

## **Kingdom of the Serbs, Croats and Slovenes**

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LEAGUE OF NATIONS.

Aug. 10<sup>th</sup>/25

**Health Organisation.**

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**ORGANISATION  
OF THE PUBLIC HEALTH SERVICES**

IN THE

**KINGDOM OF THE SERBS, CROATS AND SLOVENES**

By

Dr. A. STAMPAR,

Head of the Health Section of the Ministry of Public Health  
at Belgrade.

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## Health Documents issued by the League of Nations

MINUTES of the FIRST SESSION of the Provisional Health Committee, held at Geneva, August 25th-29th, 1921. (English and French texts.) (C. 400. M. 280. 1921. III.) . . . . .	3/6	\$ 0.70
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LEAGUE OF NATIONS.

**Health Organisation.**

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**ORGANISATION  
OF THE PUBLIC HEALTH SERVICES**

IN THE

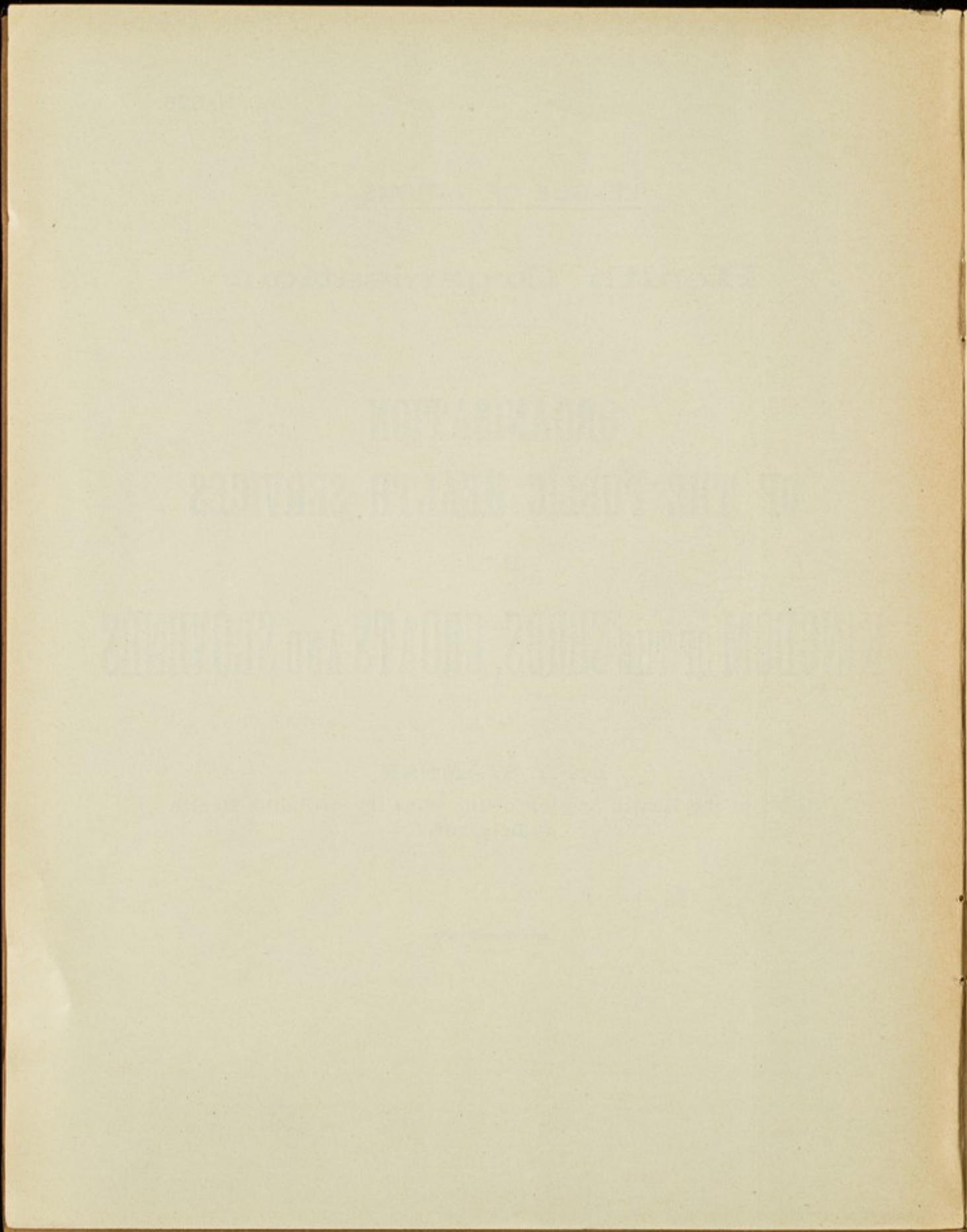
**KINGDOM OF THE SERBS, CROATS AND SLOVENES**

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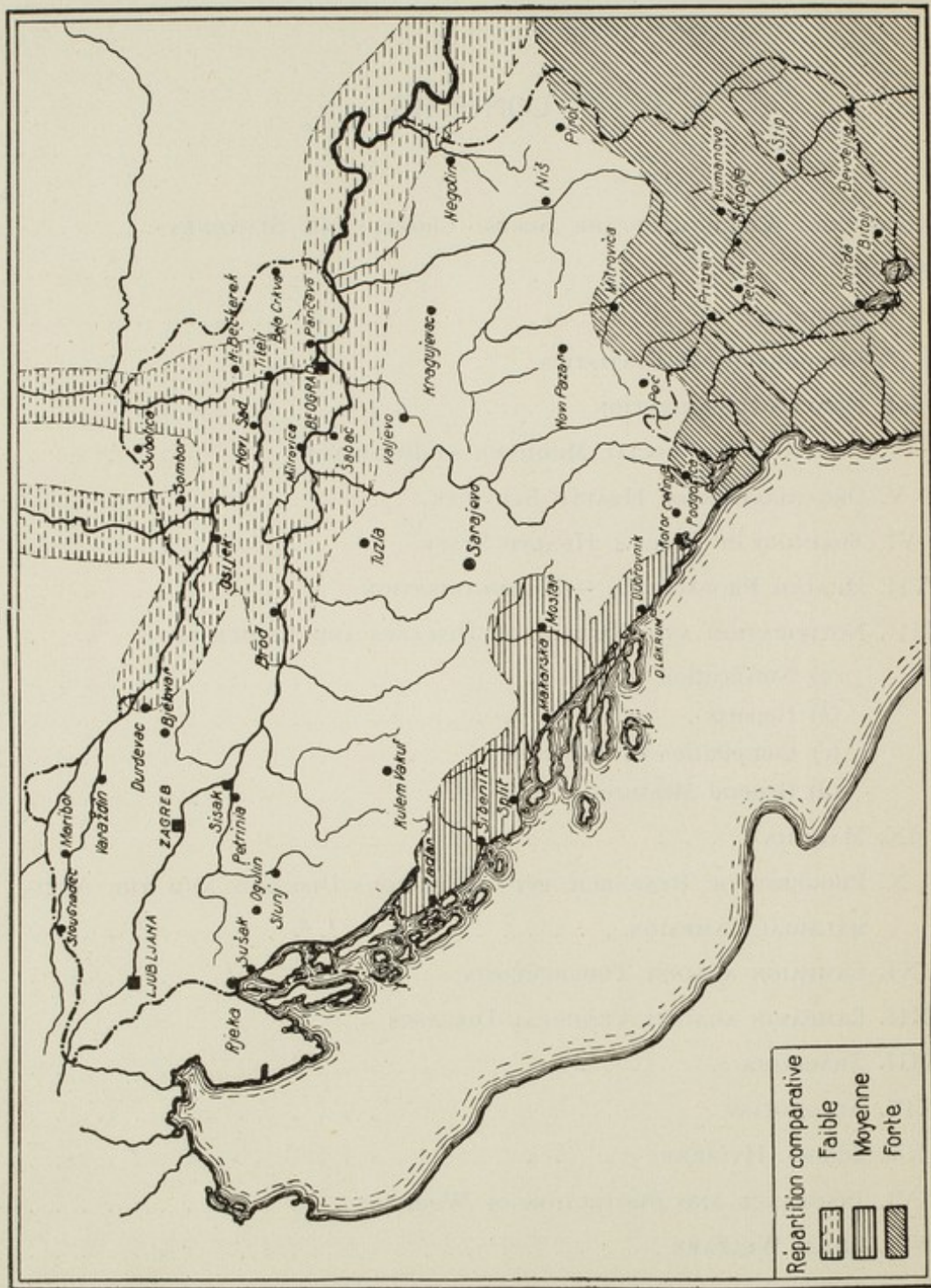
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## CONTENTS.

	Page
MAP OF THE KINGDOM OF THE SERBS, CROATS AND SLOVENES . . . . .	4
PREFACE . . . . .	5
I. GENERAL . . . . .	7
II. DEMOGRAPHICAL STATISTICS . . . . .	8
III. HEALTH ORGANISATION . . . . .	10
IV. INSTITUTE FOR SOCIAL MEDICINE AT BELGRADE . . . . .	11
V. ORGANISATION OF HEALTH SERVICES . . . . .	12
VI. TRAINING OF SPECIAL HEALTH STAFF . . . . .	15
VII. HEALTH PROPAGANDA — POPULARISATION . . . . .	15
VIII. NOTIFICATION AND CONTROL OF DISEASES AND EPIDEMICS . . . . .	18
(a) Notification . . . . .	19
(b) Reports . . . . .	21
(c) Compilation of Statistics . . . . .	22
(d) General Measures . . . . .	23
IX. MALARIA . . . . .	26
X. PROGRESS OF RESEARCH INTO INFECTIOUS DISEASES AND THE ANTI-MALARIAL CAMPAIGN . . . . .	32
XI. CAMPAIGN AGAINST TUBERCULOSIS . . . . .	37
XII. CAMPAIGN AGAINST VENEREAL DISEASES . . . . .	40
XIII. TRACHOMA . . . . .	43
XIV. ALCOHOLISM . . . . .	44
XV. SCHOOL HYGIENE . . . . .	46
XVI. INSURANCE AND PROTECTION OF WORKERS . . . . .	48
XVII. CHILD WELFARE . . . . .	50

MALARIA IN THE KINGDOM OF THE SERBS, CROATS AND SLOVENES



## PREFACE.

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Health legislation and administration constitute one of many factors which go to form the public life of a nation. Unlike political institutions, health institutions do not arise out of an organic unity and cannot develop on a definite plan. The changes and innovations introduced in the course of years have, for the most part, been made haphazard. The problems have arisen from the vicissitudes of life itself. In short, the needs of the moment have determined the intervention of the legislator and of the administration. The health problem assumes very different aspects at different times and in different places.

The technical resources at the disposal of the various countries and the psychological factors involved have varied in every way and this has given a distinct character to every health organisation. Consequently, it is a matter of great difficulty, even for health specialists, to form an accurate opinion on foreign health organisations; and yet the great complexity and ever-increasing number of international problems with which we have to deal make it essential to gain at once some knowledge of these different institutions. Failing this knowledge, not only does co-operation become difficult but the opinion that may be formed regarding the condition of public health in a given country is extremely liable to error.

Furthermore, information on disease obtainable from several different countries is very difficult to compare, as it comes from such different sources.

An indispensable preliminary to any useful study of the problem is a process of standardisation requiring the most thorough knowledge of the international health administrations.

As the work of the Health Organisation of the League of Nations is strictly international, the primary aim of this body should be to remedy as far as possible the difficulties arising from the diversity of the sources of information. The Health Organisation has accordingly decided to publish a series of monographs describing the organisation and working of the health administrations of the different countries. For the writing of these reports it has enlisted the services of experts occupying important positions in the various health administrations.

The original proposal was to make all these monographs conform to a fixed pattern. The Health Section of the Secretariat of the League of Nations accordingly

sent a note to the authors of these monographs framed with a view to obtaining reports which could be directly compared; but the majority of the authors preferred to present their work in a less stereotyped form.

The series of enquiries which we have undertaken to publish deals with health administration from the general standpoint only. We propose subsequently to publish investigations on certain special points in the field of public health, which will give additional and more detailed information on these points.

In publishing these general enquiries we have been greatly helped by the generous financial grants provided by the International Health Board of the Rockefeller Foundation.

*Geneva, May 1925.*

HEALTH SECTION OF THE SECRETARIAT  
OF THE LEAGUE OF NATIONS.

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## I. GENERAL.

The Kingdom of the Serbs, Croats and Slovenes, founded on December 1st, 1918, was formed out of the ancient Kingdom of Serbia, Montenegro and certain provinces of the former Austro-Hungarian Empire, *i.e.*, Croatia, Slavonia, Vojvodina, Bosnia-Herzegovina, Dalmatia and Slovenia. These provinces possessed different administrations, were subject to different historical influences and, in matters of public health, to different laws. The principal aims of preventive medicine and hygiene in these various countries were, however, the same; Governmental activity was pretty well confined to providing the necessary care for the sick and to the upkeep of the hospitals. Major health problems were neglected. When the world war broke out, bringing in its train cholera, typhus and smallpox epidemics, public health methods underwent a change and a vigorous health campaign had a better chance of bearing fruit than it would have had before the war. As soon as the Kingdom was proclaimed, the Ministries of Public Health and Social Institutions were created. On June 28th, 1921, the Royal Constitution came into force; it contained a certain number of most important paragraphs dealing with public health. Some of these may be quoted:

“ § 23. — Labour shall be under the supervision of the Government; women and children shall be specially protected while at work if their work constitutes a danger to their health. There shall be special laws for the security and protection of workers and for the control of the number of working hours in all undertakings.”

“ § 27. — It shall be the duty of the Government to endeavour to improve general and social hygiene: to safeguard public health, extend special protection to mothers and children, protect the health of all citizens, fight chronic and acute diseases and alcoholism, and provide free medical care and medicine for the poor.”

“ § 31. — Material assistance for workers in case of urgent need or of illness, disablement, old age or death shall be provided for by a special law.”

“ § 32. — Disabled soldiers, war widows and orphans and indigent parents of soldiers killed or deceased during the war shall be under the special protection of the Government, and assistance shall be given them as a token of gratitude. Professional or technical training for disabled men and the education of war orphans shall be provided for by a special law.”

## II. DEMOGRAPHICAL STATISTICS.

The duty of collecting demographical statistics devolves upon the Ministry for Social Affairs. With this object in view, the Central Statistical Office was established, but this service has not yet been fully centralised, as there are statistical bureaux also in the provinces, though the latter are not intended to be permanent. The statistical office for Croatia and Slavonia is at Zagreb; that for Slovenia at Ljubljana, for Bosnia-Herzegovina at Sarajevo, and for Dalmatia at Split. These offices publish statistics regarding their respective territories in accordance with the regulations there in force, since in this matter general regulations for the whole of the Kingdom do not as yet exist. The Central Statistical Office at Belgrade deals with Serbia, Montenegro and Voivodina.

These facts will explain the delay in the compilation of statistics on the movements of population in the Kingdom of the Serbs, Croats and Slovenes. They also explain the lack of demographical publications, which is a serious impediment to the study of social pathology. There is no need to point out that post-war conditions have modified not only the organisation of the State but also the composition of the population. The statistical service in Croatia and Slavonia is still, from the point of view of the continuity of its work, the best organised. Unfortunately, in this province also, as in all the others, nothing has been published for the last ten years. The most recent information regarding Croatia dates from 1915 and for Serbia from 1908. At that time the reports regarding Voivodina were included in those on Hungary, and those regarding the other provinces in the reports on the Austro-Hungarian Empire. The proper compilation of these statistics is rendered extremely difficult, not only by the inadequacy of the organisation, but also by the methods of work adopted. Statistical data are mainly furnished by the priests, that is to say, their accuracy is dependent upon religious practices. Considering the different levels of education in the different classes of the clergy, the difficulties in the way of establishing statistics are obvious, but even under present circumstances these might be made of much greater value.

The Central Statistical Office has issued statistical forms. The method of using individual forms has recently been introduced; these are accompanied by detailed instructions for filling them in. The instructions give a fairly good idea of the demographic-statistical methods adopted in the territories of Serbia, Montenegro and Voivodina.

According to these instructions:

All Orthodox, Catholic or Moslem ministers of religion, as also the registrars' offices which, in accordance with the regulations, keep the marriage, birth and death registers, are obliged in each case of marriage, death or birth to fill in the respective

statistical forms. Should certain particulars not be included in the printed forms, each official or minister of religion who is responsible must immediately ascertain any such particulars, which should be added to the printed form.

In each case of marriage, death or birth a printed form must be filled in which is then copied into the special register.

These forms must be filled in by hand and certain particulars must be underlined.

The profession must be given accurately and in detail.

Not only living children but also still-born children must be entered in the form for the registration of births. Children who have not breathed and who die before birth are regarded as still-born. Still-born children must also be entered in the register for deaths. The entry of any still-born child in the register for births must be supplemented by reference to the number under which it has been entered in the register for deaths.

In the forms for notifying deaths the cause of death must be given, whether disease or accident. The Health Officer who certifies the death must draw up a statement of the causes; if no medical certificate can be given, the statement must be drawn up by a priest or by any person who has examined the corpse. In the latter case, in order to facilitate the determination of the cause of death, instructions are issued accompanied by a list describing the more ordinary diseases which might cause death.

A printed form duly filled in is sent by the Orthodox priests to their hierarchic superiors in the district (in the towns), or to the Health Officer of the district, on the 8th of every month. Heads of districts must supply the priests with the forms required, collect them on the 8th of each month, and then send them to the Central Statistical Office at Belgrade not later than the 12th of each month.

The priests are supplied with the envelopes and printed forms by the Director of Government Statistics. The same regulations regarding the forms apply to that part of the population which does not belong to the Orthodox religion. In the latter case the forms are distributed by responsible agents.

Should no births or deaths or marriages have taken place, the forms must be sent back with the remark "No registrations".

The information available regarding density of population is still somewhat vague, but such as it is, it reveals a number of very important facts. The average density is 48.1 per kilometre; there are fewer men than women, *i.e.*, 96 per cent; there are 2,122,353 houses for 12,017,323 inhabitants.

From the foregoing it will be seen that the statistics of the Kingdom of the Serbs, Croats and Slovenes are still inadequate and that contact between individual health organisations and the Statistical Office is not yet fully established.

### III. HEALTH ORGANISATION.

The Ministry of Public Health is the central authority for health matters. In May 1919, a decree was promulgated providing for the organisation of this Ministry. This decree was amended in 1920, and on November 21st, 1921, a new law was passed. In accordance with this law the Ministry of Public Health is responsible for the supervision of all health matters. The Ministry's duties may be summarised as follows:

1. Watching over the regular increase of the population by encouraging numerous and healthy births, and by promoting the normal development of new generations.
2. Protection of public health.
3. The establishment of institutions for the treatment of, and preservation from, diseases.
4. The study of the normal and pathological biology of the nation.
5. Popular education in health matters.

The Ministry of Public Health is divided into an Administrative Department, a Health Department and a Public Health Service.

The Ministry for Social Affairs deals with housing questions, with the protection of childhood, the care of the infirm, social and workers' insurance; the programme of these two ministries has therefore many points in common.

Up to 1923, the *Health Department* was entirely independent of the *General Administration*. There were ten independent sanitary inspectors, one regional medical officer at the head of each province, a medical officer at the head of each district, and another in charge of counties (*comitat*). These medical officers possessed full authority, entitling them, for instance, to inflict fines on the inhabitants for infractions of sanitary regulations.

A law on general administration, however, which has been in force since 1923, curtailed the powers of these district medical officers, who, in penal matters, are now responsible to the judicial authorities. The county medical officers are now responsible to the administrative authorities of their subdivision; they retain, however, the right of direct appeal to the Minister.

Special health officers are attached to the municipalities and are in charge of their health services.

The Institute for Social Medicine at Belgrade is under the supervision of the Ministry of Public Health. There are two advisory bodies: a Permanent Epidemics Commission and a Supreme Health Board. The programme of the Permanent Epidemics Commission may be summed up as follows:

Technical study of epidemical conditions at home and abroad; determination of the measures necessary for the protection of the population; the study of any new discoveries in the field of prophylactic epidemiology, in order to ensure, when possible, their practical application; the continued study, in accordance with the statistical reports of the Ministry of Public Health, of the propagation of infectious diseases. The Epidemics Commission also organises public lectures and distributes the necessary instructions in cases of epidemics; it endeavours to popularise vaccination in threatened areas, and organises the sanitary defence of infected districts.

#### IV. INSTITUTE FOR SOCIAL MEDICINE AT BELGRADE.

The aim of this Institute is to study the normal and pathological statistics of the Serb-Croat-Slovene peoples and the health conditions of the various social classes. In its capacity as the technical branch of the Health Department of the Ministry, the Institute deals with all problems which are of importance from the point of view of the improvement of public health. It performs practical as well as theoretical work in the field of social medicine. It is its duty to seek a suitable sanitary standard for the Serb-Croat-Slovene population and to undertake demographic investigations and enquiries regarding social diseases. The Institute may also undertake comparative studies on the standard of living in various countries, study measures affecting health conditions in their bearing on morality, trades and professions, political reforms, etc., etc. The Institute may also undertake a comparative study of the sanitary regulations of different countries.

The work of the Institute therefore includes:

- (1) Statistics;
- (2) Biometry;
- (3) The study of the evolution of health conditions;
- (4) The collection of all possible information regarding morals, customs, standard of life, medical traditions, etc.;
- (5) Drawing up of plans and schemes for preventive medicine and medical social therapeutics;
- (6) Collaboration with similar institutes;
- (7) Health propaganda;
- (8) Research regarding possible reforms in existing social-medical institutions.

For this purpose the Institute has at its disposal:

- (a) Laboratories for biometry and medical statistics;
- (b) Research laboratories;
- (c) A scientific library and reading-room;
- (d) A museum for models, drawings and propaganda posters.

In due course the Institute will publish a scientific review and a popular review for propaganda in matters of health and social medicine. The Zagreb Institute has adopted the same programme.

#### V. ORGANISATION OF HEALTH SERVICES.

The Health services are independent and act as autonomous technical organisations. The laws which define their functions are the following:

##### LAW ON THE CREATION OF INDEPENDENT HEALTH INSTITUTIONS FOR THE CAMPAIGN AGAINST INFECTIOUS DISEASES AND THE ORGANISATION OF FREE MEDICAL ATTENDANCE.

*Article 1.* — With a view to combating infectious diseases and providing free medical attendance, the Ministry of Public Health is authorised to establish institutions and special organisations, such as the dispensary for the campaign against tuberculosis and venereal diseases; field and permanent epidemiological and bacteriological stations; laboratories; anti-epidemic sanitary detachments; polyclinics.

*Article 2.* — Free medical attendance shall be given in these institutions.

*Article 3.* — The necessary credits for the establishment and upkeep of these institutions shall be fixed by the budget.

*Article 4.* — The work of these institutions shall be regulated by the Ministry of Public Health.

*Article 5.* — The staff of these institutions shall consist of a higher and a subordinate staff, subject to the conditions laid down in the ministerial decree, and remunerated in accordance with the corresponding items of the budget. These officials, when acting as medical officers for epidemics, shall receive a special scale of remuneration.

LAW REGARDING MEDICAL SERVICES DURING EPIDEMICS.

*Article 1.* — In the event of the Government medical officers not being available in sufficient numbers to cope with an epidemic, the Ministry of Public Health is entitled, upon the proposal of the Permanent Epidemics Commission, to appoint for this purpose a certain number of doctors from outside.

*Article 2.* — The maximum salary of medical officers for epidemics shall be fixed at 4,200 dinars per month. Should an epidemics medical officer be appointed to a post outside his regular district, he shall be entitled to a daily allowance of 100 dinars in addition to his travelling expenses.

*Article 3.* — Epidemics medical officers appointed for this special purpose shall not be entitled to receive fees from patients during these epidemics nor, except in urgent cases, to practise.

Among special medical officers for epidemics, and in addition to those provided for in Article 1 of the law, are included epidemiological specialists. The medical officers belonging to the Health Service shall not possess the same rights as the other doctors, but shall receive a special allowance and free lodging, including furniture, heating and lighting. The fundamental principle of the Health Service is that its medical officers, not possessing the right to practise privately, remain in every respect independent. They possess a different technique from other doctors and must all be specially trained abroad. The medical officers in the Health Service number 150, and this number is to be increased every year.

The Sanitary Institute at Belgrade will be opened in 1925. Its purpose is the administrative centralisation of the health services of the country. There will be two Directors at its head, one for the technical work of the laboratories and the other for the practical side of the work. The Institute will be housed in four buildings. One of these will contain a laboratory and the others hospitals for infectious diseases.

It will include the following subdivisions:

1. Preparation and control of sera and vaccines;
2. Bacteriological analysis and research;
3. Control of foodstuffs and drinking water (beverages);
4. Study and control of infectious diseases;
5. Training of medical officers;
6. Campaign against chronic infectious diseases;
7. Scientific research;
8. Hospitals for infectious diseases, in which these diseases will be studied.

The Institute for Tropical Diseases at Skoplje and the Institute for Malaria at Trogir (the latter a self-contained organisation for the campaign against malaria) will rank as special organisations, responsible to the Central Institute.

To the Central Institute will be affiliated the hygienic epidemiological institutes at Nish, Novi Sad, Osijek, Sarajevo, Split, Ljubljana and Zagreb.

These affiliated institutes will work according to the regulations laid down by the Central Institute and will include three subdivisions:

1. Bacterio-serological;
2. Chemical;
3. Antirabic.

Their aim will be not only scientific but also practical, *e.g.*, the campaign against diseases and supervision of the water supply and rural sanitation.

Bacteriological stations will be established in the larger districts, and the smaller districts will be served by health stations and disinfecting detachments.

The principal aim of the health service of the Kingdom will be the popularisation of this science, which, up to the present, has been too much the exclusive domain of scientists and laboratories; and the extension of the benefits of hygiene to the whole of the rural population.

Bacteriological stations have already been established at Belgrade, Ljubljana, Celje, Varaždin, Gospić, Split, Dubrovnik Cetinje, Mostar, Tuzla, Banja-luka, Subotica, Šabac, Kragujevac, Novi Bazar, Prizren, Nish, Novi Sad, Zaječar, Skoplje, Bitolj, Veliki Bečkerek, Kraljevica.

These are either permanent or field organisations for the purpose of combating infectious and contagious diseases and for purposes of research. They may be established at a moment's notice, if special epidemiological conditions so demand.

The bacteriological field stations are responsible in every respect to the permanent stations. The work of the latter is more or less of a permanent nature, such as control of foodstuffs, of disinfecting apparatus, medicines, the manufacture of vaccines, etc. In short, they are small self-contained sanitary stations, possessing a staff of visiting nurses under the direction of an official bacteriologist.

The field stations are equipped with a certain number of disinfecting apparatus and a staff of qualified disinfectors.

In order to be able to carry out bacteriological analyses at a moment's notice, the health service is also provided with a certain number of motor-cars fitted out as bacteriological laboratories, an ambulance, movable baths and disinfecting apparatus. Two of the stations on the coast possess motor-boats for the transport of such equipment.

There are also two ambulance trains, with all the necessary material for analyses and disinfection.

## VI. TRAINING OF SPECIAL HEALTH STAFF.

The Kingdom possesses three faculties of medicine: one at Zagreb, another at Belgrade and the third at Ljubljana. The latter has only been in existence for eighteen months, and the studies are organised more or less according to the Austrian and German system, specialising on individual rather than social medicine. At Zagreb and at Belgrade, social medicine is taught, though this subject is not compulsory.

After having completed ten compulsory terms of six months each, students work for one year in one of the larger hospitals. If they choose hygiene as their special subject, they may be attached for a year to a health institution. Thus all doctors are divided into two groups: those who desire to practise individual medicine and those who wish to devote themselves to social therapeutics.

There are also two training colleges for district nurses, one at Belgrade and the other at Zagreb. The students must have passed four High School examinations and must not be under 18 or over 30 years of age. Their course of training lasts 2½ years. It includes a preparatory course and the study of certain subjects, such as anatomy, biology, physics, hygiene, sick nursing, social studies, the study of various chronic and acute infectious diseases, public hygiene and social medicine. After they have passed their examinations, they are attached to hospitals or health stations.

In addition to this training, two courses of from six months to one year are given, bearing upon the campaign against trachoma, malaria and infantile diseases, and there is a special course for disinfectors and laboratory staff.

## VII. HEALTH PROPAGANDA — POPULARISATION.

Sanitary police regulations and progress in health matters must be supported by public opinion, and the latter must be formed by sound health propaganda. In order to be effective, such propaganda must reach all classes of society. Preventive medicine, on which at the present stage of development public hygiene must be based, cannot be rendered properly effective unless it is supported by popular education. The Ministry of Public Health recognised the urgency and value of health propaganda. At the outset, therefore, it established a section for health propaganda with a view to popular education in this matter. Later, in 1923, the duties of this section were entrusted to the Institute for Social Medicine, which is attached to the Health Department of the Ministry.

At present, health propaganda is carried on within the limits set by the budget estimates, which also determine the prerogatives appertaining to the inspectorates in so far as they are autonomous organisations. The Ministry grants every year a certain credit for this purpose; it is directly responsible for this part of the work only within the frontiers of Serbia and Montenegro, and merely gives general instructions in respect of the other territories. Those responsible for health propaganda have achieved remarkable success, due, to a large extent, to the fact that they let themselves be guided in their work by the special conditions obtaining in each individual province of the Kingdom.

In the budget for 1924-25 of the Ministry of Public Health a special item of two million dinars is appropriated for popular education. This sum, of course, does not include expenditure on propaganda undertaken by private institutions. Pamphlets, the cinema and even the theatre are used for propaganda purposes. It must be noted that, in order to meet modern requirements in the matter of protection against disease, it is necessary that propaganda should be carried out by a professional and specially qualified staff.

*Museums and Exhibitions.* — The Kingdom of the Serbs, Croats and Slovenes does not possess a permanent *health museum*. Such a museum is, however, under construction. The Palace of Health at Novi Sad contains two special rooms set aside for a permanent health exhibition. The Health Institutes at Zagreb and Belgrade also have set aside a certain number of rooms for use as museums. Exhibitions for various purposes are held every year, illustrative of the campaign against alcoholism or tuberculosis or malaria, or for child welfare.

*Lectures.* — One of the most effective forms of health propaganda is the holding of popular lectures. As soon as it was created, the Ministry of Public Health sent instructions to all its subordinate organisations urging them to give public lectures in their districts. In every part of the country, lectures have been given based on scientific facts, the lecturers being careful to avoid unfamiliar terminology and useless technicalities.

The lecturer must always bear in mind the impression which his lecture is likely to make on his audience, an impression which is dependent upon various conditions which should be taken into consideration; it would be useless to adopt a definite form for lectures on any given subject, especially if that subject is a scientific one. Needless to say, these lectures are of greater value if they are accompanied by magic-lantern slides or, better still, by cinematographic films; these should be provided wherever possible. In addition to these lectures, discussions are held on special subjects intended for certain classes of the population.

In 1922, 178 lectures on health matters were given in Dalmatia, 360 in Voyvodina, 24 in Slovenia, 125 in Bosnia-Herzegovina, and 322 in Croatia and Slavonia. The number of these lectures will be increased as time goes on. Special lectures on health matters are also given in the schools.

*Films.* — In the light of experience gained in other countries and of information it had itself collected, the Ministry of Public Health decided to make use of this valuable means of propaganda. At Belgrade, the Ministry of Public Health established a special studio for the manufacture of films on health matters and for the transformation of foreign films. The Ministry possesses about 200 films bearing on social and clinical hygiene.

In order to be able to give demonstrations in the provinces, the Ministry has ordered a number of small, portable cinema apparatus, and has also acquired a special electro-generator mounted on a motor vehicle for use in towns and villages which do not possess electricity.

*Propaganda by means of the Theatre.* — There is a special repertory of plays for health propaganda and these are attracting large audiences which follow them with ever-increasing interest. In addition, several theatres give plays such as Brieux's "Les Avariés" and Zola's "L'Assommoir", with the help of a subsidy granted by the Ministry of Public Health.

During the holidays, representations by touring companies are organised which play in small provincial centres; mention must also be made of special "Guignol" representations which are given for the children in the schools.

*Publications.* — In accordance with the principles on which the work of the above organisations is based, the Ministry of Public Health issues special publications, and others are issued by the individual inspectorates. Great numbers of these pamphlets are published and distributed free of charge to the public; they contain mostly rules of hygiene which are easy to remember and correspond more or less to the various levels of culture.

As the number of illiterate persons is still very large, illustrated posters have been found very useful for propaganda against tuberculosis, venereal diseases, alcoholism, etc. Leaflets are also distributed, containing special instructions for the campaign against infectious diseases. Hundreds of pamphlets are published by the Ministry of Public Health, not to mention pictures, posters and memoranda. There is a *Journal of the Ministry of Health*, the Ministry's official organ. This is a periodical which, in addition to the official part containing the more important laws and regulations, includes a technical part. Two thousand copies of this journal are printed and sent free of charge to all health officials and institutions; the Ministry of Public Health also publishes in French for use abroad a monthly *Bulletin*, which is a summary of its official journal.

*Other Propaganda Work.* — The Ministry of Public Health gives its support to various organisations founded for the purpose of improving public health, such as the Association for the Protection of Public Health, the Temperance Union, the "Sokol"

Association, the Union of Women's Associations, etc. The Ministry subscribes for 2,000 copies of the paper *Health and Temperance*, and distributes them free of charge to the population.

The Ministry of Public Health makes regular grants to these organisations (including propaganda work and the journeys of the propaganda staff). It has, moreover, drawn up a plan for compulsory instruction in hygiene in the schools. This plan has, however, not yet received the support which it deserves.

In accordance with a Ministerial decree of 1920, special lectures are given for patients suffering from venereal diseases.

It is impossible in the space at our disposal to mention all the work carried out by these propaganda organisations, but the Ministry of Public Health follows it with great interest and gives it its full support.

It is not possible as yet to form an estimate of the results achieved by an institution which has only been in existence for five years, but signs, such as requests for special advice before the erection of dwellings or before the conclusion of a marriage, etc., are not lacking to show that very real progress has already been achieved and that the interest of the masses has been aroused.

#### VIII. NOTIFICATION AND CONTROL OF DISEASES AND EPIDEMICS.

Ever since its establishment, the Ministry of Public Health has carried on an active campaign against acute infectious diseases. Towards the end of the war, in the liberated provinces, the incidence of these diseases reached a very high percentage. The consequent loss of life and of economic resources was very considerable. To meet this danger, the Ministry considered that it was first of all essential to have accurate data regarding the extent and nature of these diseases and to enforce regular registration of all cases.

Compulsory notification of infectious diseases must obviously be regulated by law; legislation on this subject, however, differs according to provinces. This fact constituted an initial obstacle. The first step, therefore, was to standardise these various regulations in order to be able to exercise uniform supervision throughout the Kingdom.

In spite of this difficulty, however, and owing to the issue of standing instructions and special circulars, the number of notifications has greatly increased, and it has thus been possible to obtain a fairly satisfactory idea of epidemiological conditions in the whole of the Kingdom.

The lack of qualified medical officers constitutes a further difficulty. There are districts of from 40,000 to 80,000 inhabitants with but a single medical officer. If the size of these districts is taken into consideration, it will be realised that the majority of the population is not able to obtain medical attendance at all. Notification of acute diseases is, however, compulsory and must be made to the municipal or communal authorities.

Yet another difficulty in the way of securing accurate reports is the lack of means of communication; when a whole week must elapse between the moment when the case is diagnosed and the time when it is entered in the register of the Ministry, notification loses much of its value; moreover, a great number of cases are not reported by the medical officers since, on account of the distance, their services could not be called upon. For this reason alone, perfectly accurate bacteriological data cannot be secured.

All these difficulties existed at the time of the unification of the Kingdom, and to some extent still subsist, although general conditions have improved. Slowly but surely a uniform system of notification is being introduced throughout the Kingdom. The Health Department of the Ministry of Public Health also includes a statistical division, which collects the data received from every part of the Kingdom in accordance with the instructions of and in co-operation with the Institute for Social Medicine. Weekly returns are compiled and sent abroad. This work is very heavy and exacting; moreover, under present conditions, at least three weeks are required before satisfactory printed tables can be issued.

Conditions have, however, greatly improved since 1918 and 1919, thanks particularly to the bacteriological stations and research institutes and to the campaign against infectious diseases. The regular police and the sanitary police must be kept informed of all new methods of combating infectious diseases. Modern health statistics constituting a record of all important facts relating to public health are essential. The importance of this branch of statistics is steadily increasing as social hygiene is becoming better organised and consequently also more popular. It may be said that the duties of the Ministry of Public Health are now so extensive that, without the assistance of a reliable statistical service, it would be impossible for it effectively to carry on its work. These statistics are necessary to make possible a proper estimate of the results achieved, and to show the pathological tendencies of the country; they serve at the same time as a measure of control and as a guide.

For these reasons, the Ministry of Public Health has, with the assistance of specialists, published a set of regulations which provide legislative measures for the notification of infectious diseases and for the compilation of statistics. They read as follows:

*Part I.*

(a) NOTIFICATION.

*Article 1.* — The following diseases shall be subject to compulsory notification: cholera, plague, yellow fever, smallpox, typhus, typhoid fever, relapsing fever, dysentery, scarlet fever, measles, diphtheria, meningitis, encephalitis lethargica, whooping cough, erysipelas, tetanus, anthrax, leprosy, Malta fever, mumps.

*Article 2.* — (A) Cases of the above-mentioned diseases must be notified by all doctors, whether medical officers, military doctors or private practitioners.

(B) They must be notified by all Government, military or private health organisations concerned with the supervision and treatment of the sick. The same applies to dispensaries and insurance offices, which must notify all cases coming to their knowledge.

(C) Hospitals must state whether the patient desires to be admitted for treatment or not, and whether he has been sent by a doctor or has come of his own accord.

(D) Notification must also be made by all persons employed in the health services and in dispensaries, by nurses and disinfectors, of all cases coming to their knowledge outside the institution to which they are attached.

(E) Further, notification must be made by all Government or provincial authorities which are in close contact with the people, *i.e.*, the police, revenue officers, etc.

(F) By all managers of factories or institutions in which a great number of people live in close contact, such as schools, factories, boarding-houses, prisons, etc.

(G) By all proprietors of night shelters, hotels and similar houses, should such cases occur among visitors or employees.

(H) By ministers of religion.

*Article 3.* — The persons belonging to the institutions mentioned in Article 2 (A, B, C and D) must cancel notification of any cases already notified when the patient has died or recovered. The institutes mentioned under (E) are bound to make the same notification even if a health officer is in charge of the case.

*Article 4.* — All reports must — on printed forms and within twenty-four hours after the case has been notified — be sent to the medical officer of the district or to the health officer of the town or of the province in which the presence of the disease has been observed. This report may be made verbally, but in any case a printed form must be filled in by the sanitary inspector or by the assistant commissioner for health.

*Article 5.* — The printed form must be very accurately filled in and must, moreover, show whether the case is merely a suspected case or whether it is clearly established, and, if so, by what means.

*Article 6.* — The health officer of the district and, in towns, the health commissioner must be supplied with a sufficient number of printed forms, and must distribute them free of cost to anyone who applies for them.

*Article 7.* — The district health officers and urban health commissioners must immediately telegraph to the Ministry of Public Health or to the health officer of the county the epidemiological situation in the territory of which they are in charge in cases of plague, cholera or yellow fever; they must also report by telegram all first cases of smallpox or typhoid fever of which notification has been made.

*Article 8.* — The district health officers, and in the towns the health commissioners, shall be bound to keep an accurate record of all notified cases in a special register showing at the same time recovery, death or admission to hospital.

## *Part II.*

### (b) REPORTS.

*Article 9.* — The district health officers and the urban health commissioners must send in a weekly report regarding the progress of infectious diseases in accordance with the compulsory notifications made on the printed forms.

*Article 10.* — These reports must only mention cases which have been reliably diagnosed.

*Article 11.* — The diagnosis can only be regarded as reliable when:

- (a) In the case of cholera, plague, yellow fever, relapsing fever, typhoid fever, tetanus, anthrax, Malta fever and rabies, it has been established by sero-bacteriological tests carried out in one of the special institutions for this purpose; this is especially important in first cases of an epidemic;
- (b) In the case of other diseases, *i.e.*, smallpox, scarlet fever, measles, encephalitis lethargica, whooping-cough and mumps, the typical clinical symptoms may be regarded as sufficient.

*Article 12.* — In connection with Article 10, district health officers and urban health commissioners are bound to have each notified case verified either by a doctor or by an undertaker, including suspected cases and any which have not been diagnosed in the manner prescribed by Article 2.

*Article 13.* — In the event of a further notification being made in a place in which the disease in question has already been notified, the health officials may enter the notified case in the register without proceeding to any further verification.

*Article 14.* — In connection with Articles 10, 12 and 13, the reports provided for in Article 9, drawn up by the district health officer, must be sent to the urban health officer. These reports must be forwarded direct: (1) to the Ministry of Public Health and the Institute for Social Medicine; (2) to the county health officer; (3) to

the competent bacteriological and epidemiological station; (4) to the adjoining districts; (5) to the neighbouring countries with which special Sanitary Agreements have been concluded.

*Article 15.* — The district health officers and the urban health commissioners are bound to send in weekly reports.

*Article 16.* — Should no case of infectious disease be notified, a special form must be sent in (marked "no notifiable case").

*Article 17.* — The district or urban health officer must send in an epidemiological report at the outbreak of an epidemic, and subsequently every fortnight until the epidemic has entirely disappeared. In the case of plague, cholera, yellow fever, smallpox, typhus, typhoid fever, relapsing fever, dysentery and scarlet fever, a report must be sent to the Ministry of Public Health and to all the authorities mentioned above. These reports must be drawn up according to the printed forms, which contain all useful epidemiological information.

*Article 18.* — The epidemiological report mentioned in Article 17 must be sent at the beginning of an illness, if it is of an epidemic nature, and in all cases of contagious diseases, other than those mentioned in Article 17, notification of which is compulsory.

(c) COMPILATION OF STATISTICS.

*Article 19.* — Epidemiological institutes, health institutes and bacteriological stations must compile reports based on the epidemiological information received from district and urban health officers in accordance with the regulations in force in sanitary stations.

*Article 20.* — The county health officer must co-ordinate the data received from his county, must take the necessary measures prescribed by law and, in accordance with Article 15, must send a weekly report to the Ministry of Public Health.

*Article 21.* — The provincial institution must compile the data received from the counties and send in a report regarding the whole province to the Ministry of Public Health.

*Article 22.* — The whole of the statistical material must be sent to the Ministry and dealt with by the Institute for Social Medicine. The latter

1. Must keep an accurate record of these reports;
2. Must verify them;
3. Must co-ordinate the reports from the district officers and the inspectors;
4. Furnish the printed forms;
5. Give instructions in doubtful cases;
6. Furnish information in all matters concerning compulsory notification of diseases and the submission of statistical reports.

*Article 23.* — Within ten days the Institute for Social Medicine must draw up a weekly report for the whole of the Kingdom, according to provinces.

*Article 24.* — The Institute for Social Medicine must prepare technical reports and draw conclusions therefrom, which are subsequently to be published.

*Article 25.* — The regular weekly report must cover the whole of the territory; it is published in the official gazette, which is sent to the epidemiological and bacteriological institutes, to the military and provincial authorities abroad in countries with which Sanitary Conventions have been concluded, and, further, to the League of Nations and foreign scientific institutes with which regular relations are maintained on a basis of reciprocity.

*Article 26.* — The reports intended for foreign countries must be sent in the Serb-Croat language and in French.

*Article 27.* — The district and urban health officers are bound to send in every three months printed forms concerning the reports forwarded to the Institute, where they must be deposited, and accurate records must be kept according to months and districts. On the basis of these data the Institute must study statistical problems in accordance with instructions from the Ministry of Public Health.

(d) GENERAL MEASURES.

*Article 28.* — With the exception of the diseases mentioned above and until special legal measures shall have been taken for the organisation of the campaign against tuberculosis, venereal diseases, malaria and other chronic diseases, contagious and social diseases shall not be registered; but all medical practitioners shall be bound to send a summary report and all necessary information on the incidence of these diseases among their patients upon a request by the health authorities and in accordance with an order from the Ministry of Public Health, which shall take the necessary measures in each case.

*Article 29.* — The orders referred to in Article 28 may not be issued more than twice in the same year in respect of the same disease.

*Article 30.* — Reports on these diseases, in accordance with Article 28, are not specially remunerated.

*Article 31.* — Letters and telegrams concerning notification of diseases in accordance with the regulations, and sent on printed forms, shall be carried free of cost.

*Article 32.* — All regulations previously in force shall be cancelled by the present regulations; the latter shall govern the notification of contagious diseases and the

necessary measures to prevent their spread, also all matters concerning births and deaths.

*Article 33.* — Contravention of these regulations shall be punished in accordance with the terms of the law.

\* \* \*

These regulations came into force in January 1925; they are based on present experience in the matter of the notification of diseases and the technical possibilities of carrying out the prophylactic measures advocated. Acute contagious diseases are subject to compulsory notification. Notification of chronic diseases may also be made compulsory, but only for a specified period. These returns are generally compiled by institutions for combating chronic diseases in any given province.

Notification must be made to the health officer, to the sanitary staff and to any other health organisation which may be in a position to exercise control in these matters. Reports are forwarded to the health authorities, which send them direct to the Ministry. This procedure represents a great saving of time and, moreover, the Ministry has at its disposal at any time a fairly accurate record of the contagious diseases in question; the health authorities report at the same time to the bacteriological section any cases which come to their knowledge; they also inform other sanitary institutions in order that the latter should immediately apply the necessary prophylactic measures.

In the case of particularly dangerous epidemics, reports must be sent by telegram. It should be pointed out that the reports sent to the Ministry are based on positive diagnoses, verified in most cases by laboratory tests. Notification of diseases must be made to the health authorities within 24 hours and health officers must send their reports on the 7th, 14th and 21st and on the last day of each month. These reports are therefore not weekly, but are sent at fixed dates, which facilitates comparison between the various months.

New regulations also provide for notifications of another kind, *i.e.*, epidemiological reports and individual cards for sporadic cases. The latter, like all other printed forms, are standardised throughout the Kingdom and therefore are easily comparable.

In addition, a special service has been created to ensure that all the provisions of international health conventions shall be observed.

Although information regarding the course of contagious diseases has been collected with some difficulty, these statistics, such as they are, give a fairly good idea of characteristic health conditions throughout the Kingdom. We possess complete statistics for the years from 1919-1923. The following table shows the course of diseases in the Kingdom between 1919 and 1924. Deaths are given in actual figures and mortality and morbidity per 1,000 inhabitants. It is true that a period of 5 ½ years is not sufficient for obtaining very definite information on the frequency of epidemics, but it has been possible to collect information which will be very useful in view of future investigations.

INFECTIOUS DISEASES IN THE KINGDOM OF THE SERBS, CROATS AND SLOVENES

Number of Inhabitants 12,017,323	1919					1920					1921				
	Morbidity (absolute figures)	Morbidity per 100,000	Mortality (absolute figures)	Mortality per 100,000	Mortality	Morbidity (absolute figures)	Morbidity per 100,000	Mortality (absolute figures)	Mortality per 100,000	Mortality	Morbidity (absolute figures)	Morbidity per 100,000	Mortality (absolute figures)	Mortality per 100,000	Mortality
Diseases															
Smallpox . . . . .	5,278	43.42	1,100	9.15	20.8	4,156	34.59	941	7.56	22.64	2,119	17.63	483	4.02	22.83
Typhoid fever . . . . .	3,969	33.03	579	4.82	14.6	3,851	32.05	444	3.69	11.53	4,617	38.42	614	5.11	13.30
Typhus . . . . .	12,198	101.41	1,499	12.47	12.3	1,582	13.16	188	1.56	11.88	1,054	8.77	130	1.08	12.33
Dysentery . . . . .	17,532	141.47	3,100	73.48	17.6	11,138	92.68	1,906	15.86	17.11	13,279	110.41	2,392	19.90	18.09
Scarlet fever . . . . .	1,521	12.66	224	1.86	14.7	4,940	41.11	882	7.37	17.85	15,221	126.66	2,769	23.04	18.10
Diphtheria . . . . .	1,406	11.70	126	1.05	9.0	1,912	15.91	298	2.48	15.59	2,667	22.19	349	2.90	13.08
	1922					1923					1924				
Smallpox . . . . .	728	6.06	165	1.37	22.66	1,042	8.68	199	1.6	19.08	308	2.56	62	0.51	20.13
Typhoid fever . . . . .	3,906	32.50	504	4.19	12.90	3,549	29.54	493	4.10	13.89	1,051	8.75	153	1.27	14.56
Typhus . . . . .	232	1.93	26	0.22	11.16	352	2.93	49	0.41	14.10	232	1.93	14	0.12	6.8
Dysentery . . . . .	2,878	23.95	371	3.09	12.89	3,977	33.09	637	5.301	16.02	209	1.74	18	0.15	8.63
Scarlet fever . . . . .	18,088	150.52	3,997	33.28	22.10	16,521	137.48	3,669	30.52	22.21	4,478	37.27	908	7.56	20.27
Diphtheria . . . . .	1,935	16.10	290	2.41	14.99	1,963	16.33	313	2.60	15.90	700	5.83	118	0.98	16.86

The health organisation is steadily improving and the number of health officers is being increased and consequently registration of diseases is becoming more and more complete.

In 1919, there were 5,278 cases of smallpox, in 1923 there were 1,042, while during the first half of 1924 there were 308 cases with a mortality of approximately 20 per cent. Typhoid fever is always prevalent. The epidemiological institute at Sijek and the bacteriological station at Voyvodina are carrying on research in order to

discover the origin of this infection, which is particularly prevalent in districts where drinking-water is scarce. In consequence of these enquiries, new cases are often discovered which otherwise would remain unsuspected. We may mention, however, that the number of cases is not increasing; if anything, it is decreasing.

In 1919, there were 12,198 cases of typhus, of which 1,499 were fatal. It must be remembered, however, that this was one of the consequences of the war and of conditions in a country which was not united for a time after the cessation of hostilities. The decrease in this disease must be attributed in a large measure to better sanitation and to the organisation of a campaign against infectious diseases. The apparent increase in 1923 must be put down to more regular notification.

The organisation of the campaign against contagious diseases by endeavouring to check epidemics gives better results than the efforts made to raise the level of sanitation. The case of scarlet fever, for instance, proves this. Where there is no effective anti-epidemic campaign, little success can be expected.

## IX. MALARIA.

*Its Prevalence.*— The Kingdom of the Serbs, Croats and Slovenes is one of the most malaria-infected countries in Europe. At the present moment, more than a million of its inhabitants are suffering from this disease; it is impossible, on account of the lack of doctors in certain parts of the country and of transport difficulties, to ascertain the exact figures, but we know that the whole of Dalmatia, the islands off the south coast, the southern part of the former Montenegro-Herzegovina, the southern reaches of the rivers Save, Theiss and Danube, and the whole of Macedonia are infected. The great number of cases and the material loss entailed thereby have made malaria one of the most anxious problems with which the Kingdom has to cope.

*Malaria Research and Anti-malaria Measures before the War.*— The Austrian Government took steps to check malaria only in Dalmatia. The measures taken were, however, not based on scientific knowledge and only in isolated cases were blood tests and entomological research undertaken. They were obviously inadequate and could give no practical results. The Austrian Government thought it could check the spread of malaria by distributing quinine, but that, after all, is only a palliative, and during the war, when quinine became scarce, there was a great recrudescence of the disease throughout Dalmatia. Among the minor measures, the construction of dams, drainage works, etc., served the purposes of agriculture rather than those of sanitation. The Turkish Government undertook no measures whatever against malaria during its occupation of Macedonia, nor did any other Government in the various parts of the present Kingdom.

*Work undertaken during the War.*— Military regulations included also measures against malaria. Dalmatia, however, which did not form part of the front, was neglected. In Montenegro, various measures were carried out to protect the army against malaria. In Macedonia, the Germans undertook research of some value, carried out by specialists such as Mühlens, Füleborn, Doflein and some others, and some useful measures were introduced. On the Salonica front the Allies undertook anti-malarial prophylactic measures on the basis of French and British scientific research.

In the spring of 1921, a special-Commission, under the chairmanship of Professor Engling, was set up to deal with the question of malaria; this Commission worked during the whole of the summer and autumn of that year in Macedonia, and, on the basis of its findings, an anti-malaria campaign was organised throughout the Kingdom. The Ministry decided, first of all, to set up an institute for tropical diseases at Skoplje, and a central laboratory for research into tropical diseases was established in 1922 at Belgrade, under the direction of Dr. Dschounkowsky. It was recognised, however, that no good results could be obtained without the co-operation of specialists. A special institute for the province was, therefore, established at Trogir.

The Malaria Commission then travelled throughout Macedonia; we give below a brief summary of its work.

As regards climate, Northern Macedonia is entirely different from Southern Macedonia. The dividing line between these two regions runs in the neighbourhood of Veles; the climate of the southern districts is Mediterranean — that is to say, there is no excessive heat in summer and no intense cold in winter. In the north, however, differences of temperature are extreme; they are very marked even within 24 hours, and in this respect the climate resembles that of the Roman Campagna. It has been said that in Rome, in one and the same day, the temperature may vary between the averages of summer, winter, spring and autumn. The same may be said of Skoplje, and with even better reason. In Rome, the change in temperature may be 15° C. during the day, whereas in Skoplje the temperature varies often by as much as 25° C.; sometimes the temperature in that town has even varied by as much as 40° C. in 24 hours. These violent fluctuations in temperature are well known to the population, which endeavours to counteract them by suitable clothing.

In Macedonia, there are several extensive malaria districts, the more important of which are the valleys of the Vardar, of the Struma, the Bregalnica, the borders of the lakes of Doiran, Prespa, Ochrid and the marshes of Monospito. The nefarious influence of malaria on fecundity is very obvious in Macedonia where, in consequence of anæmia, menstruation in women occurs only every three or four months. Miscarriages are frequent; women infected with malaria in the Strumica region sometimes have two or three miscarriages in succession. This seems to be due to the mechanical pressure exercised by the enlarged spleen, to hyperthermia and the effect of the toxin, and in some cases also to the effect of quinine. In Monospito, for instance, congenital anæmia in children is the cause of a very high degree of infant mortality

(50 per cent); out of 151 healthy births registered, only 20 per cent of the children reached the age of five.

Soldiers and settlers are more liable to infection than others, especially if they come from uninfected regions. Of the 500 settlers who, in 1918, were given land at Strumica, and at Bezgac in Herzegovina, there only remain eight or ten old men; the others have all died in the space of thirteen years. The tropical form of malaria has also been observed in Macedonia in the army, and Castellani has more or less ascertained its distribution, mainly to the north of Skoplje. It is possible that the Turks introduced this particular form of malaria during the 1912 war. It is believed that there is a great difference between the former tropical form and its present form; it is getting increasingly serious, and cases of death are becoming more and more frequent. The principal danger, which particular efforts must be made to avert, is an outbreak of this form in other districts. A careful study of the anopheles and their biology and of the climatic conditions of the country is imperative.

Of the cases 37 per cent are of a serious kind, with a 10 per cent mortality. According to Dr. Tlickovitch, out of 1,000 young men sent to Macedonia to do their military service, 450 were infected with malaria and therefore became germ-carriers.

Dr. Dschounkowsky found in Macedonia the following species of anopheles: *A. maculipennis*; *A. bifurcatus*; *A. pseudopictus*; *A. superpictus* and *A. palestiniensis*. The species which has the widest distribution in Macedonia is *A. maculipennis*, which is often found even at an altitude of 1,300 metres, but as a rule prefers the valleys. Dr. Dschounkowsky found some in hives, while stables seemed to be practically immune. Dr. Dschounkowsky, like Martini, has ascertained that *maculipennis*, after its meal, leaves its habitat for three days and another mosquito, *superpictus*, takes its place. The female *maculipennis* lives from three to four weeks, sometimes it may even live up to three months, and Dschounkowsky has discovered females nine to ten months old.

Generations.	<i>A. Maculipennis.</i>
I. . . . .	April, beginning of May.
II. . . . .	Beginning August.
III. . . . .	September, October.

Another parasite, *Anopheles bifurcatus*, is found everywhere in Macedonia, but in smaller numbers than *maculipennis*. It can live up to an altitude of 1,500 metres, spends the winter in the larval state and comes to life again under a temperature of 9° C. It is rarely found in stables and prefers open spaces. The female does not suck blood only during the day, but also gorges at night. Unlike the larvæ of *maculipennis*, which prefer tepid water, those of *bifurcatus* live in cold water; the latter develop more slowly. *Anopheles superpictus* (the smallest of the anophelines in Europe, 5 mm.) is very plentiful in Macedonia. It is found comparatively rarely

north of Kumanovo and fairly frequently south of that place. It lives at an altitude of from 600 to 800 metres according to temperature. Its larvæ, not unlike those of the *bifurcatus*, like clear cold water to an even greater degree than *maculipennis*. It has been proved that they can also reach their full development in running water. The sort of place they prefer is a slope traversed by a tiny trickle of water. When the course of such a small stream is blocked by a stone of any size, it is diverted to either side, forming small pools of stagnant water with small eddies. The larvæ of *superpictus* like stagnant water of this kind; they remain there in a characteristic position, that is, with their raised tail against the stone. If they are put in a glass of water, they immediately assume the same position. In mountainous regions, during the summer, *superpictus* gradually increases; *maculipennis*, on the other hand, becomes rarer, until it completely disappears in the autumn. The last representatives of the anopheles family to disappear are *superpictus*.

Their chief enemy is rain, and there is no kind of anopheles which is not susceptible to hygrometric variations. That is why they only make their appearance when the rainy season, *i.e.*, June, is over. *Superpictus* makes its appearance one month after *maculipennis* and disappears one month after this species. It is of peculiar epidemiological importance in so far as we are concerned; the regions infected by the tropical form of malaria and those infected with *superpictus* present very similar characteristics. *Superpictus* is greatly responsible for the extension of the epidemic and even determines its direction, since it introduces this form of malaria into remote valleys in the mountains. The autumn spread of tropical malaria coincides with the period of development of the third generation of *superpictus*. A regular campaign against this parasite is therefore imperative and, moreover, its destruction is practicable. If the period of development of the larvæ is turned to account, it is possible to obtain excellent results in the disinsectisation of small streams. This measure was in fact proposed during the last war.

A brief table of the prevalence of malaria in the Macedonian army, according to months and cases, in accordance with the observations of Dr. Zeranizitch, Principal Medical Officer, are of some interest.

The following are the figures for the monthly incidence of the disease per hundred cases:

January . . . . .	4.6%	May . . . . .	7.7%	September . . . . .	26.7%
February . . . . .	3.7%	June . . . . .	22.9%	October . . . . .	26.9%
March . . . . .	9.7%	July . . . . .	6.8%	November . . . . .	25.6%
April . . . . .	5.6%	August . . . . .	7.8%	December . . . . .	8.9%

Malaria research in Dalmatia (1921) carried out at Metković, Trogir, Stobrec and Stozanac has given the results summarised below:

In the districts just mentioned, out of 32,548 inhabitants, 10,315, *i.e.*, 31%, were examined. It was found that 7,503 of these were suffering from malaria and 73% from enlarged spleen.

Microscopic examinations were carried out in 6,411 cases, of which 1,728, *i.e.*, 27 %, gave positive results.

Out of 2,812 patients who did not suffer from enlarged spleen, 230, *i.e.*, 8 %, were found to be infected with blood parasites.

According to Age:	Splenic Index:
Under 5 years . . . . .	81.28 %
From 5 to 15 years . . . . .	80.2 %
Over 15 years . . . . .	80.5 %

*Distribution of the Various Forms of Malaria in Dalmatia.*

(According to Dr. Ivanic's Report.)

Month	Tertian	Quartan	Tropical	Quart. Tert.	Trop. Quart.	Trop. Tert.	Trop. Tert. & Quart.
June . . . . .	136	88	27	6	1	2	2
July . . . . .	90	169	67	11	8	4	—
August . . . . .	69	181	105	17	12	2	1
September . . . . .	34	197	165	13	9	4	—
October . . . . .	25	106	109	9	5	4	—

Malaria research undertaken in the Macva, Podringe District, Serbia, by Dr. Ljubinski, gave the following results:

The malaria season begins in July (the Save floods transform 30% of the Macva region, *i.e.*, 90,000 hectares, into a lake; the Drina, Surave and the Bassara contribute to the floods). These floods last more or less until October. Before the war, only tertian and quartan fevers were prevalent; the tropical form appeared after the war and is prevalent only during the second half of the malaria season, that is to say, during August and September.

*Splenic Index:* 25.04 %.

The percentage of the various forms according to Ljubinski is as follows:

Tertian . . . . .	75.0 %
Tropical . . . . .	21.0 %
Quartan . . . . .	0.3 %

The most widespread species of anopheles in the Macva is *Anopheles maculipennis*.

*Work accomplished in 1922.* — Among the work undertaken was the setting up of a Malaria Commission under the direction of Dr. Dschounkowsky, head of the Research

Laboratory for Tropical Diseases. It was decided to break new ground; particular attention was to be devoted to the study of local conditions and the development of malaria in endemic centres in Southern Serbia. Social, climatic and hydrological conditions were very carefully studied as well as the geology of these provinces. In order to make these investigations as complete as possible the assistance of hydro-technical, agricultural and climatical experts was obtained; zoological work was entrusted to local experts.

On the basis of general, technical and economic principles, an attempt was made to ascertain the characteristics of the rivers in Southern Serbia and to devise the best methods of putting their waters to use.

A brief monograph regarding the inter-relation between water systems and malaria under natural conditions and under those created by the carrying out of water-works was submitted by Prof. S. Maximoff, engineer.

This monograph was completed by a chapter on special points which must be borne in mind when hydrotechnical works are to be constructed in malarial districts.

From the agricultural point of view, the agronomic engineer and expert, A. Romanovsky, undertook comparative studies on the crops which might be cultivated with advantage instead of rice.

Special investigations were also carried out by a group of doctors regarding conditions of health among school-children and railway workers.

*Work done in 1923.* — In 1923, the anti-malarial campaign was entrusted to the permanent epidemiological institutes and to the bacteriological and anti-malarial stations. In the south of the Kingdom, the work was undertaken by the bacteriological stations at Skoplje, Bitolj and Novi Trogir; other stations were established at Štip and Struga. Each of these institutes possesses auxiliary stations distributed over its district and used as dispensaries. At Trogir, the anti-malarial campaign has also been further extended. An anti-malarial station was set up at Metković, together with a number of auxiliary stations, and in the same year investigations were carried out along the rivers Save and Danube by the bacteriological stations at Belgrade and Šabac and by the Research Laboratory for Tropical Diseases at Belgrade. The Belgrade station worked throughout the summer in order to collect as much material and information as possible on the distribution of malaria. The results of these investigations were published by the Ministry of Public Health in separate monographs.

The station at Šabac adopted the same methods. It collected information regarding the incidence and distribution of malaria and devoted special attention to the question of the spread of anopheles in its district. On the initiative of this station and under its direction, minor draining works were undertaken.

In the same year, in the neighbourhood of Kaviļjaca and ŝabac, the Belgrade Research Laboratory for Tropical Diseases dealt with the classification of the material collected by the Malaria Commission during the previous year, organised a malaria exhibition and undertook an investigation of the valleys of the Save and the Danube in the neighbourhood of Belgrade. Various methods of destroying larvæ were tested by the laboratory specialists, who used mainly gases and liquids. Special attention was also devoted to the study of the parasites found in the blood of animals and birds.

#### X. PROGRESS OF RESEARCH INTO INFECTIOUS DISEASES AND THE ANTI-MALARIAL CAMPAIGN.

An Institute has been founded at Skoplje, which will be in full working order next year. All anti-malarial institutions will then be under the control of this Institute and work under its direction. The final organisation of the anti-malarial campaign will be completed this year, and anti-malarial institutions will then be scattered over the country, all working for the same end.

This organisation aims at rendering large tracts of our Kingdom perfectly healthy within the next twenty years. At present, these tracts are centres of diseases, although they are some of the richest and most fertile parts of the Kingdom.

The following institutions are at present conducting the anti-malarial campaign: in Dalmatia, Montenegro and the Island of Krk, Rab and Pada; in Bosnia and Herzegovina, the anti-malarial institutions at Trogir; the bacteriological stations at Kraljevica, Cetinje, Mostar, Tuzla and 32 auxiliary stations; in Southern Serbia, the bacteriological stations at Skoplje, Novi Bazar, Prizren and Bitolj, and the anti-malarial stations at Stip and Struga, as well as 14 auxiliary stations. All these institutions are provided with special material and are under the direction of specialists; they possess an adequate staff and several motor-cars to ensure rapid service. At Belgrade, there is a special laboratory for research into tropical diseases, which devotes itself mainly to proto-zoological studies and to propaganda.

*Budget.* — The funds appropriated for this work in 1920 and 1921 were infinitesimal. In the 1924-25 budget the sum of 10 million dinars was appropriated for the anti-malarial campaign. Three million dinars were charged to the health budget for the construction of the Institute for Tropical Research at Skoplje. The Minister grants to the directors of the institutes the credits they require which have been provided for in the budget. The tropical research laboratory at Belgrade took a very active part in propaganda and in the popularisation of anti-malarial prophylaxy. The laboratory organised an exhibition showing by means of charts the importance

of the malarial problem throughout the world as well as in the Kingdom of the Serbs, Croats and Slovenes.

*Work now in hand.* — Since last year the anti-malarial institute at Trogir has been carrying out sanitation works, which have proved most successful. The same measures against malaria have been taken by the Kraljevica station in the island of Krk. In other parts of the country the institutes continue to devote themselves to the study of anti-malarial problems. In Macedonia, sanitation works will be carried out in various parts of the provinces along the Danube and the Save. The Belgrade station will carry on with the work begun in previous years. This year five sanitary columns have been organised at Belgrade, another at Zemun and another at Smederevo. In other parts of the country the sanitation works already begun will be carried on, and the laboratories will again devote themselves to the study of quininisation; they are preparing a plan for the sanitary organisation of Belgrade and its suburbs.

The worst period as regards quartan fever was September and October 1922, when at Opouzen from 46 to 47 % of the population were found to be infected; at Dernitch 60 %; at Derpolie 62 %. As regards the age of the persons suffering from malaria, it was found that, out of the 856 patients who were examined between May and July, 350 — therefore nearly half — were between 1 and 15 years old. It must be borne in mind, however, that of the persons examined the majority were school-children. Older persons are less liable to infection; the oldest patient suffering from quartan fever is 86 years, and the youngest 5 months. An examination of the spleen was carried out on school-children in Dalmatia. Out of 1,836 children examined, 982 were found to have enlarged spleens; 529 were normal and 325 showed a certain thickening.

The worst cases of enlarged spleen were found among adults from 30 to 56 years old. In children, enlarged spleens were found to be much rarer. It would seem, too, that women are more liable to this complaint than men.

Much attention was devoted to the destruction of anopheles in Dalmatia. Since this is one of the most important measures in the campaign against malaria, a special study was made of the places most favourable to the development of anopheles; these would appear to be stables, w.c.s, sheltered stairways and cellars. The number of anopheles varies according to the season. It has been noted that in Dalmatia the anopheles winter in stables, sometimes in dwellings, but very rarely in cisterns. They are very numerous in the spring, especially in May. In June and July they are most numerous in the valleys; they are then chiefly found in bedrooms and at that period they are already gorged with human blood.

It has been noticed that anopheles prefer dark and damp dwellings, and avoid kitchens where there is a fire and smoke. Anopheles decrease in September, but they reappear after the cold damp days of October.

The proportion between male and female anopheles varies according to the season; generally, however, it is 2 to 3. At the time of hatching the proportion between males and females is about 1 to 224. The mosquitos caught in May generally belong to a first generation which has lived through the winter; the second generation appears at the end of June and the third at the end of July. Anopheles breed mainly in ditches and puddles, but the water must be stagnant and free from vegetation. The larvæ require a constant current of fresh air.

It is important to note that anopheles larvæ have never been found in salt marshes, nor in pools of salt water in the neighbourhood of the sea, nor in cisterns containing rain or brackish water.

Anopheles are mostly found in dry and rocky places where drinking-water for the population and cattle has to be stored. The number of larvæ varies according to the season; they are most numerous in the spring and at the beginning of the summer; in September they increase again and decrease in October.

In Dalmatia, the species of anopheles most frequently found are the following: *maculipennis*, *elutus* and *algeriensis*. *Anopheles bifurcatus* has not been found in Dalmatia. *Anopheles superpictus* has been found at Soutorina in Herzegovina; the most common carrier of infection in Dalmatia, however, is *Anopheles maculipennis*.

The discovery of infection in mosquitos presents great technical difficulties, and only a carefully trained and experienced staff can undertake it. Among the types examined, *anopheles maculipennis* has given fewer positive than negative results.

Of the blood examinations carried out among the inhabitants of Dalmatia in the Neredva Valley in September and October 1922, an average of from 30 to 60 % gave positive results. Since this index, however, does not apply to the whole of the population and since the splenic index cannot always be ascertained, it would seem that this means of measuring the incidence of the disease can only give results which fall far short of actual facts.

It is thought that an estimate of the number of infected persons must depend upon the number of anopheles, upon the prevailing temperature and upon the parasitic index of the population itself.

As regards the number of anopheles, it has been found that this depends upon geological conditions and the distribution of water.

In a marshy valley like the Neredva Valley, about 20 km. long and covering approximately 200 sq.km., the number of malaria patients has been estimated at 15,000. In that part of the country the air is damp, mainly owing to sheets of stagnant water; the latter, moreover, are generally in the neighbourhood of the dwelling-houses. During the very hot part of the summer the water remains in the ditches and marshes and thereby provides a very favourable breeding place for the mosquitos.

Rocky, mountainous districts, where drinking-water is scarce, but where cisterns

have been dug in the neighbourhood of villages in order to store well-water for the needs of the population, are veritable reserves for anopheles. The frequency of malaria is, of course, affected by various causes, but depends mainly on the mosquito, which spreads the infection among the poor inhabitants, whose houses, in many respects, are not very different from stables; mosquitos also spread the infection, especially at night, among the herdsmen who come down from the mountains in the summer and autumn into the malaria-infected plains.

Malaria is also very easily spread in schools, in inns, and by the usual means of communication such as railways and ships. It can also be transmitted by germ-carriers far from the original place of infection.

Particular attention has been devoted by some specialists to the relation between social conditions and the incidence of malaria. They have carried out special research in various villages and have drawn up extremely interesting tables. 85 per cent to 90 per cent of the illiterate population live under very primitive conditions, in constant contact with the animals in the stables in which the mosquitos generally live. The dwellings are very rarely real houses; they are mostly miserable huts, 2 by 3 metres square, with mud walls and thatched roofs, open to wind and rain. The inside of these huts is dark and the air is foul. These people cook, eat, sleep, are born and die in these wretched huts. Owing to the complete absence of any sanitation, dwellings constitute a very favourable breeding ground for every kind of disease, tuberculosis as well as malaria. The children wear neither shirts nor shoes, are covered with rags, are accustomed to the stings of insects and are generally covered with scabies.

There are few houses in Dalmatia; the food in these mountainous regions is insufficient and monotonous and in some districts a bad harvest means famine, and the population does not seem to have much energy left to react against this state of affairs.

In the damper parts of the plains the population is on the whole better nourished, but the dwellings are also very unsatisfactory. Under such conditions, the population degenerates and becomes addicted to alcohol, believing it to be the only remedy against malaria. Thus the pathological cycle is complete, leading from insufficient nourishment to alcoholism, malaria and tuberculosis.

After having carried out investigations from house to house in the remotest districts in order to discover the causes of this national scourge, the specialists engaged in this work have devised a certain number of prophylactic measures specially suited to conditions in Dalmatia.

These measures are the following:

Carriers of parasites must be treated with quinine the moment the fever season begins — that is to say, in March and April. Quinine treatment must be given in all

positive cases; quinine must not, however, be left to the patients, but must be put into their mouths so as to make sure that it is actually taken. The sale or exchange of quinine is forbidden. Instructions are given for the destruction of anopheles either by means of brooms, or by the Giemsa wash, or by a solution of formaline and soap, and the use of mosquito curtains is advocated.

In order to destroy the breeding places of the anopheles, small marshes are filled in, the bigger ones cleaned out and puddles are cleared of vegetation; ditches in the fields and along the roads are cleaned and drained in summer and autumn. Another very useful measure, which at the same time benefits agriculture, is the draining of marshy districts with a view to putting the land under cultivation.

Some specialists have suggested a special system in order to improve food conditions in Dalmatia, since it is obvious that the campaign against malaria as well as that against other diseases would have much better results if the population were better fed. It is also thought that instruction given in the schools diffusing elementary notions on malaria infection by anopheles would be useful.

As has already been stated, an anti-malarial institute was founded at Trogir on the initiative of the Ministry of Public Health. In addition to this institute, there are two research stations, one at Spalato and one at Metković.

In conclusion, it may be mentioned that in Dalmatia tropical malaria on the whole appears in a mild form; no serious case has been reported, probably because the population is well supplied with quinine.

*Anti-malarial Prophylaxy Exhibition.* — The research laboratory for tropical diseases at Belgrade has organised an anti-malarial prophylaxy exhibition, with material provided by its own staff and laboratories. Visitors to this exhibition may learn everything on the subject of malaria, its origin, its distribution throughout the world and in the Kingdom of the Serbs, Croats and Slovenes in particular; they are made to realise the great loss this disease causes to the Kingdom since, according to information in the possession of the Ministry of Public Health, there are 1 million malaria-infected persons in the country, and the annual loss from this cause is computed at approximately 2 milliard dinars.

Visitors can also acquire useful information on the hæmatozoa, the cause of the spread of the disease, *i.e.*, the mosquito. Photographs, statistical tables, relief maps with descriptions of the geological structure of the country are shown in the museum for the instruction of visitors. The life-history of mosquitos and the transmission of parasites are illustrated very clearly in various ways. Detailed demonstrations of prophylactic measures are also given; the museum possesses models of all devices used for destroying mosquitos and their larvæ.

### XI. CAMPAIGN AGAINST TUBERCULOSIS.

The Ministry of Public Health has had great difficulty in collecting the information necessary for the study of the social aspect of this disease; it is still incomplete and inadequate, and the only data of any value are those based on the diagnosis of qualified doctors. The diagnosis of causes of death is generally made by priests who possess no medical knowledge whatever. The information thus collected has, however, a certain value for the study of tuberculosis, at least in the Kingdom of the Serbs, Croats and Slovenes (excluding Montenegro and Southern Serbia). The data obtained from Northern Serbia and Vojvodina are very incomplete. The following table will give some idea of the number of patients treated for tuberculosis in the hospitals of the Kingdom:

Period	Province	Number of Patients	Number of Hospitals	Sex Percentage	
				Masc.	Fem.
1920	Serbia . . . . .	3,711	27	55.96	44.04
1919-20	Croatia-Slavonia . . . . .	5,707	26	60.12	39.88
1919-20	Slovenia . . . . .	5,155	10	46.98	53.02
1919-20	Bosnia-Herzegovina . . . . .	3,367	27	67.27	32.73
1919-20	Dalmatia . . . . .	290	3	55.50	44.50

The morbidity figures for tuberculosis are particularly high in the hospitals in Bosnia-Herzegovina. It must be noted, too, that Mohammedan women suffering from tuberculosis are always nursed at home. Cases of tuberculosis of the lungs are very frequent in the hospitals in Bosnia-Herzegovina and less so in Slovenia, Dalmatia and Serbia. Admission to hospital is very unevenly distributed; in Slovenia, out of 100,000 inhabitants, 498 suffering from tuberculosis were treated from 1919-1920; and out of 100,000 inhabitants, 208 were admitted to hospital in Croatia-Slavonia, 179 in Bosnia-Herzegovina and 145 in Dalmatia.

On the basis of these figures, it is thought that the rate of tuberculosis mortality in Southern Serbia and Montenegro must be about 40 per 10,000 inhabitants. This proportion does not appear to be in any way exaggerated. Dalmatia and Slovenia are, perhaps, the least infected provinces of the Kingdom.

Period	Province	Rate of mortality from tuberculosis	
		per 10,000 inhabitants.	per 100 deaths from different causes.
1895-1919	Serbia . . . . .	29.7	15.19
1908-1918	Croatia-Slavonia . . . . .	42.8	16.82
1908-1920	Slovenia . . . . .	28.0	13.10
1908-1917	Bosnia-Herzegovina . . . . .	33.5	12.22
1876-1911	Dalmatia . . . . .	25.5	10.04
1908-1920	Voyvodina . . . . .	36.9	—

Figures for a few of the towns:

Period	Town	Rate of mortality from tuberculosis	
		per 10,000 deaths: from different causes.	per 100 deaths:
1900-1910	Belgrade . . . . .	86.7	34.62
1908-1918	Zagreb . . . . .	64.9	24.09
1908-1920	Ljubljana . . . . .	50.3	19.23
	Novi Sad . . . . .		
1908-1919	Zenta, Sombor (Voyvodina)	40.0	15.91

The influence of race and religion on tuberculosis has often been discussed. Very interesting information has been collected regarding Bosnia-Herzegovina and Voyvodina in this matter. Nearly the whole of the population of these provinces is of Jugo-Slav race, with a slight admixture of Albanians, Roumanian Turks and Greeks in Bosnia-Herzegovina; there are three different religions.

The Serbs are mostly Orthodox Greeks. The Croats are Roman Catholic, and part of the population of Bosnia-Herzegovina is Mohammedan. There are also Jews, who live in the towns, particularly at Sarajevo. They settled there at the time of the Inquisition in Spain.

Mortality from tuberculosis is highest among the Moslems, as women and children, in accordance with their religion, are confined to the harems. Next come the Serbs (Orthodox Greeks), then Catholics and Protestants, among whom death from tuberculosis is rare. Last come the Jews, who are least liable to tuberculosis.

It is an interesting fact that, among the cases treated for internal tuberculosis in 1919-1920 at the Sarajevo hospital, more than 40 per cent were Moslems and Catholics, whereas the surgical forms were found mostly amongst Orthodox Greeks and Jews.

Among the Serbs and in the Voyvodina, mortality from tuberculosis is very high, obviously not for economic reasons, since this is a very rich part of the country. The probable cause of the spread of this disease is the absence of sanitation. The houses are generally very badly built and insufficiently ventilated, and they are inhabited by several families living together. The feeding is irrational; too rich during the period of work in the fields and too abundant during the period of rest in winter. Drink is a further contributory cause. The Serbs are more addicted to this than the other races in the Voyvodina. Finally, superstition is a cause of contagion, especially among the women, who endeavour to hide the disease out of a feeling of shame and who, therefore, cannot be properly treated.

A few figures regarding mortality from tuberculosis in the Voyvodina are given below according to races and religions (per 10,000 inhabitants).

	Slavs	Germans	Hungarians	Roumanians	Jews	Average
Bela Crkva . . . . .	56.3	29.1	30.0	39.4	10.7	35.5
District of Vršac . . . . .	65.2	21.1	29.0	41.1	—	42.6

	Orthodox Greeks	Catholics	Protestants	Jews	Average
Novi Sad . . . . .	62.6	45.5	40.0	20.0	48.3
Velika Kikinda . . . . .	61.4	39.8	14.6	10.0	50.5
Bela Crkva . . . . .	50.0	31.5	30.4	10.7	35.5
Three Communes of Stari Becej	51.5	39.5	26.0	21.2	44.5

The campaign against tuberculosis is still in its infancy: there is an item of 20 million dinars inscribed in the budget of the Ministry of Health, to be spent within twenty years. Immediately after the war, several institutions took up the campaign against this disease; 30 anti-tuberculosis dispensaries were set up, and adopted the following programme of work:

These institutions apply all modern means of propaganda, in the dispensary itself and in the districts, in order to give the population an accurate idea of the manner of contagion and propagation of tuberculosis. Patients are treated free of charge. From the technical point of view, these dispensaries are independent; administratively, they are under the Ministry of Public Health and are therefore under the supervision of the divisional inspector. Their aim is to prevent the spread of tuberculosis and to give to those suffering from it appropriate treatment. Seeing that the tuberculosis patient is always the most dangerous cause of infection, the dispensaries must seek out the patients, isolate them in special institutions or at home and endeavour to give instruction on hygiene to their neighbours or parents.

These dispensaries undertake, so far as possible, to give treatment to the patient and to examine his family for tuberculosis. They also supply the families with the material means of keeping their dwellings clean, of looking after the personal cleanliness of the patient and the periodical washing of the linen. The staff of the dispensary acts as a link between the family of the patient and social or charitable institutions, so that he may receive not only medical assistance but also, if possible, better lodging and food. In any case, the staff is strictly forbidden to accept any remuneration from the patient himself or from his family. One of the aims of the dispensary is to protect children against infection by the family. Patients who are supposed to be cured are still kept under observation and work is found for them suitable to their state of health. The dispensaries assist them in finding another profession on their return to normal life.

Each dispensary is under the direction of a medical officer who devotes his entire time to this work. He directs the work of the dispensary in all its details and has

to keep in permanent touch with the other health and charitable institutions in order to extend the sphere of influence of his dispensary. On the 10th of every month he must furnish a regular report to the Health Authorities according to a form supplied by the Ministry of Public Health. He has also to prepare the budget of the dispensary and to keep the accounts.

He has a certain number of assistants and district nurses working under him; their number is determined by the Ministry, and they have all received a special technical training. Registers in which all statistical and clinical information is entered regarding the patients treated there are kept by the dispensaries. The work of the district nurses is the same as that of nurses in any other European dispensary.

In addition to the dispensaries there are in the Kingdom a few sanatoria for the prevention of tuberculosis founded for the especial purpose of saving the children from infection.

Among such institutions may be mentioned:

1. The sanatorium for children at Sabac (Serbia) with 60 beds. The children are admitted there during spring and summer for rest cures;
2. Sun-baths on the banks of the Danube at Novisad (Voyvodina);
3. Open-air school at Novisad;
4. The sanatorium at Lipik (Croatia) with 60 beds, for the scrofulous and adenic forms of the disease;
5. A preventorium with 60 beds at Palima (Bosnia);
6. The sanatorium on the island of Lokrum (Dalmatia), 150 beds;
7. The sanatorium at Kraljevica (Croatia);
8. The sanatorium for tuberculous cases at Topolsica (Slovenia), with accommodation for 120 patients and a special section for children, containing 100 beds;
9. The sanatorium at Brestovac (Croatia) founded by the social insurance associations;
10. A sanatorium for war invalids at Golnik;
11. Another at Surdulica (Serbia) with accommodation for 240 patients.

The prophylactic anti-tuberculosis campaign is carried on mainly by these dispensaries. In addition, there are isolation hospitals for serious cases.

## XII. CAMPAIGN AGAINST VENEREAL DISEASES.

The problem of venereal diseases and its solution has in recent years become more urgent and more difficult: the difference between the laws in force in the various parts of the Kingdom, the different levels of culture, the shifting of the population which followed upon the war, the conservative habits of certain classes of the population —

are all contributive causes. In certain parts of the Kingdom venereal diseases have become endemic. This is the case particularly with regard to syphilis. The suspicion with which the people receive any new regulations on these matters is well known, especially where medical measures are contemplated which touch upon their private life.

The Ministry of Public Health has to cope with a particularly difficult problem. Since hospitals, by their very nature, have very little chance of assisting in the campaign, the Ministry has had to find other means, *i.e.*, social medicine. In all prophylaxy there are three essential parts: treatment, popular education and the seeking out of cases. Hospitals and dispensaries can only deal with the first part of the work. When a sanitary decree on venereal diseases was promulgated it was soon found that it could not be uniformly applied throughout the country on account of the difference in the customs obtaining in the various provinces. The Ministry, therefore, had to change its policy and no longer sought a solution of the problem by means of compulsory measures but rather by means of popular instruction and the setting up of social institutions. In accordance with the provisions of the law of 1906, an attempt was made to organise a campaign against syphilis and blenorrhagia in Croatia; but it was soon found that the application of this law produced no results. Therefore a new law, organising the campaign against venereal diseases, was promulgated on November 25th, 1921. Dispensaries were set up in every province of the Kingdom, *i.e.*, fourteen in Croatia and Slavonia, seven in Voyvodina, four in Slovenia, three in Bosnia-Herzegovina, three in Dalmatia and fourteen in Serbia. New regulations were issued determining the duties and aims of the anti-venereal dispensaries.

The principal articles of these regulations are as follows:

“*Article 1.* — The anti-venereal dispensaries are Government institutions established for the purpose of seeking out cases of venereal diseases and of treating them. Medical attendance and medicines shall be given at the dispensaries free of charge. Each dispensary shall have its own well-defined sphere of activity determined by the Ministry of Public Health.

“*Article 2.* — The dispensaries shall be supplied with the necessary laboratory material and with the medicines used in modern treatment of venereal diseases.

“*Article 3.* — From the technical point of view these dispensaries shall be independent; administratively, they shall be responsible to the Ministry of Public Health and the Health Inspectors.

“*Article 4.* — The aim of the anti-venereal dispensaries shall be to check the progress of these diseases in the country.

“*Article 5.* — For this purpose it shall be their duty to instruct the public by the following means: personal consultation, public lectures, cinematographic shows with explanations, distribution of pamphlets and explanatory notices on the manner in which infection is spread and on anti-venereal prophylaxy.”

The staff of these dispensaries shall in a discreet manner endeavour to discover the source of infection when they are consulted by new patients. Patients who cannot continue their treatment at home and who therefore would constitute a grave danger for the community are advised to seek admittance in hospitals. The staff of the dispensary shall devote particular attention to the protection and preservation from infection of the families of infected persons. Daily charts are kept of the cases treated and records of patients who object to regular treatment by the doctor and refuse to take the necessary measures for their recovery. The dispensary must also impress upon the persons frequenting it the dangers they incur and the danger they are themselves if they marry before their cure is complete. The staff of each dispensary must keep in touch with all the dispensaries in the neighbourhood, and thus secure as complete a registration as possible of the cases in the district. The medical officers attached to the dispensaries are responsible for the examination of prostitutes. They must also submit the reports on the state of health of the district with regard to venereal disease.

“*Article 6.* — A medical specialist shall be at the head of each dispensary and his time shall be entirely devoted to this work. He shall have passed technical tests which from the legal point of view qualify him to occupy this post.”

The regulations quoted show that the work of these dispensaries is not restricted to the mere examination of patients. They are also responsible for social work consisting in seeking out centres of infection; their work is, in fact, etiological, pathological and at the same time therapeutic. As regards prophylaxy, no very definite instructions can be given. It is a very delicate task, which requires a great deal of tact and the methods to be applied must vary according to places and circumstances.

The system of dispensaries has not been working sufficiently long to have reached its full development; but it would seem that it represents a definite scheme of social prophylaxy which is likely to prove effective. The dispensaries have to send a monthly report on current work. These reports show that the number of patients seeking advice at these institutions is constantly increasing, together with the number of dispensaries. It is hoped that by this means cases of venereal disease will soon decrease both in number and gravity.

The number of patients suffering from the initial forms does not increase in the same proportion as that of patients suffering from other stages of syphilis. It has been noted that the number of persons attending the dispensaries simply to obtain prophylactic or other advice is by far the highest; this must be regarded as a good sign

since it shows the confidence which the population places in these institutions. The number of cases of venereal disease cured during one year is 7,500, and approximately 2,500 patients were sent to hospital; that is to say that, by means of the dispensaries and hospitals, 10,000 infected persons have ceased to be infectious and a danger to the whole population. Tables have been drawn up regarding the profession of the infected persons and regarding the etiology and social pathology of these diseases.

The Ministry of Public Health, desiring to form an idea of the degree to which venereal infection is prevalent in the country, sent detailed questionnaires to the health officers. According to the replies received, 15,000, cases were registered throughout the country during a period of six months. These figures, however, do not appear to be correct, since in the dispensaries alone 9,500 cases were registered during the same period.

As has been said in the part of this report dealing with health propaganda, popular education lectures are frequently given. They include cinematographic shows and lectures on anti-venereal prophylaxis. Circulars from the Ministry of Public Health lay down that lectures on the dangers of venereal diseases must be given to the older students at the colleges before they go out into the world.

In accordance with the regulations already quoted regarding anti-venereal dispensaries, the latter are responsible for the examination of prostitutes. The regulations in this respect are not, however, the same throughout the Kingdom. This is a defect which it is hoped will be remedied by the standardisation of laws applicable to all the provinces. In certain parts of the country prostitution is tolerated; in others it is prohibited.

To sum up, prophylaxy against venereal diseases, like that against malaria and tuberculosis, is directed by the medical officer in charge of the dispensary who devotes his time to that institution. It is hoped that further progress will be made in the near future. The Medical Association of the Kingdom has recommended that, in order to organise an even more intensive campaign against venereal diseases, licensed houses should be closed and that a medical certificate should be required of all persons intending to marry, that the anonymous registration of cases should be introduced and that the Wassermann test should be placed under State control. Everything tends to show that the campaign against this scourge is conducted with method and vigour.

### XIII. TRACHOMA.

In 1913, in certain districts of the Kingdom, 133 out of 100,000 inhabitants were found to be suffering from trachoma. Between 1894 and 1905, out of every thousand recruits, 46 were rejected for the same reason. Trachoma is very prevalent in the Macva district in Northern Serbia. Accurate information regarding the incidence

of this disease is, however, not available. The estimates made at the Belgrade Polyclinic, where, out of 1,000 patients treated for eye diseases, 147 were found to be suffering from trachoma, may give some idea of the prevalence of the disease. Most of the cases come from Northern Serbia. It is obvious that the war must have had a very unfortunate influence on the spread of this affection. At the end of the war, the Ministry of Public Health immediately undertook prophylactic propaganda against trachoma. Pamphlets were distributed and lectures given. Moreover, fifteen dispensaries were set up, distributed over the various provinces of the Kingdom, and working in close co-operation with the polyclinics for eye diseases.

The introduction of compulsory notification of trachoma has not given very encouraging results and has produced no information of any value. Serious difficulties, mainly social, render the campaign against trachoma less effective than it ought to be. A great many patients, however, come to the dispensaries for treatment. During the first month of 1924, 1,600 persons were treated for trachoma in the dispensaries. The aim of these institutions is not only to give treatment to patients but also to seek out new cases and to protect the families of the patients against infection. Medical inspections are carried out, particularly in the schools; caravan dispensaries have been set up, so that even in the remoter villages the population should be able to avail itself of the services of specialists. The caravan dispensary of Nova Gradiska visited fourteen villages in the space of one month and discovered 234 cases. This is obviously the best method of conducting the campaign against trachoma.

#### XIV. ALCOHOLISM.

In connection with the campaign against drink it must be stated at the outset that Article 27 of the Constitution prohibits the abuse of alcohol. The temperance campaign is a problem of social hygiene which is of particular interest to the Government, but the special law for the organisation of this campaign has not yet been promulgated. It is doubtful even whether it will ever be passed on account of the trade interests which would be affected by prohibition.

In the absence of any legal restriction, private organisations have to a certain extent taken up the campaign by means of propaganda and in the budget of the Ministry an annual appropriation of approximately 2,000,000 dinars has been made for this purpose. This sum must be spent on the campaign against alcoholism, conducted by temperance associations. The work of these associations based on propaganda has, up to the present, thanks to their energy and good organisation, achieved very encouraging results. The staff of the Ministry of Public Health includes specialists in the campaign and in propaganda against alcoholism. The Ministry of Public

Health considered that special attention must be devoted to propaganda in the schools; the Ministry of Public Education has set aside in the curriculum of the schools one special day every year for temperance propaganda.

Without waiting for the tabling of the anti-alcohol bill in Parliament, the Ministry of the Interior availed itself of the powers with which it was already invested to limit the trade in alcohol by various decrees. In consequence, the sale of strongly alcoholic drinks is prohibited in restaurants from 6 p.m. on Saturday to 11 a.m. on Monday; the sale of any alcoholic drinks to persons under sixteen years of age is altogether prohibited.

Seeing the difficulties with which the administration of the Kingdom still has to cope, it is not surprising that, up to the present, these regulations are only imperfectly enforced.

In May 1921, the Ministry of Transport issued a decree forbidding the use of alcohol to the personnel of railways and of shipping companies before going and while on duty. The Ministry of Public Health attaches particular importance to a special institution, somewhat on the lines of a dispensary, called "Temperance" station (*Trinkerfürsorgestelle*).

The aim of these institutions is the following:

1. To seek out persons addicted to alcohol and those likely to become so addicted.
2. To endeavour to find suitable means to induce persons addicted to alcohol to give up the habit.
3. To advise the family of a dipsomaniac in regard to his treatment, with a view to inducing him to give up the habit.
4. To protect the members of the family from a moral and social point of view, and to give them all possible material assistance.
5. To watch over the children of dipsomaniacs.
6. To serve as a link between the family of the dipsomaniac and the humanitarian institutions prepared to assist him in his struggle against intemperance.
7. To collect data on the progress of alcoholism in the district of which the station is in charge; to send a monthly report on the subject to the Ministry of Public Health.

In spite of numerous difficulties, economic and other, with which these institutions have to cope, they carry on their work steadfastly and with success. A station of this nature has been working since March 1924 at Belgrade, and another since January 1925 at Zagreb.

The Ministry of Public Health gives its support to all private associations of this nature, of which there are at present 41 in the Kingdom, and it is to be hoped that the law against alcoholism will soon be passed, giving the competent authorities the necessary powers to conduct an active temperance campaign.

## XV. SCHOOL HYGIENE.

The Ministry of Public Education is responsible for health supervision in all primary and secondary schools, and is, therefore, responsible for the medical inspection of the children attending the schools. The medical inspection of all children is compulsory on entering school. The district health officers usually examine the children in the villages when they are carrying out vaccinations or when an epidemic is threatened. In the small towns the children are under the supervision of the communal or municipal health officers. There are five school doctors in the service of Belgrade municipality to look after its 14 board schools. Nearly all secondary schools have their own doctors. These are generally health officers appointed by the Ministry of Public Education for the purpose. Efforts are being made, however, to train specialists in school hygiene; these doctors would not be allowed to practise privately since it would be difficult to carry on these two activities at the same time.

The Ministry of Public Health has laid down a curriculum for the teaching of hygiene in teachers' training colleges. This is an absolutely indispensable measure in order that teachers should be familiar with the methods of ordinary prophylaxis which must be taught to the children. The Ministry has, moreover, issued regulations for combating infectious diseases in the schools; these give a brief description of the symptoms and the measures which must be taken if an epidemic is threatened.

In order to secure more accurate information regarding health conditions in the schools, last year the Ministry sent out a questionnaire dealing with the condition of the premises, ventilation, the shape and condition of the desks, etc., and also with the physical and mental condition of the children. Replies have been received from all parts; most of them were supplied by the district medical officers, some by the teachers themselves. In this way it has been possible to form an idea of general conditions in the schools and of the state of health of the children attending them.

Once this preparatory work had been done, the Ministry of Public Health decided to introduce permanent medical inspection in the schools, to set up school clinics, special open-air schools and school sanatoria. The Ministry has already established in the island of Lokrum a sanatorium for anæmic children from Belgrade. Anti-tubercular dispensaries send a great many children to various places on the coasts of the Adriatic selected for their good climate. Regulations are already in force for the protection of the school-children; a few of these may be quoted.

*Article 12.* — Schools shall be set up for abnormal children who have been found on medical inspection to be incapable of following the ordinary teaching in primary schools. These special schools shall also admit blind, deaf and backward children; the number of children to be admitted will naturally depend upon the material equipment available for this purpose and upon the number of vacancies.

The teaching given in these schools shall be in conformity with the curriculum laid down by the special law of the Ministry of Public Education and with the instructions of the Higher Board of Public Education.

“*Article 13.* — These schools for abnormal children shall be established at the cost of the Government in particularly healthy localities selected by the Ministry of Public Health. They shall be boarding schools.

“Every August the medical officer for the county shall examine all the children and present a report on their health.”

According to the regulations for school medical inspection, children shall be removed from school in the following cases: (1) if they are suffering from an infectious or any other disease which constitutes a danger to the other children; (2) if they are physically incapable of going to school without undue difficulty or of doing the work required of them there; (3) if they are physically or mentally weak, deaf or dumb. Each county school which has at least 60 pupils shall be obliged to have its own medical officer appointed by royal decree.

Administratively, these are subordinate to the officials of the Ministry of Public Education, but in so far as their medical functions are concerned they are responsible to the Ministry of Public Health, from which they receive instructions in accordance with the law.

“*Article 153.* — The county medical officer shall annually carry out the medical inspection of all children in these schools and shall also give lectures on hygiene and prophylaxy. He shall give free attendance to the children and teachers in the schools, shall order the closing of the schools in case of epidemics and give instructions for combating the latter.”

*School Clinics.* — Up to the present, three school clinics have been set up at Belgrade and ten in the rest of the Kingdom. These institutions devote themselves to social medicine and their programme of work is governed by the following regulations:

“*Article 1.* — School clinics have been established for the protection of the school-children's health.

“*Article 2.* — It is the duty of these clinics to carry out periodical examinations of the children from the point of view of physical and mental development.

“*Article 3.* — Children shall be treated for every sort of defect. They shall be examined and given medical treatment for affections of the teeth, defective sight and hearing and oto-rhinolaryngological and cutaneous affections, for malaria, tuberculosis and mental deficiency.

‘ *Article 4.* — Every possible method shall be applied to prevent the propagation of infections.

“ *Article 5.* — First aid shall be given in cases of accident.

“ *Article 6.* — The clinics shall select the children who must be sent to the special schools for constitutional defects or retarded development.

“ *Article 7.* — The school clinic shall be under the direction of a medical officer specialising in school hygiene.

“ *Article 8.* — In addition to the director of the clinic, a number of specialists shall also attend the patients, with the assistance of specially trained nurses who shall visit the schools and sick children in their homes. ”

## XVI. INSURANCE AND PROTECTION OF WORKERS.

The law on the protection of workers was promulgated on June 14th, 1922. This law fixes the maximum hours of work in industry and in mines at 8 hours per day (48 hours per week) with one hour of rest. In cases in which a special contract has been concluded between employers and workers, and subject to the consent of four-fifths of the workers, the hours of work may be extended by two hours a day in industry and by one hour in the mines. On Sundays every kind of work is prohibited.

Night work<sup>1</sup> is forbidden for all women of whatever age and boys under 18 years of age.

The employment of children under 14 years of age is strictly prohibited.

Women are entitled to two months' rest before and after confinement. If a woman, as a result of her confinement, is unable to perform her ordinary work and produces a medical certificate to that effect, leave of absence for one year may be granted.

The competent authorities must give the mothers who themselves nurse their children the possibility of continuing to do so by allowing them the necessary time even during working hours. These rules apply in all cases of maternity, whether legitimate or not. In all industrial undertakings where more than 100 women are employed and there are more than 25 small children, the owners of the undertaking are obliged to provide crèches. New undertakings must make special arrangements for the children of the workers. Such undertakings must, moreover, submit to the health regulations in everything concerning conditions of work. The machinery and lathes must be regularly inspected so as to avoid accidents owing to deterioration. The workshops must contain a kitchen for the workers and a medical dispensary for urgent cases.

<sup>1</sup> Between 10 p.m. and 5 a.m.

The protection of the workers is organised by eight committees. These must give the Government and communal authorities information regarding decisions taken by workers' insurance associations regarding cheap lodgings, social hygiene, food conditions—in short, everything likely to affect the situation of employers and workers.

They must also supervise the application by the communal and Government authorities of the labour health laws and the rules governing relations between employers and workers in the matter of labour hygiene. They must act as arbitrators and mediators in the case of disputes between employers and workers regarding the application of any of the labour laws.

In order to organise employment, labour exchanges have been set up.

A regular inspection of work by a Government institution has been introduced; its director is generally a civil engineer.

The law on labour protection undoubtedly represents a great step forward in the field of social hygiene. Up to the present, however, it has been difficult to apply it everywhere owing to the scarcity of doctors specialising in labour questions.

The law on workers' insurance was promulgated on May 31st, 1922. In accordance with this law, workers may be insured against accidents, disease, disablement, old age<sup>1</sup> and death. A law on insurance against unemployment is under consideration. These insurance laws are applicable to all workers, irrespective of age, sex, or nationality. Workers for whom insurance is not compulsory may insure voluntarily; agricultural labourers, however, are excluded from the labour insurance scheme. Any person who employs more than five workers must register them with the district insurance agency. Workers are divided into classes according to their wages. The insurance premium must be paid every week.

Undertakings in which work is particularly dangerous must pay a supplementary tax. This tax is paid weekly by the employer. The tax for insurance against disease or accident (unconnected with employment) and against old age or death must be paid in equal shares by the employer and the employee, the latter's share being deducted from his wages. The insurance premiums against accidents occurring in connection with employment are paid entirely by the employer. Insurance premiums are not paid during the illness of an employee. The assistance and compensation given during disablement are the following:

1. Free medical attendance during twenty-six weeks and more; in certain cases, until the worker is able to return to work.

2. Medicines, nursing and orthopædic appliances are given free of cost to the patient during this period.

3. If disablement caused by an accident lasts more than three days and up to twenty-six weeks, the disabled worker receives two-thirds of his daily wages during the whole period. The attendance of midwives is given free of charge.

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<sup>1</sup> From seventy onwards.

4. Women are given an allowance two months before and two months after confinement, up to three-fourths of their wages. The mother receives for each child born alive an allowance equal to 14 days' wages. Other allowances are given in order to procure all the necessary care for the child. During twenty weeks after the period of confinement properly so-called, an allowance is given to the mother equal to the amount of her daily wage. Mothers who are previously insured and who can prove by means of a medical certificate that they are not able to feed their children at the breast receive, instead of the allowance granted for this purpose, the equivalent in food for the child.

5. The members of an insured person's family who receive no wages and who live in the same house are entitled, in case of illness, to free medical attendance so long as the insured person himself is entitled to such assistance. The wife, whether legitimate or illegitimate; the children, whether legitimate or illegitimate, as well as adopted children; parents; grand-parents; grand-children; the brothers and sisters of the insured person all are considered members of his family.

These allowances are paid to the insured persons through the local insurance agency. Sickness insurance can, however, not be paid for any period exceeding a year, and assistance to pregnant women cannot be given for any period exceeding three months.

The Central Labour Insurance Office is at Zagreb and all provincial branches are responsible to this office.

## XVII. CHILD WELFARE.

The law on child welfare was promulgated in 1922. According to its provisions, all war orphans and all children and young persons who are partially or totally orphaned and possess no adopted parents are placed under the protection of the Ministry of Social Affairs from the time of their birth until the age of 18. The application of this law is entrusted to the district committees, whose duty it is to set up the necessary institutions in order to educate and protect orphans or abandoned children, to exercise supervision over these institutions, to draw up the budget for their upkeep, to keep registers of the children who receive assistance, to endeavour to find homes for these children in families and to exercise supervision over the local agencies for the protection of abandoned children.

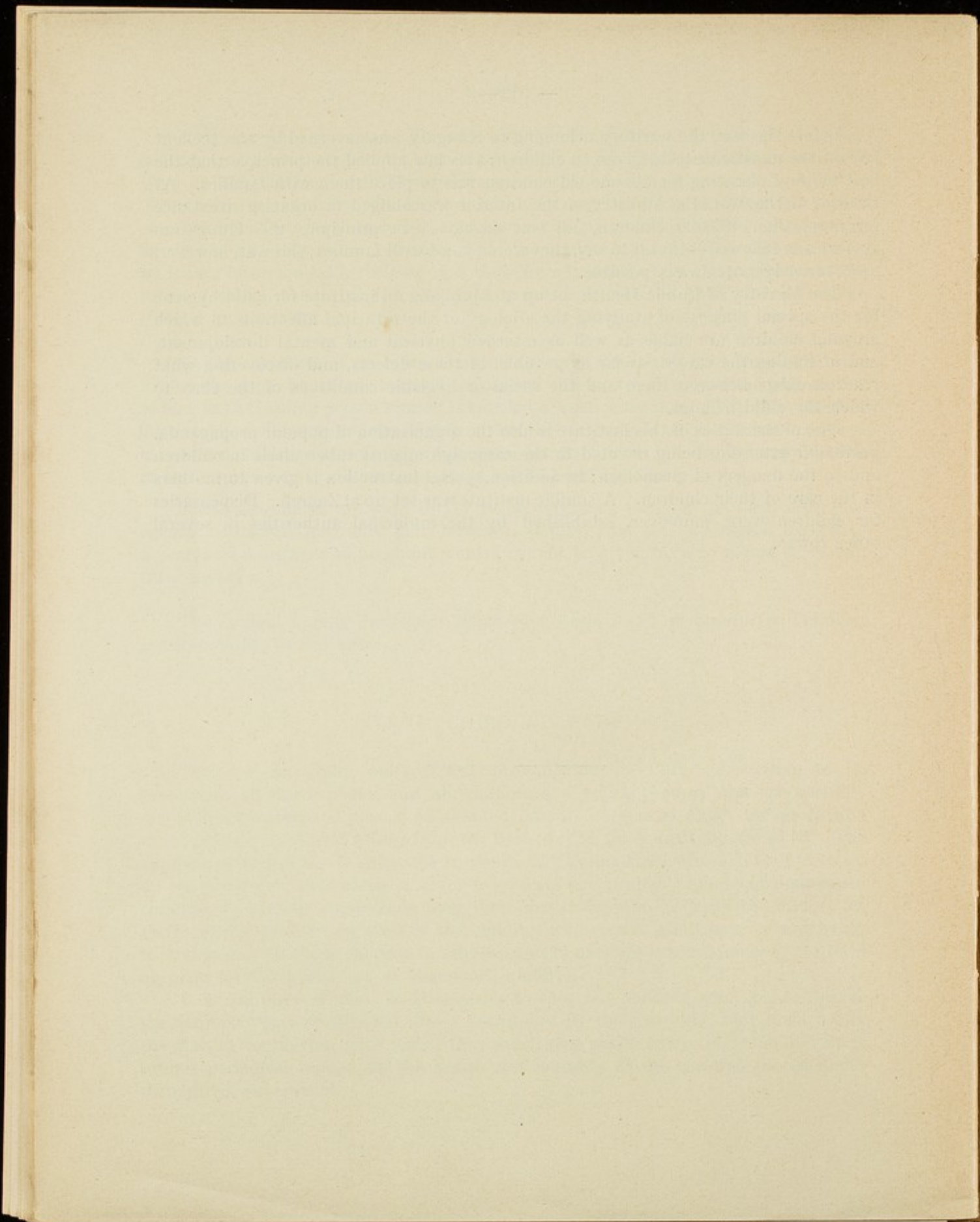
It is the duty of these local agencies to seek out children who do not receive the necessary care or who have been abandoned by their parents; they must notify the district committee, with which they must keep permanently in touch and must submit periodical reports on the health and morality of the children placed under their direct supervision.

Before the war, the territory belonging to Hungary was governed by an excellent law on the assistance to be given to children; this law applied the principle that the best method of caring for abandoned children was to place them with families. At the end of the war, the Ministry of the Interior was obliged to organise assistance for more than 100,000 children, all war orphans. In principle, the Hungarian system was followed—that is to say, they were placed with families; this was, however, unfortunately not always possible.

The Ministry of Public Health set up at Ljubljana an institute for child hygiene for the special purpose of studying the etiology of the principal affections to which growing children are liable as well as retarded physical and mental development, and of finding the causes, as far as possible, of these defects, and discovering what relation exists between them and the social or hygienic conditions of the class to which the child belongs.

One of the duties of this institute is also the organisation of popular propaganda, particular attention being devoted to the campaign against tuberculosis in children and to the dangers of alcoholism; in addition, special instruction is given to mothers in the care of their children. A similar institute was set up at Zagreb. Dispensaries for children were, moreover, established by the municipal authorities in several other towns.

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