms of treatment of Lupus seem decidedly hopeful.

SECTION II.

In addition to operations on scrofulous joints and bones, some of the members of the Congress advocated surgical interference with the meninges of the brain and encephalon in cases of acute tubercular meningitis. The results of such interference do not appear to have been very promising, but in reference to the removal of solitary tuberculomata from the central hemispheres Duret brought forward the results of thirty-six operations on the cerebrum and twelve on the cerebellum. Among these twenty-three were recorded as successes, and there were eleven deaths.

Alessandri of Rome also gives some nine favourable results in twenty-seven operations on tubercular masses in the cerebrum and cerebellum, the results on the latter being more discouraging than those on the former.

French surgery seems at the present to be attempting operations in ileo-coecal tuberculosis. No operations have been

tried in (1) cases of ulcers of the intestine confined to the mucous membrane, nor in (2) the entero-peritoneal forms, in which ulcerous lesions penetrate more deeply and are accompanied by tuberculosis of the peritoneum and the mesenteric and pericoecal glands.

The form (3) operated on is characterised by a real tuberculous tumour, and reported to be met with in patients often free from pulmonary tuberculosis. It is held to be a primary ileo-coecal tuberculosis of the fossa iliaca.

The French surgeons hold that in these cases, if the tumours be still mobile and devoid of strong adhesions, surgical intervention is most successful, and that the resection of the ileo-coecal segment is followed by complete recovery of the patient.

SECTION III.

The chief papers in this section dealt with (1) the preservation of the infant against tuberculosis both at home and at school; (2) the rôle of seaside sanatoria for children as a means of social defence against tuberculosis; and (3) the rôle of maternal and scholastic mutual aid associations in the fight against this malady.

Latent Tuberculosis in Children.

In certain of the papers read before the third section stress was laid upon the infection of children in the early years of life, the evidence pointing towards the conclusion that, in so far as regards France, tuberculosis is present in a latent form in infants and young children, and that it is prone to remain thus latent until, in later years, the soil of the human organism becoming altered by school life, by poverty, by alcohol, or by other adverse conditions, the potential or latent infection becomes an actual infection. This point was accentuated in the papers read by Dr. A. B. Marfan of Paris and by Professor Ganghofner of Prague. The latter affirmed that in the course of 1800 autopsies on bodies of children dead of diseases other than tuberculosis, who during life had presented no clinical symptoms of tuberculosis, he had found signs of tuberculosis present in the following proportions:—

Among 460 deaths of children in the		first year of life latent		
		tuberculosis was found in		33 = 7.1 per cent.
"	536	"	aged from 1-2	86 = 16.0 "
"	476	"	" 2-7	117 = 24.5 "
"	271	"	" 4-6	73 = 26.9 "
"	123	"	" 6-8	33 = 26.8 "

Dr Marfan, in his paper, concluded—

1. That in the human species tuberculosis exceptionally is congenital; it is nearly always acquired.
2. That at ages 1-6 years the infant is most exposed to contract tuberculosis,

3. That as regards a considerable number of cases in which tuberculosis manifests itself at adolescence or during adult age, the manifestation is due, not to a recent contagion, but depends upon an infection which existed, already latent, since early life.

It will be seen that these views as regards latency are similar, up to a certain point, to those expressed by Von Behring, but Dr. Marfan and Professor Ganghofner attribute infection in infancy and childhood not mainly to the milk of infected bovines, as did Von Behring, but largely, although by no means entirely, to human infection contracted domestically in quite early life, and in the later years to family, school, and other influences. All these authorities, however, included the boiling of milk among the several preventive measures prescribed by them.

In connection with this subject, it will be of interest to refer here to a very important communication made to the third section by Professor H. Vallée,* who succeeded the deeply regretted Nocard as Professor at the National Veterinary School of Alfort. Professor Vallée, after a series of valuable experiments carried out with the object of determining the relative facility of infection by the air passages and by the intestinal tract, obtained results which, in his view, justify the conclusion that, although tuberculosis can invade the organism *viâ* the nose or the bronchi, the most accessible route is by way of the intestines. He considers that the tubercle bacillus is able to traverse the walls of the intestine without determining appreciable lesions of the mucous coat, or subsequently of the mesenteric glands. Having thus escaped from the intestine, it passes, he says, by way of the lymphatics and infects the bronchial glands, for which it has a distinct predilection.

M. Vallée infers that one is no longer entitled to consider that with man tuberculosis of intestinal and alimentary origin is relatively rare; that, on the contrary, one must regard pulmonary tuberculosis as arising frequently from the swallowing of dust or of infected foods (imperfectly cooked or raw meats, milk, etc.).

He adds that the researches of Rabinowitch, Mohlen, and Moussa which have demonstrated the virulence of the milk of certain cows attacked with visceral tuberculosis without any lesions of the mammary glands, establish, like his own researches, the necessity of a *strict sanitary control of milk production*.

The Prevention of Tuberculosis amongst Children both at Home and at School.

But few newly arising considerations came up for discussion under this heading. *As regards infection at home*, it was urged, largely upon the facts relative to latent tuberculosis referred to above, that it was between the ages of one and six years that

* See also "Annales de l'Institut Pasteur" Nos. 10-25, October, 1905 (Masson and Co., Paris).

children are most prone to contract tuberculosis. And such infection was attributed (A) to tuberculous milk, (B) to tubercle carried to the child's mouth by fingers contaminated by infected earth or other materials, (C) to living in infected houses. Upon these views the adoption of obvious preventive measures was advocated.

As regards the school as a medium of infection, a marked distinction was made between *open* and *closed* cases, the former being regarded as very rare, the latter as common. Professor Grancher has found amongst the Paris school-children only one in every 500 children with *open* tuberculosis, whereas 11-14 per cent. of the boys and 17-20 per cent. of the girls were found with *closed* tuberculosis. Infection at school was attributed by Dr. Méry—one of the *rapporteurs*—to (a) infected premises, (b) infected teachers, (c) infected children presenting open lesion. But the general opinion was to the effect that infection at school was far less frequent than infection in the home. Professor Ganghofner, who read the second paper on this subject of child tuberculosis, thought that measures should in the first place be directed against "predisposition;" and he relegated to a relatively secondary position measures against direct infection. There was some difference of opinion as to the prevalence of tuberculosis amongst school-teachers in France, due, perhaps, to a want of harmony as to the precise meaning of "tuberculosis" and as to the method of diagnosis adopted.

The general preventive measures advocated embraced the teaching of hygiene in schools, the periodical inspection of school-children, inclusive of the searching out of tuberculous or pre-tuberculous children, and the adoption of increased facilities for lessons and physical exercises in the open air. Professor Grancher's "*Ceuvre de la préservation scolaire contre la tuberculose*," which concerns itself not only with the question of infection, but with the discovery and treatment of latent tuberculosis, was the subject of general commendation.

Seaside Sanatoria in their relation to Tuberculosis.

Instructive communications were read upon this subject by Dr. Armaingaud and Professor A. D'Espine.

We have already referred to the fact that there are many of these institutions upon the French littoral and that excellent results in the case of scrofulous and rachitic children have been thus obtained. It is believed, too, that in all the large towns (with one exception) which have furnished or have access to these institutions the mortality from tuberculosis is decreasing.

The results of these marine sanatoria are not generally considered as encouraging in the case of definite pulmonary tuberculosis, but apparently excellent results have been obtained in the case of children who are regarded as being predisposed to pulmonary tuberculosis.

The statistical methods adopted at these seaside sanatoria cannot be regarded as altogether satisfactory, and both the *rapporteurs* on this subject laid stress upon the importance of publishing the statistics upon a uniform plan. Both also emphasised the importance of exposing the children as much as possible to the sea air and they urged that if the sanatorium could not be built upon the beach itself the children should be taken there during the day. Sea-bathing was also regarded as an important adjuvant to these institutions, and an increase in the employment of helio-therapeutics was advocated. We have already drawn attention to the fact that the cases at Berck-sur-Mer have yielded astonishingly good results in the absence of surgical interference.

In connection with the subject of marine sanatoria, it was interesting to be reminded by Professor D'Espine, one of the *rapporteurs*, that it was the Englishman Russell who published in 1750 his celebrated work "*De tabe glandulari sive de usu aquæ marinæ in morbis glandularum*," that thus had been laid the foundation-stone of marine sanatoria, with the result that before the close of the eighteenth century another Englishman, Dr. Lettsom, founded at Margate the "Royal Sea-Bathing Hospital," which since 1791 has done such admirable work for children and adults suffering from tuberculosis of the joints, bones and other organs. Unfortunately, England has not retained her lead in this matter of marine sanatoria, although there are in addition to the institution just referred to, numerous convalescent homes to which tuberculous children can be sent.

The Rôle of Maternal and Scholastic Mutual Aid Associations in the Fight against Tuberculosis.

This was the subject of a joint paper by Drs. Cave and Savoie, who contended that, inasmuch as tuberculosis is a disease of communities, it can only be successfully grappled with by the co-operation of societies, etc. He thought that the Mutual Aid Societies, or Friendly Societies, as they would be called in this country, should form the centre from which such co-operation should radiate. Prevention should be the watchword of these societies, and the battle should be carried on by means of the diffusion of knowledge, the erection of cheap and wholesome dwellings, the provision of co-operative kitchens and restaurants, and many other social agencies. There should be a rigid medical inspection of the members of the Friendly Societies, and consumptive members should be sent to sanatoria or be otherwise isolated.

The following are the resolutions arising out of the proceedings of this *Third Section*, and they are interesting as regards their variety and scope.

The Tuberculosis Congress considering—

That tuberculosis, a communicable disease, is nearly always contracted by the infant in a contaminated family centre.

That tuberculosis of the adult is more frequently a tuberculosis of infancy which has remained latent and unrecognised.

That consequently the safeguarding of the infant is the most valuable and efficacious means of combating tuberculosis, which is essentially a social malady.

That whatever may be the gate of entry of the tubercle bacillus—pharynx, lung, intestine, skin—the means of prevention must always have regard before everything to home infection.

That in so far as the child already infected is concerned, its tuberculosis, whether pulmonary or glandular, is more easily cured in childhood than at any other age, provided the disease is early recognised and treated.

That if the tuberculous condition of the infant were thus recognised and treated at its commencement the local tuberculosis would be cured, or at least would remain "closed," until adult age, a fact which would prove a great social gain.

The Congress, having regard to the above considerations, proposes the following resolutions:—

Resolution 1.—In order to ensure the preservation of the infant in the home, it is necessary —

(a) To maintain the house in a state of wholesomeness and perfect cleanliness.

(b) To boil or sterilise the milk which the infant consumes.

(c) That in the event of the family circle being contaminated the child should be removed as soon as possible. And that poor children should be confided to institutions based on the model of the Society for the Preservation of Infancy founded by Professor Grancher.

(d) To direct the efforts of the maternal and scholastic friendly societies towards the principle of *preservation* by means of personal hygiene, rational feeding, and a house to which sun and air can gain free access.

Resolution 2.—In order to ensure the preservation of the child at school, it is necessary—

(a) To ensure the sanitary condition of the premises and of the furniture.

(b) To increase and, if possible, to make general school *cantines* modelled on those of Saint Etienne of Paris, Roubaix, etc.; to increase the holiday colonies, to inculcate the principles of hygiene into the child, and, more particularly, to teach him the necessity of living in the pure air, to practise physical and respiratory exercises, and to see to the cleanliness of his person.

In so far as boarding schools are concerned, to insist on a sufficient time being spent in the open air and in the performance of carefully regulated physical exercises.

(c) To search out in schools the tuberculous children by a careful medical examination of all on the lines laid down by Professor Grancher and his pupils in the Paris schools.

(d) To take care of the suspected or already affected child for as long a period as possible by administering better food and by country schooling.

Resolution 3.—To complete these measures of *preservation* by supplying different means of *assistance* to the invalid child, especially by the high altitude cure.

It is especially important to make extensive use of marine sanatoria the action of which is most efficacious on the pre-tuberculous and on those suffering from external and glandular tuberculosis.

SECTION IV.

This section was devoted to the subject of the Preservation and Assistance of the Adult, *i.e.*, to what was termed Social Hygiene. The discussions which took place covered a wide field, and excited a very general interest, several prominent French legislators being among the speakers. Professor Landouzy and M. Paul Strauss, a senator who has devoted much attention to social and sanitary reform, presided over the meetings, and the number of papers contributed to this section were considerably in excess of those at other sections of the Congress.

Economic Conditions in the Social Etiology of Tuberculosis.

Practically all three of the *rapporteurs* who dealt with this complex and somewhat indefinite problem agreed in effect, that tuberculosis is to a large extent a social malady, *i.e.*, that it is a disease in the causation of which poverty in some form or another plays a predominant part.

There was, however, a difference of opinion as to the channel through which poverty acts, and by what means its greatest influence is exerted. Dr. Romme, who has written much upon the social aspect of tuberculosis,* was inclined to attach a predominant influence to the substitution of machinery for manual labour—a force which, in his opinion, has brought about the rural exodus which, from a health standpoint, is such a regrettable feature of modern life. In support of his argument, he quoted Durozoy's figures with reference to a canton in the department of Oise, where the purely industrial villages yielded a mortality from tuberculosis of 56 to 61 per 10,000, as against a mortality in essentially agricultural villages of from 0 to 10 per 10,000. The tuberculosis mortality was 46 per 10,000 in a particular village in which part of the population remained in the fields, while the remainder was occupied in neighbouring factories. The author also quoted the now well-known figures from Hamburg, where the mortality from tuberculosis was 10·7 per 10,000 among those with an income above 3,500 marks, 39·3 where the income was between 900 and 1,200 marks, and 60 per 10,000 among those who earned less than 900 marks per annum. Somewhat similar figures have been yielded by certain other large towns, to one of which we shall shortly refer again. Unfortunately, the age distribution of the population has not been taken account of in some of these cases.

A suggestive contribution upon this difficult subject was made by Dr. Arthur Newsholme, of Brighton, in which he analysed the several factors which are credited with an influence upon the prevalence of tuberculosis. He thought that the data which he had been thus far able to collect did not support the view that the prevalence of the disease in question depended in a

* "La Lutte Sociale contre la Tuberculose" and "L'Alcoolisme et la Lutte contre L'Alcool en France."

predominant degree upon sanitary reform, the price of food, or other so-called social factors. All these factors had, without doubt, aided in bringing about the remarkable reduction which has taken place in this and certain other countries, but none of them were, in his view, competent to sufficiently explain such decrease. So far as his investigations had gone, he was inclined to regard the segregation of cases of advanced consumption in workhouses and infirmaries as the dominant factor in bringing about the decrease referred to, and he brought forward statistical evidence with regard to certain countries and places which tended to indicate that in such places increased accommodation of such cases in workhouses and infirmaries had been associated in point of time with a diminishing death-rate from tuberculosis, and this association was regarded by him as being not improbably one of cause and effect.

Professor Sternberg of Vienna also discussed several of the factors involved in the problem, more particularly from the standpoint of Vienna, and he showed that in the Austrian capital the tuberculosis mortality in the several districts bore, as a general rule, an inverse relation to the percentage of income-tax payers, and a direct relation to the percentage of illegitimate births. For instance, in District No. 1, which represents the best part of Vienna, the tuberculosis mortality for the period studied was 1.1 per 1,000 inhabitants, the percentage of tax payers 25 per cent. of the population, and the illegitimate births 0.8 per cent. of the total births; whereas in District No. 10 the tuberculosis mortality was 6.7 per 1,000, the percentage of income-tax payers 9.2 per cent., and the illegitimate birth rate 9.2 per cent. This relation between income tax and tuberculosis has been already referred to, but, as Professor Sternberg points out, the parallelism between illegitimate births and the mortality from tuberculosis is new, and it will be of interest to note whether such parallelism obtains elsewhere. The author also brought forward evidence indicating that want of employment is a more important factor in the promotion of tuberculosis than the question of housing. In his view it is not yet possible to assess the share of the several associated factors in their relation with tuberculosis. This is a matter for *social medicine*, which must collect the factors and co-ordinate them.

The discussion which followed did not throw much light upon the questions raised, a fact which was due in some measure to the imperfect character of the statistical records of France. There can, we think, be little doubt that all the suggested factors brought under review exercise some influence upon tuberculosis, but it is extremely difficult to determine for the world at large any one predominant factor. In one country and at one time one influence may preponderate, whereas in other countries such influence may be exercising a very minor effect. It is clear, however, that the international study of this behaviour of tuberculosis is of the highest importance, as it affords opportunities for checking hasty generalisations based on the study of the disease in one country alone.

Insurance and Mutual Help in the Battle against Tuberculosis.

The consideration of this subject gave rise to much discussion, the reporters being from France, Germany, and England.

M. Fuster, approaching the subject more particularly from a French standpoint, urged that, in order to complete the preventive measures, insurance against sickness and invalidity on the German lines should be added to the recent legal provisions which afford assistance to incurables,* and he stated that in France a certain section of the public is asking for an insurance system by which the State and the employer together should be compelled to furnish the necessary funds. Whatever system is introduced, it should pay, M. Fuster thought, due regard to the principles of prevention, and should enable some of the capital involved to be invested in works of social amelioration, such as the erection of workmen's dwellings, etc.

The German aspect of this question was introduced by Privy Councillor Bielefeldt, who expressed the opinion that of all the factors concerned in Germany in the war against tuberculosis, the first place should undoubtedly be accorded to the system of the compulsory insurance of the working classes which obtained in the Fatherland. We may add here that this system comprises, in so far as insurance against invalidity and old age is concerned, contributions from the employed, the employer, and the State; and that the compulsion of contribution applies, generally speaking, to all persons who are earning under £100 per annum. Herr Bielefeldt stated that from 1885 to 1905 there had been distributed by the Mutual Help Societies in one form or another 1,117,962,482 marks (£55,898,124). The Insurance Societies, Friendly Societies and the Assurances against Invalidity had distributed towards invalidity and sickness, whether in the form of pensions or assistance to families, 815,550,258 marks (£40,777,513) from 1891 to 1903. It is important to note that in such assistance is embraced help to the family of the disabled workman in order that such family may not by privation become prone to develop tuberculosis, and that the patient may be freed from anxiety during his stay in the sanatorium.

As regards the measures adopted by the workman's insurance system with reference to the treatment of tuberculous members, it may be remarked that the Insurance Societies place consumptive subjects in hospitals or sanatoria or other suitable places. Thus from 1897 to 1904, there were sent for treatment for a total period of 7,687,805 days some 101,806 tuberculous subjects, such treatment representing a total expenditure of over 35,000,000 marks. Out of the total number of patients 83,000 were sent to special establishments for tuberculosis and 9,000 to bathing stations.

The alleged results were as follows: Out of every 100 tuberculous subjects treated during the years 1897-1900, inclusive, there remained respectively at the end of the five years 37, 31, 32, and 31 able to obtain a livelihood without any assistance from the Invalidity Funds.

* The Law of July 14, 1905.

Moreover, these assurances against sickness and invalidity render important service in the prevention of tuberculosis in that, by means of lectures and literature, they seek to diffuse information with respect to the etiology and prevention of the malady. Moreover, these societies have contributed more than 211,000,000 marks for the erection of sanatoria and other institutions and over 133,000,000 marks for the construction of workmen's dwellings.

While there were 88,285 deaths from tuberculosis in Prussia in 1886, there were only 66,726 in 1902 (notwithstanding the increase of population). In German towns having more than 100,000 inhabitants the mortality was 37·36 per 10,000 in 1886, while in 1902 it reached only 22 per 10,000. Herr Bielefeldt thought that "it follows from their observations in Germany that these happy results depend above everything on the existence of the compulsory workmen's assurance which allows of the simultaneous action of all the factors of the anti-tuberculous battle."

In so far as Great Britain is concerned, Mr. C. H. Garland of London pointed out that this question, as to whether it would be to the financial advantage of Insurance Societies to aid in the curative treatment of their policy holders and to promote preventive measures, has not up to the present been very seriously considered by British Insurance Companies or by Friendly Societies. So far as could be judged, such an arrangement would not prove a financial success for the Insurance Companies, but he thought that these companies might well utilise their agents in the distribution of educational literature upon the subject of tuberculosis. With reference to Friendly Societies and Trades Unions which make payments to the sick, he referred to the fact that in the Ancient Order of Foresters the cost of a consumptive member in sick pay is £14 more than in the case of other invalids, while in the Hearts of Oak Benefit Society the consumptive members cost each 17 guineas more than other invalids.

He suggested, therefore, that if the curative treatment cost only £16 per head it was probable that the amount of sick pay drawn by the consumptives would either equal or sink below that drawn by other invalids. An experiment on these lines was, he thought, well worth a trial, and such a trial was within the statutory powers of the societies. He added that a movement was now on foot among Trades Unions and Friendly Societies in England for the purpose of erecting and maintaining sanatoria for those members who were suffering from pulmonary tuberculosis. The project was prompted rather by humanitarian than pecuniary motives, but this experience was likely to yield instructive results.

In connection with this question the following resolutions, amongst others, were passed :—

It is desirable that measures of general prophylaxis, as well as the work of assistance, should be completed by an assurance contributed to by the employed, the employer, and the State.

It is desirable that invalidity, which is for the most part only prolonged illness, should be protected by the same organisation of assurance as sickness.

Such assurance should not concern itself solely with pensions ; its action should be above all preventive hygiene, and treatment should form part of its attributes.

It is desirable that capital or reserve funds should be able to be partly applicable, under every security, as loans to various public or private institutions of hygiene.

*The Rôle of Sanatoria and Dispensaries in the battle
against Tuberculosis.*

As was anticipated before the Congress there was an animated discussion upon this subject, a discussion which was taken part in by representatives of many nations. The readers of the papers were Drs. Courtois-Suffit and Laubry of France in a joint paper, M. Emile Beco of Belgium, and M. Sophus Bang of Denmark, all three papers purporting to criticise sanatoria destructively, at least in so far as the original claims made for them were concerned.

It was urged that sanatoria for the poorer classes could no longer be regarded as the principal means of controlling tuberculosis, seeing that the exaggerated conceptions with regard to their value had arisen from the prevalence of mistaken notions as to the nature of the disease which, in the opinion of Messrs. Courtois-Suffit and Laubry, was not so much an infectious disease as an expression of social circumstances. They regarded the cure of consumption as quite exceptional, and they contended that the experience with reference to sanatoria both in France and Germany had not been sufficiently encouraging to justify the expenditure involved. From a purely humane standpoint sanatoria were defensible, but as institutions calculated to promote economic cures their value was doubtful. Sanatoria would, in their view, only lead to successful issues when general sanitary and social measures shall have resulted in better conditions of the working classes. As they expressed it, "en construisant la sanatorium la Société ne doit songer qu'au côté humanitaire sans chercher à retirer quelque bénéfice de sa générosité." Sanatoria should, they thought, aim rather at prevention than cure, and they should consist of simple, inexpensive buildings; advanced cases should be isolated in hospitals. The same paper also criticised the anti-tuberculous dispensaries which in the authors' opinion should partake more of a co-operative nature and be supported by workmen's insurance societies. The sanatorium should be mainly for the "pre-tuberculous" or the strictly curable patient, the hospital for incurable patients and the dispensary for preventive work.

M. Emile Beco who spoke from Belgian experience thought that the dispensary should be regarded mainly as a preventive centre where the public could be educated in preventive measures while the charitable aspect of the institution—assistance, food, clothing, etc.—should be relegated to a secondary

position. These institutions should endeavour to seek out early cases of pulmonary tuberculosis and to send them, where practicable, to sanatoria which should be reserved for strictly curable cases unable to be dealt with in a satisfactory fashion at their own homes. Institutions of this nature should be regularly inspected, and their statistics be drawn up on a uniform plan. They should be linked together with other charitable and hygienic institutions such as insurance and friendly societies, and laboratories, wherein chemical and bacteriological researches could be undertaken.

M. Sophus Bang of Denmark, Medical Superintendent of the large sanatorium of Silkeborg for the working classes, thought that the statistics of sanatoria were, up to the present, unreliable, since they often included cases of *latent* tuberculosis, a fact which rendered comparison with sanatoria where only active cases were admitted fraught with error. This argument was more particularly applicable to sanatoria where the cases were diagnosed by the use of the tuberculin test by which means patients might be admitted in whom the mischief might have remained latent had they not entered the institution. Sanatoria were in some respects useful institutions, but they would never alone stamp out tuberculosis. In order to deal adequately with tuberculosis, a series of institutions was necessary such as hospitals, asylums, convalescent homes, etc., and the provision of such institutions was being undertaken in Denmark.

As was to be expected these criticisms of sanatoria and dispensaries did not pass unchallenged, and a prolonged discussion ensued in which speakers from many countries took part. The prevailing tone of this discussion was more favourable to sanatoria and dispensaries than the papers, although the cost of these institutions, more particularly in the case of sanatoria, was the subject of much adverse comment. The representatives of Germany were strong in the defence of both these institutions, but it was urged by some that the general provision of popular sanatoria was only feasible in conjunction with a system of obligatory insurance such as obtained in Germany. Dr. Kayserling, General Secretary of the work of dispensaries in Berlin, remarked, with regard to sanatoria, "*Supprimer les sanatoria aujourd'hui? ce serait la révolution!*" The general tendency of the whole debate was perhaps to reduce both sanatoria and dispensaries to their respective value in the battle against pulmonary tuberculosis, and it was only after much ingenuity and tact had been exercised by President and Secretaries that resolutions to the following effect were agreed to:—

1. The degree of utility or the necessity of dispensaries and sanatoria is open to discussion in accordance with the institutions, habits and resources of each country, but the principle of them must be recognised.

2. It is understood that dispensaries and sanatoria as means for controlling tuberculosis have about them no exclusive or predominating advantages.

Dispensaries have, for their essential object, prevention, education is

hygiene and, at the same time, assistance. They can, moreover, serve an valuable channels for the diffusion of information.

Sanatoria are hospital establishments reserved for cases of pulmonary tuberculosis capable of cure or lasting improvement. They are equally the agents of prevention and popular education.

3. The problem of the healthy dwelling will always dominate the prevention of tuberculosis.

It is important that comprehensive views shall obtain in the administration of dispensaries and sanatoria. While conserving their autonomy and liberty they can only gain by being linked together and by being associated with kindred preventive institutions, such as bacteriological laboratories, hospital or benevolent bodies, friendly societies, insurance banks, sanitary services and anti-alcoholic societies.

As desiderata to be realised concurrently with dispensaries and sanatoria, the Congress indicated the desirability of certain reforms (a) to the "Assistance Publique"* which should, it was contended, assume a more preventive rôle and concern itself more with hygiene, (b) to the Friendly Societies whose attention should be directed towards the more rational application of prophylaxis and hygiene.

The Congress also passed resolutions advocating the general adoption of such an international nomenclature of causes of death as would result in the procurement of comparable tuberculosis statistics and the employment of a uniform method of collecting and recording statistics relative to the inmates of sanatoria.

Tuberculosis and the Dwelling.

Two communications were made to the Congress upon this subject; one by Messrs. Paul Juillerat and Louis Bonnier, and the other by Mr. Keith Young of London. Both papers accentuated the importance of a sufficiency of sunlight in the battle against tuberculosis. It has been observed in Paris for several years past that tuberculosis is more prevalent in the lower floors of dwellings than in the upper, the explanation offered being the absence of sunlight. The modifications advocated are embodied in the resolutions which follow. Mr. Keith Young, in insisting upon the importance of light and air, drew attention to the excessive mortality which obtained in back-to-back houses, and to the fact that Dr. Arthur Ransome, F.R.S., had shown that the greatest incidence of consumption was upon those living in dark courts and alleys. He insisted on the importance of the width of streets, and referred to Sir Shirley Murphy's tables† relative to this subject, which showed the width of street required to allow of one to six hours' sunlight on houses 40 feet high, situate in meridional streets and in streets inclined to the meridian at certain angles in the latitude of London, at the summer or winter solstices and the vernal and autumnal equinox.

It will be seen from the resolutions that many of the points referred to are already taken account of by the model byelaws of the Local Government Board.

* The Poor Law in England is the organisation which corresponds most closely to the "Assistance Publique" in France.

† Annual Report of the Medical Officers of Health of the Administrative County of London for 1898, page 80.

Dwellings.

In the case of France and other countries where such taxes exist, the door and window tax ought to be suppressed, and encouragement should be afforded to householders to provide large bay windows in the walls of their dwellings for the ventilation and especially the lighting of inhabited rooms.

There should be instituted in all important towns (of at least 20,000 inhabitants) an enquiry, on the lines of that inaugurated by the town of Paris, with the view of determining the distribution of tuberculosis in the dwellings, and of ascertaining the law governing such distribution.

It is desirable with this end in view to establish in all towns a register of the sanitary condition of houses.

Urban public authorities should encourage the orientation of new streets and arrange them in such fashion that each side of the street can for at least some hours daily receive the direct action of the solar rays.

In future the size of streets and the height of houses which abut upon them should be regulated in such fashion that the rays of the sun can at least for some hours daily fall upon the front walls from foot to summit.

The minimum size of enclosed courts should be arranged in the same manner, and should give the same result as the width of streets.

No inhabited room (whether used as a kitchen, workshop, or caretaker's dwelling) should be lighted and ventilated except from streets or courts having the dimensions indicated above, and by bay windows of a size proportioned to the surface of the room.

The arrangements and dispositions of houses should be carefully considered in order that all parts may be permanently ventilated, and that no unwholesome emanations can invade the inhabited rooms. Especially should the heating apparatus and the smoke flues be so constructed that no emanation of carbonic oxide can spread to the dwelling rooms.

In no case should one tolerate, even for a day, rooms which cannot be lighted by natural light.

Every place which has been inhabited by a tuberculous subject ought not to be let, or occupied by another person, until after it has been carefully disinfected.

No court which lights and ventilates inhabited rooms should be allowed to be covered in either wholly or partially, no matter at what height, by glass or any other method of covering.

So far as possible courts ought to open on to the public streets so as to permit the circulation and renewal of air. It is desirable that during the erection and modification of towns there should be reserved large open spaces, planted if possible, and utilised as public gardens and allotments for the working classes.

What was, however, regarded in France as the most sweeping resolution of all was that which bore the names, amongst others, of M. Casimir-Perier, M. Léon Bourgeois, Professor Landouzy, and Senator Strauss. It was to this effect—

“Having regard to the substantial results obtained in certain countries by their public health legislation, the International Congress of Tuberculosis expresses the opinion that the law should bestow upon public authorities the power and the means of expropriating all buildings dangerous to the health of the inhabitants, account being taken in fixing the compensation to be paid, of the sanitary condition of such property.”

This power is already possessed, though not perhaps sufficiently exercised, by sanitary authorities in England under the provisions of the Housing of the Working Classes Acts.

Tuberculosis in the Army.

Dr. Kelsch, who made a communication to the Congress on this subject, referred to the very heavy tribute levied in France, especially among the young soldiers, by tuberculosis. It arose both by the awakening of old foci and by contagion. As regards the former the reader of the paper stated that during post-mortem examinations upon persons dead of other diseases, old, healed, or latent tuberculosis was found in 40 to 50 per cent. of the cases, and he quoted Naegeli to the effect that from fifteen to thirty years of age 96 per cent. of cadavers showed signs of tuberculous infection. According to Dr. Kelsch this awakening of old foci during the first year of service with the French colours was the predominant factor. He considered that in the individual the rôle of the soil surpassed that of the contagion, and, therefore, that all causes which tended to weaken social communities should be contended against. Contagion was obvious in the army as elsewhere, but it did not attain the severity with which it was formerly credited.

The following resolutions were passed:—

The Congress in calling attention of the proper authorities to the frequency of infectious diseases, particularly tuberculosis, contracted by the soldier in the garrison town, in public establishments, cafés, inns, etc., expresses the opinion that, independently of general hygienic measures which are, or ought to be, taken to improve the sanitary condition of the soldier, there should be provided for each barrack a special place of recreation furnished with books, games, etc., as also wholesome drinks in order to diminish for the soldier the danger of the infectious diseases which he is liable to contract outside.

The Congress also expresses the opinion that tuberculosis resulting from contagion in the barrack should be prevented in armies by monthly medical inspection of all the men without exception; that cases of *open* tuberculosis should at once be brought to the notice of the proper authority in the same manner as cases of other infectious diseases in order that the necessary measures of disinfection may be taken.

The Etiology and Prevalence of Tuberculosis in the Navy.

An interesting communication dealing with the question of eliminating tuberculous subjects from the French Navy was made by Inspector-General M. C. Auffret. In considering this matter the author did not regard as properly belonging to the Navy those recruits who were found to be consumptive immediately upon their entrance into the service, and he regarded those in whom tuberculosis was revealed after a few months' service by an attack of bronchitis, as imported consumption.

It was found that the northern ports, those upon the coast of lower Brittany, yielded a large number of consumptives, and the excessive tuberculosis rate in the port of Toulon was ascribable to the large number of Breton sailors sent to that port.

The excessive prevalence of tuberculosis in Brittany is due, in the author's opinion, to the ignorance of the people as regards

contagion, to the hard life of the people and to alcoholic excess. The paper did not furnish the *rate* of incidence of tuberculosis upon the Breton sailors, although the French Navy is largely recruited from that Province.

The following resolutions embodied many of the author's recommendations.

The Mercantile Marine Service.

With the object of controlling the tuberculosis which is so widespread in the mercantile marine it is desirable—

1. That every reform taken against tuberculosis in the Navy should be extended to the mercantile marine.
2. That no tuberculous sailor should be permitted to embark.
3. That a thorough medical examination should be made at the time of enrolment and also at embarkation.
4. That the provision of a personal health ticket should be made obligatory.
5. That all tuberculous sailors should be disembarked.
6. That hygienic principles should be determined for, and applied to, what are in effect, the floating lodgings and workshops of the mercantile marine.
7. That the food and the conditions of rest and sleep of the sailor should be improved.
8. That in the merchant service there should be an efficacious battle against alcohol.

Notification and Disinfection.

The following resolutions were passed in connection with these subjects.

1. It is desirable that the notification of open tuberculosis should become general.
2. Disinfection in the case of open tuberculosis should be carried out by means of efficiently controlled methods and processes.
3. Administrative regulations, and, if necessary, laws enabling disinfection to be carried out should be promulgated without delay.

Looking back on the Congress as a whole, although if Professor Von. Behring's statement be exempted there was no startling announcement, we regard the work of the Congress as having been distinctly helpful in educating the public as to the manifold causes which make for tuberculosis, as to the means which may be taken to render the system relatively immune through resistance, and as to the measures to be adopted in order to avoid infection.

The Congress has done useful work in focussing the progress which has been made in our knowledge since the London Congress in 1901, and in reducing to their proper level certain factors upon which undue stress was possibly laid in London.

Perhaps one of the most important points which has been brought to the notice of the public by the Paris Congress is the

widespread prevalence of latent or "closed" tuberculosis among school children. Attention has been drawn afresh to the fact noticed by Drs. Hope and C. J. B. Williams at the post-mortem examinations made in Paris by Andral fils, and confirmed by later observers, that a large number of adults who died from some other disease or cause, are shown at their autopsies to have suffered from a tuberculosis which has never been recognised during life, and which has healed in the absence of recognition and of treatment, a circumstance which should bring home to the medical profession and to the public the hopeful fact that the natural tendency of tuberculosis, whether of the lungs or other organs is, in a large proportion of cases, towards cure. This very general prevalence of tuberculosis both in children and adults would seem to suggest the need for differentiation between "open" and "closed" tuberculosis in the administrative measures which are taken against the malady generally.

It will have been seen by the resolutions passed at the Congress that no one factor, unless, perhaps, poverty is so considered, was regarded as being an exclusive or dominant factor in inducing causation of the disease. For its prevention there is demand for all measures which tend to educate the people in the principles of hygiene, and which lead them to encourage through their representatives, local or central, the provision of better houses, less overcrowding of persons in the said houses, and fewer houses upon a given area, more light and air, wholesome food in sufficient amount, less alcohol, and better conditions of employment, as well as generally better sanitary administration, inclusive of the control of milk and meat throughout the country. It is measures of this sort that are likely to hasten the decline in England of the already retreating foe, tuberculosis.

In so far as special measures are concerned there would, we think, be advantage in greater co-ordination between all the agencies, preventive and therapeutic, working against tuberculosis, and we may add that we are much impressed with the progress which has been made in Germany during recent years, a progress which is attributed in material degree to compulsory insurance against invalidity and which is the means of promoting "the simultaneous action of all the factors in the anti-tuberculous battle."

There can, we think, be no question that in promoting measures against physical deterioration we shall also be aiding the campaign against tuberculosis.

Tuberculosis is a disease which exercises its greatest influence upon the working classes, and if these classes appreciate the necessity of aiding in the enforcement of at least some of the reforms referred to in this report, they will be furthering not only the battle against tuberculosis, but also that against the acute infectious diseases, and against ill-health generally.

We cannot say that our attendance at the Congress has enabled us to make any recommendations arising directly out

of the Congress, and Dr. Bulstrode is precluded by virtue of his official position, and by the fact that he is engaged upon a comprehensive report to the Local Government Board upon the subject of Tuberculosis from participating at this juncture in any conclusions involving administrative questions. Dr. Theodore Williams has, however, set forth certain considerations which he trusts may prove useful.

We are Your Lordship's Obedient Servants,

C. THEODORE WILLIAMS,

H. TIMBRELL BULSTRODE.

THE RIGHT HON. THE EARL OF CREWE,
LORD PRESIDENT OF THE COUNCIL.

*Memorandum of Dr. C. Theodore Williams on Considerations
arising from the work of the Congress of Tuberculosis
held in Paris in October, 1905.*

The long series of resolutions passed by the Congress contained a number of recommendations of great importance; some of which were specially applicable to the requirements of France and certain other nations, but others had more general significance and applied with great force to England, for instance:—

(1) A knowledge of the laws of health, which would lead to an intelligent appreciation of measures for the prevention of disease, should be taught in all schools, elementary or other.

(2) The prevalence of tuberculosis of the glands and certain other organs among children, and the importance of recognising as early as possible any conditions which are likely to lead to the development of tuberculosis suggest the desirability of the periodical examination of school children by qualified medical practitioners, and the creation of some organisation by means of which tuberculous and "pre-tuberculous" children may under certain circumstances be sent to convalescent homes.

(3) The excessive prevalence of pulmonary tuberculosis in the poorer parts of our large towns points, I think, to the need for especial attention being paid to such parts by the sanitary authorities both in the direction of more frequent house-to-house inspection and the more extended application of the Housing of the Working Classes Acts.

(4) The danger of the contraction of tuberculosis by means of the milk of tuberculous cows appears on the evidence adduced at the Paris Congress and elsewhere to be a real one, against which administrative measures should be applied on a more comprehensive scale than is the case at present throughout the country generally.

(5) It is of great importance that in the plans of new quarters or streets of towns, the recommendations of the Paris Congress should be followed, viz.: that the width of the streets and the height of the houses should be regulated to ensure full exposure to sunlight of the front of the building for some hours of the day, sunlight being a most effective bacillicide. The preservation of open spaces is equally desirable, but fortunately this country has long shown a bright example to other nations, in the institution of public parks and gardens in the metropolis and the principal cities of Great Britain and Ireland.

(6) The greater co-operation of hospitals, dispensaries, sanatoria and consumption working colonies is desirable, in order

that more use may be made of each of these institutions in united effort against tuberculosis.

To deal with tuberculosis effectively all these agencies are necessary, their respective spheres being as follows:—

1. Let us take the *Dispensary System* of France, and the *Out-patient System* of England. In the French system examination of the patient, disinfection of his surroundings, his appropriate treatment and education in sanitary matters all go hand-in-hand. In some instances food is also supplied.

The *Out-patient Department* of our consumption hospitals in England is not so complete, but the measures in force at Edinburgh, and which are partially introduced by the Brompton Hospital in London, of inspection of the patients' homes, disinfection of sputum, and hygienic instructions to patients, will probably be as effective, and will possibly be extended to all such out-patient departments. Next comes—

2. *The Sanatorium*, so largely and successfully introduced in Germany. The function of a sanatorium is to receive and treat early and limited cases of consumption for the period required for their arrest, failing which to transfer them to a consumption hospital, but in case of arrest, to pass them on to a labour colony.

3. *The Labour Colony*, generally horticultural or agricultural, where open-air occupations can be provided according to the measure of the patient's strength and his capacity for such work. This department is only in its infancy in this country, but there have been hopeful experiments in this direction. Lastly, there is—

4. *The Consumption Hospital*, first instituted in England. The object of the hospital should be—

- (1) To isolate advanced and acute cases from the rest of the population, these being the ones from which there is most risk of contagion.
- (2) To treat those cases by all the approved methods which modern medicine can supply, and, where possible, to convert them into chronic cases, which may in time benefit by the sanatorium.

Many acute cases under treatment in the hospital lose their fever, and in time are transferred to the sanatorium, where eventually gradual improvement and arrest of the disease may take place.

Advanced cases of consumption are received into a hospital, not with the hope of arresting the disease, but because they receive great comfort and relief from the skilful treatment and careful nursing, and if they are hopeless cases their last days are

passed with comfort to themselves, and what is most important, without the chance of injury to others.

As regards hospitals and sanatoria for consumption, I would insist upon the very great importance of arranging the statistical data upon an uniform basis which would admit of comparison with those of other nations, and of keeping in touch with discharged patients for a sufficiently long time to enable the after results to be periodically and faithfully recorded.

C. THEODORE WILLIAMS.

passed with content to them, and what is most important
without the chance of injury to others.

As regards hospitals and asylums for the insane, I would
insist upon the very great importance of maintaining the statistic
collected upon an uniform basis which would allow of comparison
with those of other nations, and of keeping in touch with dis-
charged patients for a sufficiently long time to enable the effect
treatment to be periodically and intelligently recorded.

THEODORE WILLIAMS

