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COMMUNICATIONS

THE WORLD-WIDE DISTRIBUTION OF TRACHOMA
excluding the Dominions, Colonies and Mandated
Territories of Great Britain

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Introduction

THE incidence of trachoma in the Dominions, Colonies and Mandated Territories of Great Britain has been considered elsewhere.* The present dissertation is directed to the distribution of the disease in other parts of the world. It is an attempt to place before ophthalmologists in readable form an approximate estimate of the high degree of trachomatisation which exists throughout the world.

The diagnosis of trachoma when there are naked-eye cicatricial changes in the conjunctiva and obvious vascularisation of the cornea is easy. However, there may be obvious pathological changes in the conjunctiva, in which it is impossible to make a certain diagnosis in the absence of a careful examination with the slit-lamp.

* *Brit. Jl. Ophthalm.*, p. 625, November, 1934.

It is obvious that in distant parts of the world a slit-lamp examination is impossible. Therefore all statistics of examinations of eyes for trachoma are grossly under-estimated.

It is necessary to appreciate the fact that an individual may be trachomatous, while oblivious of any ocular discomfort, another reason for under-estimation.

Authority for the information given has been found in the Reports of the XIIIth,* XIVth and XVth Concilia Ophthalmologica, *La Revue Internationale du Trachome*, a Report by Dr. Mackenzie, of the League of Nations Health Section, the Ophthalmological Journals of various countries, the Annual Reports of the Director of Health of Palestine, the Annual Reports of the Ophthalmic Section of the Ministry of Health of Egypt, many private communications from trachomatologists and MacCallan's *Trachoma* (Butterworth, London, 1936). Specific references to articles and to authors have usually been omitted to avoid burdening the text.

I regret that I have been unable to obtain information as to the trachoma incidence in the countries named as follows:—Afghanistan, Albania, Abyssinia, Colombia, Costa Rica, Haiti, Honduras, Liberia, Nicaragua, Panama, Paraguay, Salvador, San Domingo, Siam.

Any corrections or additions will be received by the author with gratitude.

Contents

America, United States of, Philippines; Arabia, Yemen; Argentina; Armenia; Baltic States, Latvia, Esthonia, Lithuania; Belgium, Belgian Congo; Bolivia; Brazil; Bulgaria; Chile; China, Mongolia, Tibet, Manchuria; Cuba; Czecho-Slovakia; Ecuador; Egypt; England; Finland; France, Morocco, Algeria, Tunisia, Central Africa and Madagascar, Syria and Lebanon, Annam, Antilles, New Hebrides, Caledonia, Tonkin, Cochinchina, Pondicherry; Germany, Austria; Greece, Ancient and Modern; Guatemala; Holland, East Indies, Guiana; Hungary; Iceland; Greenland; Iraq; Ireland; Italy, Cyrenaica; Japan, Korea, North China; Luxembourg; Mexico; Nepal; Norway, Sweden, Denmark; Oceania, Polynesia; Persia; Peru; Poland; Portugal, Madeira; Rumania; Russia, U.S.S.R.; Scotland; Spain; Switzerland; Turkey; Uruguay; Venezuela; Wales; Yugo-Slavia.

* Special mention should be made of Wibaut's *Mappa Mundi* which introduced the subject of trachoma at the XIIIth Concilium Ophthalmologicum.

UNITED STATES OF AMERICA.

Among the authorities for the trachoma problem among the indigenous white population of the zone of the United States of America, where trachoma is endemic, are McMullen and Rice of the Public Health service.

As a contrast to the conditions in Europe, where enquiries as to the incidence of trachoma often refer to the larger towns, in the United States the problem is more especially concerned with the mountainous and arid regions. Until recently these parts could only be reached on foot or on horse-back, but now roads fit for motor transport are being constructed.

The endemic zone extends over more than a hundred thousand square miles, or a quarter of a million square kilometres, and contains nearly four million inhabitants. The total area of the states affected is half a million square miles. The zone extends from the East towards the West through Virginia, Kentucky, Missouri, Arkansas, Oklahoma, New Mexico and Arizona.

The trachoma incidence in these regions, as noted by obvious physical signs, varies from 4 to 17 per thousand, although not so stated by the authors of statistics, it is clear that the actual incidence of trachoma is very much greater than this.

In Kentucky out of 8,444 patients examined 463 eyes were found to be blind, and 840 persons had suffered a reduction of visual acuity to counting fingers at 6 metres as the result of corneal lesions.

In the states of Missouri, Tennessee and Kentucky out of 15,450 patients examined 1,835 had been subjected to operation for entropion. About 12 per cent. of the trachomatous patients seen in Missouri had visual acuity reduced in both eyes to counting fingers at 2 metres (20/200).

The clinical descriptions given above denote a very much higher incidence of trachoma among the population of the affected states than that given by McMullen and Rice.

In the southern counties of Illinois trachoma has been known for at least 45 years according to Gradle, who is an honorary director of a campaign carried out by the Illinois Society for the Prevention of Blindness at the expense of the State. Within this area there were in January, 1938, 3,070 well marked cases of trachoma and 225 doubtful cases. Five out-patient clinics were established for indigent sufferers, about 30 miles apart. To each clinic was assigned a graduate nurse trained in ophthalmology, all under the supervision of a full-time and well-trained ophthalmologist, Dr. de François. With the careful treatment used it was found that a period of from four to twelve months was required to make the change from an active to a quiescent trachoma.

The trachoma problem among the Indians of the South-West has been closely studied by several distinguished observers including Posey, Wilder, Knapp and Proctor. Their inspections included the reservations in Oklahoma and the boarding schools in New Mexico, Arizona and California.

Of the 35,000 members of the Navajo tribe it is probable that rather more than 25 per cent. are trachomatous. The majority live in hogans or cabins which are badly ventilated and do not offer hygienic facilities. Many members of the tribe are shepherds, and when caring for their flocks are exposed to the extremes of heat and cold in summer and winter, and to the irritating dust of the desert, and have scant facilities for bathing or cleanliness. These tribesmen live as close to nature as possible in a beautiful region, but which is ill-favoured for the support of human life.

The observers mentioned above recommended that trachomatous children should be segregated in special schools from the healthy children, and that their eyes should receive continuous treatment until they can be pronounced cured and no longer capable of infecting the eyes of others. In Posey's opinion "the compulsory education of children, admirable and necessary as it is, has been the chief cause of the increase of trachoma among the Indians in recent years. It has been the bringing together in close contact in the boarding schools of children with the disease who, under the old system of tribal life, led a more or less isolated existence and consequently were less likely to give the disease to others."

The boarding schools "are housed in large buildings provided with spacious playgrounds. The dormitories are roomy and airy, and each pupil has a separate bed on which the linen is clean. The children wash under running water and dry themselves on individual towels. The pupils appear well nourished, active and happy. Many had trachoma and from our investigations it was apparent that, notwithstanding the sanitation of the schools, the disease is propagated there and that some pupils who enter in the autumn with unaffected eyes return to their homes in the summer with trachoma."

These observations were made by Posey (*Jl. Amer. Med. Assoc.*, May 21, 1927, p. 1,618), and on account of their value are included here. Conditions have no doubt improved since they were written, but according to the Sight-saving Review for 1935 (September, p. 196), the children in the Indian Schools of Arizona and New Mexico are infected to the extent of 40 to 50 per cent., while the adults only to the extent of 27 per cent. The Indian population was 78,000. So it does not look as if great progress had been made, in spite of the efforts of the Public Health Service.

However, it may be stated quite definitely that eradication of trachoma from a mass-infected population is one thing, and the alleviation of the effects of the disease with preservation of good visual acuity is another. Eradication of the disease can only be effected by general sanitary means, such as provision of a good water supply, improvement of the housing accommodation, the provision of a drainage system, and adequate nourishment of the population. Alleviation of the effects of the disease can be effected by the provision of ophthalmic hospitals in the country districts.

In Southern Illinois, Gradle and de François examined 2,173 consecutive cases of trachoma in order to determine the extent to which sight was affected. They found that 7.8 per cent. had suffered a reduction in vision in the better eye, as the result of trachoma, to less than 20/200 (*i.e.*, 6/60), and so were industrially blind. However, under treatment 26.1 per cent. improved to vision of better than 20/200. All the patients were Caucasians who had been more or less inbred for more than a century, who were mostly country-dwellers, and whose ideas of sanitation were very rudimentary.

PHILIPPINE ISLANDS.

The Philippines are a group of 7,083 islands belonging to the United States. They have an area of about twice the size of England, and a population of more than ten million. Trachoma is very common, though not universal.

ARABIA AND YEMEN.

Experience has shown that, like the occurrence of gold in mines, trachoma often occurs in pockets, being unevenly distributed. Therefore, to make a careful examination of the eyes of a number of men, women and children in a few towns and to state that the incidence of trachoma is the same for the whole country is likely to be erroneous.

Galal and Hindawy, who are Egyptian oculists of experience, spent a month at Mecca, the Holy City of Arabia, in 1926. They found that the indigenous inhabitants were free from trachoma, almost without exception. Those who were trachomatous had sojourned in other countries, such as Egypt, Palestine, Syria or Mesopotamia where trachoma is practically universal. But among the ranks of the Army of Nejd, which was occupying the City, trachoma was almost universal. Nejd is an emirate of Central Arabia, extending eastwards from Mecca towards the Persian Gulf. It consists mainly of a plateau, where rain is prevalent, and consequently where there is cultivation. There are frequent

high winds and sand-storms. Mecca, however, lies in a valley, which is very warm in winter and unbearably hot in summer. There is practically no rain, and absolutely no cultivation. The extremely limited water supply is brought in pipes from a distance of twenty miles.

There is no racial distinction between the inhabitants of Mecca and their neighbours of Nejd. The authors are unable to offer an entirely satisfactory explanation of the apparent immunity of the Meccans, for the town has been visited annually for centuries by thousands of pilgrims from trachoma-stricken countries.

I record this as an instance of the occasional pocket-like absence of trachoma in a section of a vast area where the disease is common.

Trachoma is far less prevalent in Yemen or Southern Arabia than in Egypt, Palestine and the rest of the Middle East according to Sinai. It follows a milder course and is not found in infancy. Most of the Yemenite Jews immigrating to Palestine leave their homes with healthy eyes and become infected, especially the children, on their way to, or in Palestine itself. Contrary to the accepted idea of the frequent infection of children by their mother, this mode of infection occurs only in 10 per cent. of the Yemenite families observed. About 20 per cent. of trachomatous patients are infected in their second year, 40 per cent. in their third year, and the remainder later in life.

ARGENTINA.

According to Demaria in an article dated May, 1936 (*Revista de Ophthalmologia de S. Paulo*), there is a good deal of variation in the incidence in different parts of the Republic. The greater incidence is in unhealthy ranches such as those in the district of Caceres where 50 per cent. of the inhabitants are trachomatous. At the medical examination of army conscripts coming from the province of Santiago del Estero 13 per cent. showed active trachoma, and 55 per cent. trachomatous scarring of the conjunctiva.

The disease may therefore be said to be very common in this country. It is claimed that the disease has been brought from the Old World by immigrants, and is not autochthonous.

ARMENIA.

Some years ago a medical man, describing himself as a citizen of the United States of America, called upon me in London, and informed me that he had been working with a Mission Hospital

in Armenia. I understood that he was an oculist, or at any rate that he had interested himself in the medical work of the Mission which was concerned with the treatment of eye disease and especially of trachoma. He desired to have information on the diagnosis and treatment of trachoma, with which, he stated, the Armenians were all infected.

I lent to him my first book on trachoma, "Trachoma and its Complications in Egypt," which he did not return.

I have always understood that in Armenia there was mass-infection with trachoma, and the interview with this person confirmed my opinion.

BALTIC STATES.

According to Grönholm the percentage of the population who suffer from trachoma in Lithuania is about 10, and the average percentage of ophthalmic hospital patients who exhibit signs of the disease is 22.

In Latvia 6 to 7 per cent. of the rural population of Courland have trachoma, and 35.5 per cent. of the hospital patients.

In Esthonia 4 per cent. of the population have trachoma and about 10 per cent. of the hospital patients.

In Lithuania at the towns of Prudzin and Lygumu 15,000 of the inhabitants were examined and showed a trachoma incidence of 39.9 per cent. Avizonis states that in 49.7 per cent. of the blind population the cause is trachoma. In some of the towns 29 to 59 per cent. of the inhabitants are trachomatous. Children under one year of age frequently require treatment for the disease.

BELGIUM.

Coppez and van Duyse state that trachoma has been on the wane in Belgium for the last 50 years, for in civilised countries trachoma is a malady of the poor, it survives among those debilitated by undernourishment and exceedingly hard labour. In recent years workers have had better pay, better nourishment, better homes, and shorter hours of labour. These are important causes for regression of the disease.

According to Hubin and Hubert there was an increase of trachoma in one part of Belgium in 1930 to 1932, that is in the neighbourhood of Liège. There are many foreign labourers who have been noted to be trachomatous; and in some of these cases it has been shown that their infection occurred in Belgium. It is also true that some Belgians have been infected by foreign labourers, and it is by these latter that trachoma is disseminated.

BELGIAN CONGO.

In the province of Katanga of the Belgian Congo, Dixon, during a visit, found 37 of the patients who presented themselves for the treatment of eye disorders, to be affected with trachoma. More than a third of these had trichiasis and entropion as the result of cicatricial changes in the conjunctiva and tarsus. It is stated that the disease is highly localised, one village may be heavily infected and the neighbouring one free from the disease.

BOLIVIA.

The incidence of trachoma is unknown, but is believed to be slight.

BRAZIL.

Brazil is an enormous country of over three million square miles, through which the equator runs. Brazilian oculists believe that trachoma has been imported by immigrants, since in the five years up to 1930 71,000 Poles, Roumanians and Lithuanians, as well as 52,000 Japanese, practically all of whom were trachomatous, entered the country. There are now adequate immigrant restrictions.

Dr. Alvaro of Santo Paulo, who is Health Officer as well as Assistant Professor of Ophthalmology, has given me some information as to the State, which contains eight million, and as to the City, which contains one and a quarter million inhabitants. The land is very dusty, being formed of decomposed iron soil. Mosquitos of the genus *Chironomidae* abound; their larvae live in the dust; they certainly transmit acute conjunctivitis, and trachoma appears to succeed the acute inflammation. Sanitary conditions outside the City are poor. Children are infected early. Ophthalmia neonatorum is common, but acute conjunctivitis complicating trachoma, causing ulceration of the cornea and leading to blindness is not common.

There are apparently zones in the Republic where trachoma is universal, others where there is a 30 per cent. incidence, while Dr. Alvaro states that among eye patients in Santo Paulo City the incidence is about 15 per cent.

While it has been believed by most writers that trachoma has been introduced into the State of Sao Paulo since 1889 by immigrants, Busacca believes that it has been present since the time of its discovery by the Portuguese in 1500. There is no means of knowing whether the disease was present among the indigenous inhabitants of the country or whether it was introduced by the conquerors who came from a trachomatous country.

At any rate in the Elzevir edition of a work by Guglielmus Piso, published in Amsterdam in 1648, there is a reference to the frequency of eye diseases in Brazil: "*Inter Brasiliae enim calamitates haud postremum locum sibi vendicant oculorum mala, milites, quae ceteris et penuria pressos sparsim non gregatim infestant, vivendi facultate vitiata et corrupta.*"

The country districts are much more heavily infected than the towns, owing to the very inferior conditions in which the country folk live.

BULGARIA.

Trachoma is wide-spread in Bulgaria, where great interest in the pathological aspect of the disease is taken by Pascheff and others. No pretence has been made at evaluating the trachoma incidence, at which I rejoice, for extraordinarily inaccurate results have been obtained in countries where this has been done.

CHILE.

Trachoma has only been known in Chile since 1881, when it was introduced by immigrants: its extent is unknown. It is rarely found among native Chilians, and never in the upper classes.

CHINA, MONGOLIA, TIBET, MANCHURIA.

According to ancient documents it appears that trachoma existed already in China during the reign of the Emperor Huang Ti, who flourished 2,679 years B.C. However, it is understandable that precise descriptions of the disease were not written until during the dynasties of the Emperors Tang and Ming in the fourteenth century of our era.

It is especially prevalent in Northern China, and many trachomatologists believe that the disease had its origin in Mongolia. Throughout the whole of this vast area, partly thickly populated, and partly uninhabited, it is believed that there is an incidence of 33 per cent. Those who are conversant with the epidemiology of the disease would probably guess that in thickly populated areas the disease is universal, but would express no opinion of the conditions among inhabitants of desert regions.

Pillat and Howard agree that in China trachoma is a menace to the population. It is suggested that 20 per cent. of the inhabitants of South and West China, and 40 per cent. of those of North China are afflicted. Fortunately, however, the trachoma is a relatively mild disease.

In order to obtain any control of the disease by treatment it

would have to be mild, because the Chinese regard with equanimity any disease which may befall them, and because they have an ingrained distrust of western medicine.

In a letter, dated April, 1937, Dr. Kronfeld, the ophthalmologist at Peiping Union Medical College, states "roughly 95 per cent. of all the patients seen at any of the departments of the P.U.M.C. have trachoma. The patients who apply for admission to the eye clinic practically never do so on account of trachoma. Trachoma is, on the whole, a mild disease here, and it is only the awful methods of treatment used by the Chinese quack which lead to extensive tissue destruction."

CUBA.

According to Yarr four white men and seven Chinese are seen in Cuba to be suffering from trachoma to one negro. This observation was made in 1899, but the fact that there are Chinese in Cuba makes it pretty certain that the disease is not negligible.

CZECHO-SLOVAKIA.

Of the four provinces of Czecho-Slovakia, Bohemia, Moravia, Silesia and Slovakia it is the last-named which exhibits the highest incidence. According to Bruckner of Prague the infection was imported from Hungary by Slovak labourers who returned home from harvesting in Hungary.

There are 30 trachoma stations under the charge of 23 doctors and 27 nurses who are trained at the ophthalmic clinic of Bratislava (formerly Pressburg or Pozsony).

Trachoma increased very much during and after the War, especially in Slovakia. Since 1925 a series of clinics has been organised under Government auspices; each is in charge of a medical man who has assistant medical officers and sisters; the latter visit the homes of those who require treatment and see that it is applied.

ECUADOR.

Trachoma is a rare disease in Ecuador.

EGYPT.

The trachoma incidence in Egypt may be judged by the fact that in 1936 less than 1 per cent. of the pupils in the Government Schools, numbering more than ten thousand, were free from the disease in an active or cured stage.

There is indeed a complete mass infection throughout the country. Under these conditions it can only be by exceptional

care or by exceptional luck that any child does not become infected during the first year of life.

It is clear that the intensive campaign against trachoma which was commenced under my direction in 1903 has done little to reduce the incidence of the disease. It has, however, had an extraordinarily important effect in reducing the amount of blindness resulting from acute ophthalmias and from the sequelae of trachoma. The vast system of treatment by the application of medicaments and by operation carried out by ophthalmologists at all the Government Primary Schools leads to a much earlier cicatrization of the trachomatous conjunctiva. In 1914 only 66 per cent. of the boys in the school exhibited clear corneae, while in 1934 95 per cent. had both corneae clear; while the visual acuity *without glasses* was satisfactory and as follows:

6/6 or 6/9 in each eye	57.77 per cent.
6/6 in one eye and 6/18 or better in the other	20.37 per cent.
Less than either of the above standards	21.85 per cent.

Among the upper classes of the Egyptians it is now quite common to find that the children of the family are non-trachomatous, which thirty years ago would have been a very unusual phenomenon.

ENGLAND.

The actual incidence of trachoma in England is unknown. It is not recognised in many cases even by ophthalmic surgeons. On occasion trachoma may affect persons of any rank of life. During the last few years I have had under treatment for this disease two medical men, neither of whom has ever been out of England, nor to his knowledge has seen a case of trachoma; two girls from expensive schools; two boys from high-class preparatory schools; one boy from a public school in Ireland, the son of a distinguished medical man in London.

In November, 1936, I obtained information from 44 London hospitals, either ophthalmic hospitals or hospitals with ophthalmic clinics, as to the number of cases of trachoma recognised and treated during the preceding twelve months. They amounted to 457.

The number of trachomatous children admitted to the London County Council Trachoma School (White Oak) during the year 1937 was 28.

At the Liverpool hospitals during the same period only 25 patients were diagnosed as being trachomatous, a small number when one considers the proximity of this port to Ireland, and its large Irish population.

On hearing that 4,000 children from parts of Spain where trachoma is prevalent were about to be brought to this country a joint letter was sent by the President of the Royal Society of Medicine (Sir John Parsons) and myself to the Minister of Health, dated May 15, 1937, pointing out the danger of causing trachomatous infection among the children of England. However, no notice was taken of this warning and the children were boarded out in many different districts in England. A considerable increase in the trachoma incidence may be expected during the next year or two.

I had an opportunity of seeing only one of these children from Bilbao in October, 1937. Trachoma had been diagnosed by Mr. Myles Bickerton, F.R.C.S., and by Mr. L. H. Savin, F.R.C.S., and I was able to confirm their diagnosis.

SCOTLAND.

Glasgow, with its large Irish population, appears to be the only place in Scotland where there is any trachoma. This city is also unique, in that trachoma is a notifiable disease. In the year 1935 16 cases were notified, and there were 130 cases on the register. However, at the Trachoma Dispensary 185 patients were attending, and the average number of their attendances was 23. Cases needing operation are transferred to Stockwell Hospital under Dr. Meighan.

IRELAND.

In Ireland trachoma may be said to be an occasional disease with heavy local infections. Lavery found that 23 per cent. of the girls in an institution in County Cork were trachomatous. It is in institutions or in boarding schools that the disease is especially spread. Many of the cases seem to be of a mild type, those affected suffer very little disability, and nothing wrong with the eyes may be noted until after eversion of the lids.

It is probable that if Lavery had been able to examine the girls in the institution referred to above with the illumination and magnification of a slit-lamp that the percentage of those infected would have been very much higher. However, it is obvious that if an oculist travels a long distance to examine school-pupils, he has only a limited amount of time, and he cannot take his slit-lamp with him.

FINLAND.

Our authority for the occurrence of trachoma in Finland is Grönholm. In this independent sovereign state, with its sixty million acres of forest land, the disease was formerly all-pervading.

In the sixties of the last century 36 per cent. of all the patients in the eye hospital at the capital, Helsingfors, were under treatment for trachoma. A hundred years before that date it was stated "that the inhabitants in the interior of the country owing to the smoke from the open fires and from the wooden torches used for illuminating their chimney-less dwellings lose their noblest and most necessary faculty, their eye-sight, so that they become invalids or entirely blind. The smoke causes an increased 'affluxus humorum' so that the eyes begin to water and there are repeated ophthalmias, with the result that many people when they are 30 or at the most 40 years old, are unable to read, and when they are 50 have had their sight reduced to such an extent that they cannot work on their farms."

However, since this far-off time the disease has very greatly diminished so that now there are no more than about seventy thousand persons suffering, or rather more than 1 per 1,000; this estimate was given by Grönholm for the year 1924. However, there were two periods during which the trachoma incidence markedly increased: Grönholm suggests that this was due to a periodical fluctuation in the virulence of the contagion, as there is no reason to suppose that the general cultural and hygienic standard of the country was any lower during these periods (1873 to 1875 and 1880 to 1899) than just before or later.

FRANCE.

It is impossible to obtain from the various sources of information any distinct idea of the incidence of trachoma in France as a whole. In 1929 Professor Aubaret stated that 15 per cent. of the patients at the ophthalmic clinic at the Hôtel Dieu at Marseilles were trachomatous, at which town it appeared that there were 6,000 or 7,000 children in the schools suffering from trachoma. Marseilles is a great port at which there is a great influx of infected Syrians, Algerians and unfortunately of French-born persons who have become infected in the colonies of France. At the trachoma clinics in 1926 there were 395 new cases and 3,786 old cases.

At the Paris Hospital de Lariboisière 1 per cent. of the new patients are trachomatous, that is about 210 persons a year, the majority of whom were not born in France.

On the French Mediterranean coast there is a considerable amount of trachoma, as there is in the whole of Southern France. Even at Bordeaux 1 per cent. of the patients at the ophthalmic clinic of Lagrange are trachomatous.

Corsica enjoys complete mass infection with trachoma.

In the provinces of Bas Rhin and Haut Rhin, formerly Alsace,

there is very little trachoma. Redslob of Strasbourg made an interesting observation on this point. He stated that about three hundred thousand Alsacians were conscripted into the German armies during the Great War. Of these at least two-thirds were sent to the Eastern front for political reasons, where they were billeted among Polish, Lettish, Lithuanian and Ukrainian families. As is very well known their hosts are heavily trachomatised. Nevertheless Redslob, who is an ophthalmologist of long experience, carefully examined the medical reports of all Alsatian soldiers who returned and claimed a pension on account of wound or sickness, has only been able to find three units who contracted trachoma while sojourning among a heavily infected and rather dirty population. While in Redslob's opinion this was due to some degree of immunity to trachoma among his fellow countrymen, it appears to be more likely that it was due to their extremely cleanly habits that they avoided contagion.

In the province of Moselle, formerly Lorraine, there is a highly industrialised population which is augmented by the influx of Italians to work in the mines. While there is no doubt that there was a certain amount of autochthonous trachoma this has been increased by infected immigrants.

MOROCCO.

In Morocco there is mass infection of both Mohammedans and Jews. About 4 per cent. of the European population are also trachomatous. A considerable amount of anti-trachoma treatment and propaganda is being carried out as described by Pages, Roques and others. There is the same amount of superimposed bacterial infection as in Egypt, Palestine and Tunisia, and the same difficulty in preventing the infection of non-trachomatous persons.

Contrary to the experience of trachomatologists in Tunisia, Delanoe considers that the schools form important foci of infection.

ALGERIA.

Between the latitudes 30 and 34 degrees North 1,724 of the indigenous inhabitants were examined. 74.4 per cent. of the sedentary tribes, 51 per cent. of the semi-nomadic tribes and 7.6 per cent. of the nomadic tribes were found to be trachomatous. More than half of the total became infected during the first five years of life. The cases of cured trachoma (MacCallan's Stage IV), amounted to 44.3 per cent. About 1 per cent. were completely blind, and 5 per cent. were half-blind. It does not appear that flies were responsible for the infection, which occurred through direct contact.

In 1923-24 Toulant examined the pupils in 24 different schools in Algeria. He found that 22·3 per cent. of the Europeans, and 57 per cent. of the natives were trachomatous. Toulant particularly notes that he enumerated as trachomatous only those who presented "lésions tout à fait nettes."

It is a disquieting fact to learn that so many of the European children are trachomatous; as for the natives it may be said that if a strict examination was made, including biomicroscopy, it would be the exception to find any one of them free from any sign of trachoma.

In Algeria the question of incorporation of trachomatous conscripts in the Army has been carefully considered. It has been established that many young men neglect all treatment for their eyes in the hope of escaping military service, and even that some inoculate their eyes from persons suffering from acute conjunctivitis. In order to prevent depletion of the full complement of recruits, trachomatous men are taken, provided that there are no complications.

There are certain difficulties in this arrangement; for instance it is necessary to have special trachomatous units and to afford treatment, just as there are "favus" units; also difficulties may arise as regards pensions for soldiers who become disabled on account of their eyes.

The observations of Toulant on some of the complications of trachoma are of interest. The superimposed Koch-Weeks conjunctivitis is much more severe than the non-trachomatous inflammation due to this organism which is met with in Europe; in fact it resembles gonococcal conjunctivitis in its severity. In Algeria gonococcal conjunctivitis is infrequent.

The social organisation for the treatment of ocular diseases must be different from those which have been found to be of value in Egypt on account of the vast area of the country, the defective means of transport and the minimal budgetary credits allotted for this purpose.

An elaborate scheme for a trachoma campaign in Algeria has been put into force recently by the Governor-General on the advice of his Inspector-General of Health, Dr. Lansnet. A full description of this has been published by the International Association for the Prevention of Blindness, 66, Boulevard Saint-Michel, Paris. It will be of great interest when an account can be given after the scheme has been in operation for some years.

TUNISIA.

The French protectorate of Tunisia is an area about the size of England. It has the distinction of being the seat of the earliest experimental work on the aetiology of trachoma, which was carried

out at the Pasteur Institute of Tunis by Charles Nicolle and Cuénod. While there may be as small an incidence as 10 per cent. in the North, this rapidly increases towards the South and reaches 95 per cent. in the oases. The great authority for Southern Tunisia is Talbot, who for a long time has been carrying on admirable and self-sacrificing work among the natives and especially in the schools. In the North it is unfortunately the case that children of French officers are frequently infected.

CENTRAL AFRICA AND MADAGASCAR.

Some parts of the French Possessions in Central Africa are heavily stricken with trachoma. Starting from the equator and proceeding northwards towards the desert this vast area may be divided into three zones, pre-equatorial, savannas and pre-Saharan. It is in the pre-Saharan zone that the disease is most prevalent.

The whole of the caravan-route between Lake Chad and the Congo River is highly infected; there seems to be a particularly black spot in a small region situated in the angle between Lake Chad and Nigeria, where Jamot examined 29,366 natives, many of whom were trachomatous and of whom about 700 were blind in one or both eyes.

According to Motais trachoma is a rare disease in French Guinea, the Ivory Coast, Dahomey and some parts of the Cameroons.

In Madagascar, up to about 1910, no trachoma had been signalled, but since 1920 this island, which is about four times the size of England and Wales, has become pretty thoroughly infected through the agency of Indian traders.

SYRIA AND LEBANON.

Throughout Syria and Lebanon it is the exception to find any native unaffected with trachoma.

There is now a Lebanese Republic, the inhabitants of which vary both in nation of origin and in religion. Those whose financial condition enables them to live under slightly less repulsive conditions of hygiene have a somewhat lower incidence of trachoma than their more wretched neighbours.

The immigration of 20,000 Armenians helped to raise the trachoma incidence.

De Peyrelongue has described the heavy tribute which French troops and officials have paid to trachoma during past years in Syria and the Lebanon.

ANNAM.

According to Talbot between 52 and 86 per cent. of the children in the schools are trachomatous as seen by merely everting the eyelids. It may be taken that if the slit-lamp was used a still higher proportion would be found to be infected.

Comés made an examination of children at several places in Annam to the number of 731 with the following results :

		Per cent.
Under the age of 6 months ...	Trachoma stage 1,	28.3
	" "	2, 9.4
From 6 months to 1 year ...	" "	1, 32.8
	" "	2, 14.1
From 1 to 2 years ...	" "	1, 37.3
	" "	2, 27.7
From 2 to 3 years ...	" "	1, 37.7
	" "	2, 35.3
From 3 to 5 years ...	" "	1, 34.6
	" "	2, 33.7

None was found to have reached trachoma stage 3.

Comés also examined 707 parents of children finding with :

	Per cent.
Trachoma stage 1,	24.3
" "	2, 14.9
" "	3, 9.9
" "	4, 8.9

Comés examined the children in boys' and girls' schools to the number of 532 with the following results :

	Per cent.
Trachoma stage 1,	49.4
" "	2, 13.7
" "	3, 2.1
" "	4, .9

Reports made by Talbot and by Comés do not differ considerably. The incidence of trachoma in Annam, if not universal, is very high.

Motais made an important communication on the subject of the trachomatous infection of European children in Cochin-China. He emphasised the danger of allowing European children to be tended by oriental servants who either are, or may be trachomatous. Whenever possible the servants should be examined medically before they are allowed to come into contact with these children. In trachomatous countries all servants who come in contact with the children of the house should have instilled into their eyes daily some antiseptic drops, and the children also.

THE ANTILLES.

This group of islands consists of Martinique, Guadeloupe, Saint-Pierre and Miquelon. No trachoma has ever been discovered in the islands.

NEW HEBRIDES AND NEW CALEDONIA.

Morax and Petit state that trachoma seems to be met with only exceptionally in New Caledonia and the New Hebrides. However, there is a considerable amount of traffic between these islands and Fiji, where trachoma is known to be rife, and it is unlikely that they have escaped.

TONKIN, COCHIN-CHINA, PONDICHERRY.

According to Cazaux there is mass infection with trachoma in Tonkin, while conditions appear to be a little better in Cochin-China according to Motais. The latter has seen many French citizens from Pondicherry suffering from the disease.

GERMANY.

The part of Germany most affected by trachoma is Eastern Prussia, but several foci exist in the Rhineland of Westphalia. The sources of contagion are not in the autochthonous population but in miners coming from the East, or from agricultural labourers from Poland.

In 1930 the number of cases treated in East Prussia was 1,231, of which 25 per cent. were fresh cases.

From 1877 to 1883 there were according to Kuhnt 16 per cent. of the new patients attending the ophthalmic clinic at Königsberg who were trachomatous, but now Birch-Hirschfeld says they are about 4 per cent. The reason for this is stated to be because hospitals have increased and because immigrant labourers from Lithuania, Poland and Russia have diminished.

Birch-Hirschfeld has often had occasion to observe the contamination of young people by the elders of their families who are infected with trachoma, Tr. III. This is an important observation, and is worthy of note by every ophthalmologist who has to do with trachoma, whether in isolated cases or in a trachomatous country.

AUSTRIA.

The territory of Burgenland in Austria was formerly fairly heavily infected with trachoma, between 15 and 20 per cent. of the school children being affected; however, the proportions have

been reduced by a half or a third. In the South of Styria there is still a heavy incidence.

ANCIENT GREECE.

It is supposed that Dioscorides, a Greek from Cilicia, was the first to make use of the term trachoma. He was flourishing in the first century of our era, and was mainly a pharmacologist, so it is probable that he took the word from the works of older writers which have not come down to us.

The frequency of trachoma among the ancient Greeks is unknown to us. However, Herodotus relates that among the 300 Spartan soldiers of Leonidas at Thermopylae there were two who had to be sent to the rear owing to severe ocular trouble.

All kinds of treatment were used including grattage with powdered pumice stone, copper sulphate, et cetera. For trichiasis numerous procedures were adopted. Sometimes the offending lash was gummed to those in proper position, lashes were epilated, the operations of anabrochism, anarraphe, katarraphe and many others were used, for a description of which the paper by Gabrielides must be consulted (*Rev. Internat. du Trachome*, 1932, p. 95).

MODERN GREECE.

The incidence of trachoma in modern Greece has been greatly increased by the influx of one and a half million refugees from Asia Minor in 1922, all of whom bore the stigmata of trachoma. Among these latter, superimposed bacterial infections were common. Even before 1922 in some parts the known incidence of the disease reached 70 per cent. A considerable amount of medical relief has been provided.

The most affected regions are the Island of Crete, the Islands of the Aegean Sea, the Ionian Islands, the Peloponnesus and Continental Greece.

GUATEMALA.

Pacheto refers to the small infestation with trachoma in a communication (*Arch. Ophthal. Hisp.-Amer.*, 1919).

HOLLAND.

It has been suggested that trachoma was introduced into Holland during the eighteenth century by Jews coming from the East. These settled mostly at Amsterdam which has always been the chief focus of the disease. In the poorer Jewish schools the incidence in some cases was as high as 75 per cent.

Between 1914 and 1917 a Commission of Enquiry found that in the schools 0·8 per cent. of the Christians and 8·8 per cent. of the Jews were affected. Among other interesting facts it was found that the great majority of the children complained of no ocular symptoms and had never had any treatment.

In his report Jitta goes on to say that contamination usually occurs in the family and before the age of six years; also that after six years, the age at which children begin to go to school, the trachoma incidence does not increase, showing that the provision of special schools is not necessary.

The system of prophylaxis carried out in the city of Amsterdam has been as follows:

- (1) A regular control of all the pupils in all the schools by a trachomatologist with the object of finding and treating all new cases.
- (2) Registration of all trachoma patients giving name, address, age, race, etc.
- (3) Early treatment before the appearance of such corneal complications as keratitis, ulcers and severe pannus.
- (4) Continued observation during treatment.
- (5) Continuation of treatment until a complete cure has been effected. This may last for two or three years.
- (6) Attendance at school is forbidden to those who do not carry out the treatment prescribed.
- (7) The provision of hospital facilities for out-patients in any particularly affected quarter of the city.

Besides these specific measures an attempt has been made to raise the standard of life and to improve individual hygiene; also of great importance has been the improvement in the sanitation of the houses, since it is within the first six years of life that infection is principally contracted.

The application of this plan has produced in Amsterdam the happiest results. There are now no fresh cases among children and the special control of the schools has been abolished. Altogether in Holland only five or six new cases are detected yearly. However, there is still some trachoma at Limburg near the German and Belgian frontier. This latter information was given to me by Wibaut (1937).

DUTCH EAST INDIES.

With a teeming population of over fifty millions Java, Sumatra and the other Dutch possessions in the East Indies are heavily infected with trachoma. It is important to note that besides Malay and Chinese population the Dutch settlers, men, women and children are stated to be infected to the amount of between

5 and 6 per cent.; this is no doubt due to the frequency of unions between Europeans and native women.

DUTCH GUIANA.

According to Wibaut the incidence of trachoma varies in Dutch Guiana from 2 to 4.9 per cent.

HUNGARY.

It is a pride of the Hungarian nation that their country was the first to organise a methodical campaign against trachoma. This was instituted by Feuer in 1883, and in 1886 a law was passed to provide for the gratuitous treatment of indigent sufferers. After the death of the illustrious Feuer, de Grosz, University Professor of Ophthalmology, was charged with the administration of the campaign. Trachoma was made a notifiable disease, and ophthalmological examinations of school children and factory workers became general.

The disease is found in every part of Hungary, and in certain parts not less than 10 per cent. of the children in the schools have been found to be infected.

During the Great War trachomatous conscripts for the army were dismissed; but with the need for greater man-power they were enrolled and subjected to treatment such as would render them non-infective in their regiments. As far as possible they were allotted to special regiments. The trachomatous battalions were well provided with ophthalmologists, and it has been shown that 79 per cent. were quickly rendered non-contagious, 20 per cent. required a longer period of treatment, and only 1 per cent. were found to be useless for active service.

ICELAND AND GREENLAND.

According to Wibaut there is perhaps 0.1 per cent. of trachoma among the resident population of these territories.

IRAQ.

In a private letter written in 1921, Dr. Gordon Spencer informed me that the incidence of trachoma among the inhabitants of Baghdad was usually given as 80 per cent., but in his opinion this was too low an estimate. There are a large number of Jews in Baghdad who are singularly free from the disease. Acute contagious ophthalmia is very prevalent; this begins rather later in the year than it does in Egypt. The results of hospital treatment are very bad, since the sufferers do not usually present

themselves until the cornea has become badly ulcerated. Baghdad is infested with so-called oculists who treat their cases with eggs, onions or Egyptian sugar.

ITALY.

The incidence of trachoma in Italy varies greatly in different parts. In Florence in 1907 out of 15,000 school children examined 3.19 per cent. were found to be definitely infected. However, as the result of intensive precautions this was reduced to 0.27 per cent.

At Bari it has been observed that trachoma is much more prevalent among school children who inhabit the older quarters of the town than among those who live in the newer and more sanitary parts. At the free ophthalmic dispensary in 1925 44 per cent. of the patients were trachomatous, while in 1929 this percentage had fallen to 27.

At Sassari 21 per cent. of the school children showed gross infection with trachoma in 1920, but ten years later only 10 per cent. exhibited the same condition. In the province of which Sassari is the capital the school incidence of trachoma varies from 17 per cent. to nothing.

The factors which favour the diffusion of trachoma in this province are: a defective water supply, the general poverty, overcrowding in insanitary houses, and the ignorance of the population as to the danger of contagion.

The island of Sardinia, and especially its southern part, has always had a high incidence of trachoma. The figures given by Mura for the examination of army conscripts for the years from 1889 to 1908 varied for different districts from 60 to 14 per cent. of those examined. An enquiry conducted by the sanitary officers in 1926 shows that while there have been variations from these figures there is still a considerable number of infected persons. Superimposed bacterial infections are very common, such as those caused by the bacillus of Koch-Weeks, the diplobacillus of Morax-Axenfeld, the gonococcus and the staphylococcus.

The factors which cause the diffusion of trachoma are various. They are insanitary overcrowded dwellings, inferior nourishment and lack of a plentiful supply of water. There is also to be added the high incidence of malaria and tuberculosis.

According to Maggiore recruits for the army were infected with trachoma to the number of 5.6 per cent. in Sardinia and 3.7 per cent. in Apulia; this was the result of medical examinations in 1926.

According to Maggiore 13.8 per cent. of the children in the schools of the province of Apulia and 96 per cent. of the dispensary patients were found to be trachomatous between the years

1926 and 1928; while at Bari, the nearest large town, 12 per cent. of the school children and 30 per cent. of the dispensary patients were trachomatous. However, conditions are very much better in the north of Italy.

There is a considerable difference in the percentages in the various provinces, partly depending on the clinical opinion of the examining surgeon.

CYRAENAICA.

It is usually believed that there is mass infection among all the races which inhabit the Southern Mediterranean coast, and Cyraenaica was so reported of by Paparcone in 1906. This oculist found that every patient who came to a travelling eye hospital at Tripoli was trachomatous; also that in the schools 85 per cent. of the pupils were definitely infected.

JAPAN.

At the XIIIth International Congress of Ophthalmology at Amsterdam, Miyashita gave an account of the geographical distribution of trachoma in Japan. His statistics are among the most complete in the world, for it is possible to examine legally millions of people. Some of the figures given are as follows:

Province.	Per cent. trachomatous.
High Japan	9.91.
Formosa (schools)	27.9 to 38.51.
Korea (schools)	6.04.
High Japan	27.84.
Sakhalin	25.5.
Formosa	40.
Korea	15.6.
North China	41.4.
South China	33.4.

In 1928 out of more than half a million recruits about 12 per cent. were found to be trachomatous, but the disease was mainly of a light type.

In 1919 the Japanese legislature passed an important law to enforce social measures taken to combat the disease. Every medical practitioner who diagnoses a case of trachoma must give proper instructions to the patient and the relatives as to disinfection and preventive measures, which have to be carried out, and the patient must undergo treatment; in the case of destitute persons the cost of treatment is provided. The employment of

domestic servants who are infected with trachoma is forbidden. In schools, workshops, hotels, lodging houses and hairdressers' shops the manager is compelled to take all necessary precautions to prevent the spread of contagion.

All men in Japan are twice submitted to eye examination, first when they have a preliminary military training at the age of 19 years, and again at the recruiting age of 20, the first is by the local physician and the second by the Officers of the Army Medical Corps.

Men and women teachers and school children throughout the country are examined once a year for trachoma by the school medical officer or by an ophthalmologist. Among the remaining population a general eye examination is carried out only in districts with a high trachoma index.

Japanese emigrants are examined twice before being allowed to embark for destinations abroad. Immigrants are also examined for active trachoma on arrival in Japan. Miyashita assures us that the various regulations for the suppression of trachoma have been carried out strictly since the passing of the law in 1919. Approximately 10 million persons are examined for trachoma annually in Japan, for the expense of which the Central and Provincial Governments disburse 760,000 yen (£38,660) annually, or rather less than one penny per examination.

There is no generalised treatment in the schools, although this is the case at a few of them; this is recognised to be desirable.

On the whole the adoption of the law for the prevention of trachoma has led to appreciable results in the campaign against this disease. A decline in the trachoma index has been observed in all classes of the population and among all professions. Experience has shown that the measures adopted have been satisfactory. Miyashita has been impressed by the importance of the early incidence of trachoma among infants and the desirability of inaugurating some form of treatment in the family, as this is the chief place where primary infection occurs.

Oguchi and Majima examined the inhabitants of a small island not far from the town of Nagoya, called Shino-jima. Here live a group of 2,500 persons who get their living by fishing. More than 80 per cent. of these people are trachomatous, the women being more severely affected than the men. There are said to be very few complications by entropion or trichiasis.

LUXEMBOURG.

Luxembourg is an independent grand duchy with an area of about 1,000 square miles and surrounded by Belgium, France and Germany. While the indigenous population is practically free

from trachoma there is a large influx of labourers amounting to about 20,000 Italians, Poles, Czecho-Slovaks, Yugo-Slavs, etc., most of whom are trachomatous. These temporary immigrants are not accompanied by their families. There are about 10,000 other foreigners, Germans, Belgians and French among whom trachoma is rare.

MEXICO.

At the Pan-American Medical Congress at Mexico City in 1896 it was stated that trachoma did not exist in the State. However, in 1906 it was shown that the disease did exist and that it had been brought by immigrants from Asia Minor. Since then there has been a large immigration of Chinese and Japanese of whom between 80 and 90 per cent. are infected. The ports have now been closed to Asiatic immigration.

NEPAL.

Nepal is an autonomous State, about the size of England, situated in the Himalayas, between British India and Tibet. From this country are drawn volunteers to serve in their own Gurkha regiments under British officers. Recruits showed an entire freedom from trachoma. After one year's service it was found that 5 per cent. were infected. Soldiers who have served for from five to ten years show an incidence of 8·7 per cent. It was found by Captain Shannon of the Indian Medical Service that the sons of serving or of pensioned soldiers, so called "line boys," who have been born in, and have lived in their unit lines since childhood, and then enlist in their traditional regiment, are infected to the extent of 23·5 per cent.

It seems therefore that Nepal is, as a country, free from trachoma, but that its nationals acquire the disease from contact with the trachomatous Indians.

NORWAY, DENMARK, SWEDEN.

There is no appreciable amount of trachoma in Norway or Denmark. In some parts of Southern Sweden there are areas where trachoma is endemic. In other parts there is still an appreciable amount of the disease.

OCEANIA POLYNESIA.

Trachoma is widespread in the numerous islands of the Pacific Ocean.

AMERICAN SAMOA.

According to Harbert the incidence of trachoma in Samoa is about 44 per cent. The Samoan is a stoic Polynesian and accepts illness very casually. Little attention is paid to the prevalent eye diseases in their mild form, and often symptoms are denied when the eyes show obvious active infection. It is only when complications have set in that treatment is considered. For these acute flare-ups the treatment is usually heroic; infusions of various herbs or fruit-juices may be tried first, or the method of scarification may be resorted to immediately. The latter consists in abrading the cornea with a variety of sword-grass. The effect of this treatment is to promote an intense hyperaemia, which, of course, favours healing, but unfortunately the cornea is too often opaque when it occurs. The number of large corneal scars is in a large measure due to this drastic treatment. Apparently the contagious qualities of the disease are not realised, for no precautions are taken.

Epithelial scrapings taken from active trachoma cases were found by Bengtson to show Halberstaedter-Prowaczek Körperchen.

In 1923 Hunt reported 454 cases of blindness, of which 86 were bilateral. The estimated population at this time was 8,184. This would represent 1,050 cases of bilateral blindness per 100,000 of the population. Palestine has usually been credited as being the country with the highest incidence of blindness, which is 843 per 100,000.

A similar survey in 1933 by Stephens gave an estimate of 680 cases of bilateral blindness per 100,000, so there has been considerable improvement in ten years.

PERSIA.

Persia is a vast table land, girdled by lofty mountains, with fertile valleys in between, and in the centre much salt desert. It has an area more than three times the size of France.

At the capital, Teheran, about 10 to 15 per cent. of the inhabitants suffer from trachoma, while in the south-west of Persia the percentage rises to 40 or 45.

PERU.

There is a certain amount of trachoma, natives and foreigners being equally affected. However, Palestinian immigrants are all trachomatous.

POLAND.

Poland is heavily stricken with trachoma. At the Wilno hospitals 37 per cent. suffer from the disease, however, this high incidence is greater than in some of the other departments of the country. According to Zachert Poland is less contaminated than the surrounding countries such as Lithuania and Russia. Owing to the efforts of Zachert and others a great impetus has been given to the eradication and treatment of trachoma; this has been described at length by Sexe (*Rev. Internat. du Trachome*, 1935, p. 217).

PORTUGAL.

In the three principal cities of Portugal, Lisbon, Coimbra and Porto about 5 to 6 per cent. of ophthalmic consultations are for trachoma.

According to Calves 35 per cent. of the children in "asiles" and 9 per cent. of those in the schools are trachomatous; and this is a conservative estimate.

MADEIRA.

Madeira is of volcanic formation and while agreeable in the winter is hot in summer. There is very little dust but flies abound in hot weather, especially in one of the villages which is inhabited by fishermen, where trachoma is endemic. Here there is gross over-crowding in the houses, a complete ignorance of ordinary hygiene, and worst of all a shortage of water.

In other parts of Madeira there is practically no evidence of the disease, although the fisher-wives visit neighbouring villages in order to exchange their fish for vegetables.

There is a tradition that trachoma was imported many years ago from Brazil by a single family which came from that country.

SPAIN.

Like the whole of the Mediterranean litoral the Spanish coast-towns show a high trachoma incidence. The southern provinces of Murcia, Almeria, Valencia and Castellon are the most affected, "ou 85 ou peut-etre le 90 per cent. de la Population est trachomateux" (Soria, XIII Concilium Ophth., Vol. III, p. 113).

Previous to the disastrous civil war a national anti-trachomatous service was established under Marin Amat, the work of which was described in the Report of the XIV Concilium Ophthalmologicum (Vol. III, p. 89).

There is no trachoma among the well-to-do classes.

SWITZERLAND.

A study of all trachoma cases treated at Bâle Clinic for the years 1923 to 1928 showed that out of 51 cases seen, 14 originated in Switzerland, the rest being introduced from Eastern Europe and the neighbouring German, French and Italian provinces.

TURKEY.

The Turkish Republic occupies an area in Asia Minor about the size of France. Mass infection is the rule except among the richer classes, though there is some variation of incidence in different parts. The country abuts on Georgia, Armenia, Syria and Mesopotamia, where mass infection again obtains.

Trachoma is seen in all races, Turks, Greeks, Jews and Armenians, and at every age from three months to 70 years, as well as in every altitude and climate even among the most robust. The main cause is the lack of elementary hygiene, and in some places the deficiency of water.

According to a Government Report a considerable effort is being made to alleviate the disease. This has been prepared by the Under Secretary of State and Dr. Ayberk for the XV Concilium Ophthalmologicum. More than one hundred and fifty thousand persons were examined by oculists, and it was found that in the towns about 62 per cent., and in the villages 76 per cent. of the inhabitants were trachomatous. Superimposed bacterial infections affect about 40 per cent. of the people; these are due to the Koch-Weeks bacillus in 54 per cent., to the pneumococcus in 11 per cent., to the diplobacillus of Morax-Axenfeld in 17 per cent., to the staphylococcus or streptococcus in 5.4 per cent., and to the gonococcus in 2.3 per cent.

As found by MacCallan in Egypt spontaneous cure occurs in about 10 per cent. of those affected; these often have no disability as the result of the disease.

Babies become infected during the first three or four months of life. According to the authors chaulmoogra oil has no therapeutic value in trachoma.

URUGUAY.

Barrière, of Montevideo, the capital of Uruguay, finds it difficult to give any exact account of the amount of trachoma in the republic. In the country districts there are no resident oculists, but those of his colleagues who have made professional journeys into the interior are agreed that trachoma is rife; they believe that the farms and estancias are more affected than the towns.

Since 1915 trachomatous immigrants are refused admission to Uruguay, but Barrière thinks that the greater danger comes from the country itself, for 61 per cent. of the trachomatous persons are Uruguayans, but only 19 per cent. of the Spaniards, and 9 per cent. of the Italians. There is only one hospital where treatment for trachoma and its sequelae can be obtained, and that is at Montevideo.

VENEZUELA.

While trachoma is found in all parts of the Venezuelan coast where immigrants such as Arabs, Chinese and Russians have settled, it is also present to some extent among the people of the interior, who have little communication with the coastal towns. However, the contagion was undoubtedly brought in by immigrants.

YUGO-SLAVIA.

Yugo-Slavia is about twice the size of England and Wales, and is composed of the following territories: Croatia, Herzegovina, Montenegro, Dalmatia, Serbia, Bosnia and Slovenia.

An interesting research into the incidence of trachoma has been made by Kostitch (*Rev. Internat. du Trachome*, 1925, p. 80). The war has been an important cause of the extension of trachoma in Serbia. The Serbian Army after its retreat through Albania spent some time in the Island of Corfou, a highly trachomatous place; from there it proceeded to the Macedonian front which also is highly infected. A large part of the population, including old men, children and soldier-prisoners, was interned in Austrian-Hungarian and Bulgarian camps, which were hotbeds of infection. Those who were fortunate enough to survive the internment brought back a mass infection with trachoma.

At the town Podrigne it was established in 1925 that 10 per cent. of the day-pupils and 72 per cent. of the boarders in the schools were infected.