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Appendix II



MEDICAL AND SANITARY DATA

ON

BULGARIA

(JANIS No. 38)



Compiled by

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PREVENTIVE MEDICINE DIVISION, OFFICE OF THE SURGEON GENERAL

U. S. ARMY

MAY 19, 1943

DOCUMENT NO. 0017
 NO CHANGE IN CLASS.
 DECLASSIFIED
 CLASS. CHANGED TO: TS S C
 NEXT REVIEW DATE:
 AUTH: HR 702
 DATE: 2 July 80 REVIEW

Appendix II

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(Prepared by the Medical Intelligence Branch, Preventive Medicine Division, Surgeon General's Office, U. S. Army, May 19, 1943.)

I. PUBLIC HEALTH AND ENVIRONMENTAL FACTORS INFLUENCING HEALTH AND SANITATION.—1. *Public Health Department*.—a. *Organization*. The national health organization of Bulgaria is known as the *Directorate of Public Health* (Direksia na Narodno Zdrave) and forms part of the Ministry of the Interior. The Director of Public Health is Dr. Ivan Balkansky, a former Rockefeller Fellow. Within the Ministry of the Interior the Directorate of Public Health is almost autonomous and maintains direct relations with other ministries. The Directorate of Public Health is divided into five Departments with duties as noted.

The *Public Health Department* has the following duties:

- (1) Supervision of urban sanitation (water supply, sewage).
- (2) Reclamation and drainage of marsh-land.
- (3) Medical inspection of schools, prisons, factories and hospitals.
- (4) Enforcement of sanitary regulations regarding streets and public institutions.
- (5) Inspection of food.
- (6) Operation of the Chemical Institute.

The Public Health Department is directed by a doctor of medicine assisted by an engineer and an architect.

The *Infectious Diseases Department* has the following duties:

- (1) Investigation and control of infectious diseases.
- (2) Operation of international quarantine stations (frontier stations).
- (3) Enforcement of laws and ordinances relating to infectious diseases.
- (4) Supervision of institutes of bacteriology and hygiene and maintenance of depots of sera, vaccines and medicaments.
- (5) Operation of the Bacteriological and Public Health Institutes.

The Infectious Diseases Department is directed by a doctor of medicine assisted by an epidemiologist, a chief medical inspector for malaria, and an inspector for tuberculosis and venereal disease. The malaria inspectorate though part of the Infectious Diseases Department is in practice largely independent.

The *Department of Hospitals* has the following duties:

- (1) Administration of hospitals and sanatoria.
- (2) Provision of supplies to these establishments and also to quarantine stations and ambulances.

The *Pharmaceutical Department* has the following duties:

- (1) Inspection of State pharmacies.
- (2) Control of the Central Depot of Pharmaceutical Products.
- (3) Provision of drugs and bandages for State Pharmacies.
- (4) Control of the quinine monopoly (with cooperation of the Malaria Inspectorate).
- (5) Licensing of pharmacists.

The *Financial Services Department* has the following duties:

- (1) Preparation of budgets of the Directorate of Public Health.

(2) Consultation with the Director of Public Health, the heads of Departments, and the General Medical Council.

The Directorate of Public Health is supplemented by an advisory organization, the *General Medical Council*, composed of ten members. These are the Director of Public Health, the Chief of the Army Medical Service, the president of the Bulgarian Medical Association, six physicians and one judge.

The more important functions of the General Medical Council are as follows:

- (1) Advice regarding proposed health laws.
- (2) Approval of budgets of the Directorate of Public Health and the health budgets of provinces and large towns.
- (3) Advice regarding entry into the country of persons suffering from infectious diseases; control of travel by persons suffering from endemic diseases who may attempt to move from one part of the country to another.
- (4) Conduct of qualifying examinations for physicians; supervision of the practice of medicine.

In addition to the Directorate of Public Health and the General Medical Council there are *local health authorities*. For public health purposes Bulgaria is divided into seven provinces corresponding to the administrative provinces and directed by provincial medical officers. Each province is subdivided into medical districts. There are 89 such districts, each of which is directed by a district medical officer. These districts are subdivided into medical sections. Of the 952 sections in existence in 1938, 636 were administered by physicians, while the remaining 316 were administered by "feldshers" (assistants who have had 2-3 years of special instruction).

The district medical officer continuously watches health conditions, orders any necessary improvements, investigates outbreaks of disease, supervises the observance of health ordinances and examines indigent patients free of charge both at dispensaries and at his own office. He is permitted to engage in private practice.

Every commune with a population of over 4,000 possesses a special communal health service directed by a communal medical officer. The larger communes have several such officers, as well as veterinary surgeons, "feldshers," midwives, and inspectors.

In addition to its central and local authorities the public health system includes the public hospitals (see part B.1). Approximately half of the hospitals in Bulgaria are government institutions.

b. *Scope and Estimate of Effectiveness*. In the last few years the Government has been vigorously attempting to enlarge and fortify the health services. Despite the bad financial condition of the country the Directorate of Public Health has received relatively generous budgets. In 1941 the Government authorized the Directorate of Public Health to conclude a loan of 200 million leva (\$2,500,000) for the construction of hospitals and other medical buildings. During the next year, 1942, 53 new health stations were completed. In March 1943 a bill introduced in Parliament by Gabrovsky, Minister

of the Interior, provided for a loan of 100,000,000 leva (\$1,250,000) for antimalaria work.

There is abundant evidence that additional public health facilities are needed. Thus in 1939 the tuberculosis death rate was 119 per 100,000 inhabitants, as contrasted with a rate of 46.5 for the United States. The infant mortality rate was 138.9 per thousand live births; the rate in the United States for the same year was 48.0. The morbidity rate for typhoid fever was 46.6 per 100,000 in 1938 and 38.4 per 100,000 in 1939. Of the rural health services or primary health centers in operation at the beginning of 1938, 65 per cent was directed by physicians, the others by "feldshers." Only 9 per cent of these rural health services could communicate with the outside world by railway and only 20 per cent by road. Of the villages concerned, 36 per cent had a public water supply and 20 per cent had electricity. The hospitals are inadequate in number and facilities. There is an average of one bed per 600 inhabitants, whereas the proportion in western European countries is generally one per 200, or even one per 100.

After the first world war the Bulgarians levied forces of conscripted laborers, many of whom were assigned to public works, especially antimalaria engineering. In January 1943 it was decreed that at least 30 per cent of the time of these compulsory labor battalions must be devoted to malaria.

2. *Water.* Since 1934 piped water supplies have been provided for increasing number of villages. In 1939, 43 towns and 453 villages had water supply systems (drinking water) which the League of Nations characterized, somewhat vaguely, as "less modern." 77 per cent of the total urban population and 18 per cent of the rural population—i.e. 31 per cent of the total population—were said to have "reasonably modern" water supplies. It is not known whether these supplies are acceptable according to American sanitary criteria. In 1942 approximately 200 additional villages were supplied. All sources of water supply are examined by the health services; approximately 8,000 samples of water are tested each year. In 1934 Sofiya completed a dam which gives the city ample water for present needs. In previous years there has been a shortage each summer, due to the lack of facilities for storage.

3. *Sewage.* In Sofiya there is a system of sewers but there is no sewage disposal plant. The untreated effluent drains into the Iskr River, about six miles southeast of the city. Elsewhere cesspools and ditches are employed. Soil and stream pollution are widespread.

4. *Insects and Animals of Importance to Man and Their Control.—a. Vectors of Disease.—(1) Mosquitoes.* The following anopheline vectors occur in Bulgaria: *Anopheles maculipennis* var. *typicus*, *A. maculipennis* var. *messeae*, *A. sacharovi* (also called *A. maculipennis* var. *elutus*), *A. superpictus*, *A. bifurcatus* and *A. pseudopictus*. An element of vagueness is present in certain of the published records due to the fact that in some of the observations of *A. maculipennis* the varieties are not distinguished. It will be remembered that the varietal taxonomy of *maculipennis* is comparatively recent.

Hackett, in his book "Malaria in Europe," says: "In southern Europe malaria often uses a combination of two or more anopheline species to prolong the season. In the Balkans *elutus* (*A. sacharovi*) follows *maculipennis* [sc. *typicus*, *messeae*] and *superpictus* follows *elutus*, and though none of them has a very long season the combined transmission period lasts from May to October, with a correspondingly intense malaria."

The most widely disseminated vector species of Bulgaria

is *A. maculipennis*. In the Danube valley the varieties *messeae* and *typicus* occur. In regions near the Black Sea *typicus* and *elutus* (*A. sacharovi*) are found, in addition to *A. superpictus*. Studies at Burgaz on the Black Sea yielded *elutus* 75 per cent, *typicus* 20 per cent, *messeae* 5 per cent. Near Petrich 95 per cent of specimens of *maculipennis* were of the variety *typicus*. Here the infection index varied between 0.3 per cent and 1.4 per cent in different years, the average being 0.8 per cent. Infected mosquitoes were found even in winter, although they were most numerous in July, August and September. The blood meals consisted of animal blood in 70-75 per cent of specimens and of human blood in 25-30 per cent. The maximum flight range was 4 km. (2½ miles).

Available descriptions of the ecology of Bulgarian vectors are fragmentary and must be supplemented by data derived from other areas. *Anopheles maculipennis* var. *typicus* in Bulgaria and elsewhere is not fastidious in its choice of breeding sites. It lays its eggs in fresh running water in plains or hilly regions, in springs, or even in stagnant water, in borrow pits, or close to the seacoast. This range of habitat is evidence of great adaptability. *A. maculipennis* var. *typicus* is zoophilic both in nature and in captivity. In a group of study areas near Petrich in southwestern Bulgaria satisfactory control was achieved by the use of Paris green. In other parts of the same region more fundamental engineering operations were performed, in order to control the channel of the Strumitsa river during periods of diminished flow. It was also necessary to stop mosquito breeding in irrigation ditches; Paris green was used for this purpose. In the Petrich area the control problem included *A. superpictus* as well as *A. maculipennis*.

A. maculipennis var. *messeae*, a zoophilic variety, breeds in marshes and in the border zones of inland seas, where reeds are abundant. It is found in Italy in lakes and river valleys in stagnant or slowly flowing water. Whether these ecological relations hold for *messeae* in Bulgaria is not known. In available reports the control of *messeae* is not discussed as a separate entity.

A. sacharovi (syn. *A. maculipennis* var. *elutus*) is an extremely important vector. It ordinarily prefers brackish waters and can tolerate a higher degree of salinity than the *maculipennis* varieties previously mentioned. Studies in Albania showed however that *sacharovi* could not develop in water having salinity greater than 2.2 per cent, a fact which has been used as a basis for control measures. *Sacharovi* breeds in coastal marshes such as those near the Black Sea, in inland marshes which are open to sunlight in midsummer, and in small temporary collections of water in which vegetation is present. It is found infrequently in slowly moving water. The species is avid for the blood of man. It enters dwellings and has a high sporozoite index. Control measures would presumably consist of drainage, dusting, and tide-gates; the latter would be employed to increase the salinity of certain coastal lagoons and marshes. The feasibility of airplane dusting would have to be considered. Buildings should be screened and sprayed.

A. superpictus is an extremely important vector in Bulgaria. It is encountered all over the southern part of the country and in the Vidin and Varna districts in the north. *A. superpictus* is ordinarily said to breed in hill country in sunny or slightly shaded pools, beds of small streams, in rivers which are nearly dry, in irrigation systems, and rice fields. In Bulgaria it also breeds in clean slowly flowing brooks with sandy banks. Since these brooks are rapid in the spring, *superpictus*

does not appear in large numbers until July and August. Years which have hot dry summers are known to be epidemic years in Bulgaria. Such years favor the breeding of *superpictus*; the mosquito then enters homes and stables regularly and bites man and animals, with the result that the infection index reaches 2-3 per cent. In unfavorable years the numbers are smaller; *superpictus* then rarely enters houses and infected specimens are not found. Whereas *superpictus* is the principal vector in parts of Cyprus it was shown to be less important in Greek Macedonia in spite of its abundance and relatively high sporozoite index.

Control measures against *superpictus* should consist of the spraying and dusting of small streams and pools. For more enduring results it might be desirable to consider the regulation of the channels of streams during periods of reduced flow. It would also be necessary to remove boulders and other small obstructions such as logs.

A. bifurcatus and *A. pseudopictus* occur in Bulgaria but are not regarded as important. *A. bifurcatus* has been observed at Petrich and *A. pseudopictus* in rice fields at Plovdiv. Both species are said not to enter homes and barns. In Palestine *A. bifurcatus* has been known to breed in cisterns under houses and thus produce intense urban malaria. It is not known whether a similar type of breeding occurs in Bulgaria.

No data have been found concerning the genera *Culex* and *Aedes* in Bulgaria. There is no evidence that diseases conveyed by *Aedes aegypti*—i.e. yellow fever and dengue—have ever been endemic in Bulgaria.

(2) *Lice*. *Pediculus humanus* var. *corporis*, the body louse, is common in Bulgaria. This insect is the vector of epidemic typhus fever, trench fever and relapsing fever. *Phthirus pubis*, the crab louse, is found throughout Europe and hence presumably occurs in Bulgaria.

(3) *Flies*.—(a) *Psychodidae* (sandflies). Four species occur in Bulgaria: *Phlebotomus papatasi*, *P. minutus*, *P. sergenti*, and *P. perniciosus*. *Phlebotomus* flies are vectors of leishmaniasis and papataci fever (sandfly fever). No records have been found of the occurrence of leishmaniasis in Bulgaria. Papataci fever occurs especially in warm areas such as Plovdiv. Sandflies lay their eggs in cracks and crannies, in soil, old ruinous walls, piles of rubbish, and between boards of privies and cesspools. The flying and biting occur at night. Control measures consist of cleaning and clearing of the ground, removal of debris, and filling of crannies. The ground in the immediate vicinity of barracks should be oiled.

(b) *Muscidae*. The common housefly, *Musca domestica*, is widespread throughout southern Europe. It is filthy in its habits and acts as a mechanical carrier of intestinal pathogens such as those of typhoid fever, paratyphoid, dysentery, and helminthiasis. Flies of the genus *Stomoxys* (stable flies, "biting houseflies") are said to be numerous in Bulgaria but precise data are not available.

(c) *Other Diptera*. Species of the families *Ceratopogonidae* (biting midges) are known to occur. The *Sarcophagidae* (flesh flies) are represented by the species *Wohlfabria magnifica*. Both this species and a species of *Hypoderma* (bot fly) and members of the *Oestridae* (sheep bots) have been known to produce human myiasis in Bulgaria.

(4) *Ticks and Mites*. Twenty-two species of ticks have been reported. These belong to the genera *Ixodes*, *Rhipicephalus*, *Boophilus*, *Hyalomma*, *Dermacentor*, *Haemaphysalis*, *Alloceura* and *Argas*. Table 1 lists species which are believed to be vectors

of disease in Bulgaria or elsewhere. The chief tick-borne disease of man which is suspected to occur in Bulgaria is *fièvre boutonneuse*, carried by *Rhipicephalus sanguineus*, the brown dog tick.

Tick paralysis of cattle, sheep and goats has been reported from southern Serbia; its occurrence in Bulgaria is probable but definite records have not been found. In other countries the disease has occurred in man. *Ixodes ricinus*, a probable vector, occurs in Bulgaria. (See Table 1.)

Mites. *Sarcoptes scabiei*, the mange mite, is common in Bulgaria, especially in schools and other institutions. The grain mite, *Pediculoides ventricosus*, ordinarily parasitic on insects, occasionally attacks man and produces acute dermatitis accompanied by vesiculation and fever. The inflammation may last for several weeks. The condition usually occurs during the autumn harvest. *Trombicula autumnalis*, a harvest mite, is common throughout southern and central Europe. It produces intense dermatitis.

(5) *Fleas*. *Xenopsylla cheopis* (the Oriental rat flea), *Pulex irritans* (the human flea), *Ctenocephalus canis* (the dog flea), *C. felis* (the cat flea), and *Nosopsyllus fasciatus* (European rat flea) are said to occur throughout Europe and hence presumably occur in Bulgaria.

(6) *Rodents*. The Norway rat (*Rattus norvegicus*) is assumed to be the species most prevalent, although adequate data are not available. The black rat, *R. rattus rattus* and the roof rat *R. rattus alexandrinus* are also believed to be present.

(7) *Other animal species*. The following are known to occur in southern Europe or in the Balkans and presumably occur in Bulgaria, although records have not been found. *Scelopendra eingulata*, the common centipede, occurs in southern Europe. Its bite is painful and may be followed by urticaria. *Butbus maurus*, the poisonous black scorpion, occurs in southern Europe and the Balkans. *Latrodectus tredecimguttatus* (black widow spider) occurs in the Balkans. Its bite produces muscle pain and severe circulatory depression.

b. *Snakes*. *Vipera ammodytes*, the sandviper or long-nosed viper, occurs in Bulgaria. It prefers dry stony hills with low bushes, which it frequently climbs. Its bite is often fatal to man. The common viper (*Vipera berus*), a poisonous snake, and the less poisonous Orsini's viper (*Viper ursinii*) have been reported from Yugoslavia.

c. *Pests*. *Simuliidae* (black flies, buffalo gnats). *Simulium reptans columbaczense* (Golubatz or Columbacz fly). This insect occurs in parts of Bulgaria, Rumania, and Yugoslavia, especially along the Danube. It is present in enormous numbers during April and May in certain years only; at such times it could interfere with military operations, since it is an active bloodsucker and causes painful bites. This insect is said to be most annoying in cloudy weather when the air is still. On the wind it may be carried 50 miles or more. Breeding occurs in running water, e.g., shallow creeks. Control is difficult.

Tabanidae (horseflies). Sixty-five species and varieties of these bloodsucking flies are known to occur in Bulgaria. They breed in water, earth, mud and sometimes in decaying wood. No data are available on the importance of Bulgarian tabanids in the transmission of disease. Presumably these insects act chiefly as pests. It should be remembered however that tabanidae are occasional transmitters of anthrax, a disease which is common in Bulgaria. Surra, a highly fatal disease of horses, has been reported in Bulgaria. The causative

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organism, *Trypanosoma evansi*, is believed to be transmitted by tabanids.

Dogs are extremely numerous in Bulgaria (1,384,520 reported in 1928); both rabies and echinococcus disease are common.

5. *Food and Dairy Products in Relation to Health.* The majority of Bulgarians (81 per cent) are engaged in agriculture. The typical Bulgarian is a peasant who owns several very small plots of land, which he cultivates with the aid of his family. The methods of cultivation are crude and inefficient and the yields are low. Hence poverty is widespread.

The Bulgarian peasant is typically lean and frugal. His daily intake is about 3500 calories (carbohydrate 644 grams, protein 114 grams, fat 55 grams) derived from the following principal sources: flour 72 per cent, meat and fat 10 per cent, dairy products and eggs 6 per cent. The diet is thus predominantly vegetarian. The high carbohydrate intake represents a high consumption of bread whereas the intake of fat is low. Most of the protein and carbohydrate is of vegetable origin. The diet has been found to be inadequate in the mountain districts especially; in other parts of the country it is inadequate only during certain seasons. Pellagra is said to be relatively common.

An interesting and characteristic component of the Bulgarian dietary is yoghurt, which is milk fermented by *Lactobacillus bulgaricus*. In Bulgaria yoghurt is made from the milk of goats or buffaloes rather than from cows' milk.

Milk is rarely drunk raw but is usually boiled by the ultimate consumer and butter is made from the boiled product; pasteurization is rare. Cows are tested annually with tuberculin, the positive reactors being killed. In 1929-33 of 103,023 cows tested, 3.92 per cent reacted positively. In 1937 the rate was 2.13 per cent, and ranged from 0.2 per cent near Sofiya to 12.1 per cent near Stara-Zagora. These statistics show that the use of fresh milk and its derivatives is dangerous. Boiling or pasteurization should not be omitted.

According to an official American statement, tuberculosis and other diseases of poultry are uncontrolled. Hence local fowl should be used only under strict supervision of Army inspectors.

Because of the common practice of soil pollution and the relatively high incidence of helminthiasis and enteric infections, vegetables of local origin should not be eaten raw and locally produced meats should be cooked thoroughly.

Soil pollution, stream pollution and enteric infection are frequent. Hence drinking water must always be boiled or treated. The Bulgarians are also in the habit of using natural ice, which is obtained from frozen rivers and hence is polluted.

6. *Miscellaneous Problems of Sanitation.* Bulgaria is a country of impoverished backward peasants, undernourished but long-lived. Public health is still in the stage of organization and has as yet made relatively little progress.

The health problems of rural Bulgaria have been summarized as follows:

"a. The organization of a campaign against the high infant mortality rates and the high incidence of acute and chronic contagious diseases;

"b. Improved medical assistance and the provision of such assistance at an earlier stage in the villages;

"c. The inculcation of the main principles of prophylaxis among country dwellers (i.e., the development of education in health principles);

"d. The improvement of the diet of rural populations;

"e. The improvement of dwellings and the arrangement of credits for the construction of sanitary houses;

"f. Measures to obviate the dangers to health presented by organic waste matter."

II. *MEDICAL FACILITIES.*—1. *Hospitals.* In 1939 there were 75 hospitals, with a total of 8,644 beds, under the Directorate of Public Health; in addition there were three municipal hospitals with 82 beds, and five other State hospitals under other government departments (1,434 beds). This gives a total of 83 government hospitals and 10,160 beds. To this must be added 91 private hospitals with 1,834 beds. This makes a grand total of 174 hospitals and 11,994 beds. The official statistics will be found in the appendix (*Table 3, Hospitals and Dispensaries, 1939; Table 2, Hospitals of Bulgaria, Location and Capacity, 1938*). Not included in these enumerations is a hospital on the premises of the former Hotel Palais Zarevitz in Bankya village. This has been organized as a military hospital and has 200 beds for surgical cases. The staff is mainly German but includes a few Italians.

Throughout Bulgaria most of the hospital equipment is of German origin. This is due partly to the fact that many of the physicians are graduates of German universities and partly to the fact that trade with Germany is conducted under a special clearing agreement. According to a statement published under the auspices of the League of Nations in 1940, the number of beds and the facilities offered by the hospitals of Bulgaria are insufficient, there being an average of one bed per 600 inhabitants, whereas the proportion in Western European countries generally is one per 200 or even one per 100.

2. *Medical Practitioners.* The most recent official Bulgarian statistics were published in 1940 and represent the state of affairs at the end of 1939. At that time there were 3,127 physicians for a population of 6,300,000, a proportion of approximately 1:2000. In the preceding 4 years there had been an increase of 15 per cent in the number of physicians, whereas the population had increased 3.3 per cent. Eighty-four per cent of the physicians were males, 16 per cent females. Sixty per cent were in government service, 40 per cent were in private practice. Most of the population is rural while most of the physicians are urban. Thus in the cities there is one physician to 570 persons; in rural districts 1 to 7,443. In Sofiya, the proportion is 1:346. Only 34 per cent of the physicians obtained their diplomas in Bulgaria. In part this is due to the fact that the only medical school in Bulgaria, that at Sofiya, was not opened until 1918. The following table shows the principal foreign countries of graduation:

Austria.....	577
Germany.....	396
France & Belgium.....	320
Russia.....	230
Switzerland.....	187
Italy.....	155
Yugoslavia.....	71

1,936

Other medical personnel. The following table abstracted from official government statistics represents the state of affairs at the end of 1939:

Physicians.....	3,127
Dentists.....	1,206
"Feldshers".....	1,190
Midwives.....	918
"Sisters of Charity".....	462
Pharmacists.....	860
Pharmacists' assistants.....	325

3. *Medical Institutions, including Laboratories.*

- a. The University medical school at Sofiya.
- b. The Institute of Hygiene at Sofiya, established with the aid of the Rockefeller Foundation.
- c. A rural health demonstration service at Noveseltsi, maintained with the collaboration of the Rockefeller Foundation.
- d. Schools of nursing at Sofiya, Skoplje and Plovdiv.
- e. A central veterinary institute at Sofiya with subsidiaries at Trnovo and Stara-Zagora and other stations at Burgaz, Plovdiv, Vrattsia, Plevna, Ruse, and Varna. These institutes presumably possess laboratories.
- f. In 1935 there were said to be 120 animal hospitals in Bulgaria.

4. *Social Services.* Bulgaria possesses a Red Cross organization, which has ratified the Geneva conventions of 1864, 1906, and 1929. In 1939 the Bulgarian Red Cross was said to have 850 local committees, 50,000 adult members; the Junior Red Cross had 730,000 members (children). The annual receipts were 9,561,087 leva (approximately \$100,000). The Bulgarian Red Cross issues several periodicals, maintains a hospital and a school of nursing, gives first-aid courses, and is responsible for disaster relief. All government employees are required to join. There is evidence that the Bulgarian Red Cross cooperates with or is coordinated with the German military organization. Thus in 1942 the Bulgarian Red Cross was stated to be operating a field hospital in collaboration with the Germans.

III. DISEASE INFORMATION.—1. *Diseases of Special Military Importance.*—a. *Malaria.* Malaria is highly endemic or even hyperendemic in certain regions of Bulgaria. Many streams flow from the mountains and make their way through plains and lowlands. As a result of flooding or other imperfections of drainage, large areas are permanently or temporarily converted into swamps and thus become malarious. These places are (1) the Danube valley, (2) the Maritsa valley, (3) the Struma and Strumitsa valleys, (4) the coast of the Black Sea [see map: Bulgaria: Principal Malarious Areas]. In these malarious areas there are about 1,000,000 inhabitants, of whom about 300,000 are infected with malaria. This equals approximately 6 per cent of the total population of Bulgaria. In a group of twelve trial areas near Petrich in southwest Bulgaria the children were found to have spleen indices of 90-95 per cent and parasite indices of 60-65 per cent.

It must be remembered that the Balkans constitute the most malarious part of Europe. Moreover the province of Macedonia, world-famous as a breeding ground of malaria, is immediately adjacent to old Bulgaria; the eastern districts have been partly occupied by the Bulgarians since the German invasion of Yugoslavia and Greece.

The malaria season runs from May to October. *P. vivax* is the species most often found, *P. falciparum* is next in frequency; *P. malariae* is rare. Infections occurring in the spring

are almost exclusively due to *P. vivax*. In the late summer and autumn—i.e. at the height of the season—*P. falciparum* appears in increasing numbers. Blackwater fever is seen at Burgaz and Petrich.

The most important malaria vectors are *A. maculipennis* var. *typicus* and *messeae*, *A. sacharovi* (also called *A. maculipennis* var. *elutus*) and *A. superpictus*. *A. bifurcatus* and *A. pseudopictus* occur but are unimportant. In the Danube area *A. maculipennis* var. *messeae* and *typicus* occur. Here only tertian malaria is found, and the spleen index is 5-10 per cent. Near the Black Sea the prevailing forms are *sacharovi* and *typicus*; *superpictus* is also found. In this region *P. vivax* infections are widespread in spring; in the autumn *P. falciparum* infections are also abundant, so that the spleen index reaches 80 to 100 per cent. The same conditions prevail in the Struma region in southwest Bulgaria. In the Maritsa district the morbidity is intermediate between that of the Struma and that of the Danube.

The incidence of malaria is affected by certain additional factors. The population is predominantly agricultural and each year many people migrate to the malarious lowlands in search of agricultural employment. Since water is often scarce, the population tends to concentrate near extant supplies. The cultivation of rice—e.g., at Plovdiv—involves irrigation and thus is a factor in the occurrence of malaria. At a conference of cabinet ministers in January 1943, the Ministry of Agriculture was charged with inspecting rice fields in order to suppress the cultivation of rice in fields closer than 1 km. to human habitations.

In 1932 the League of Nations Health Organization estimated the quinine requirements of Bulgaria as 6,000 to 7,000 kg.

b. *Typhus.* Typhus, a disease of immense military importance, is endemic in Bulgaria and has been epidemic there. In 1914-1916 the incidence averaged 7.9 per 100,000 inhabitants. After Bulgaria's entry into the first World War the incidence rose to 110.1 per 100,000. The following table shows the occurrence of typhus since 1938:

Year	Cases	Cases per 100,000
1938	91	1.5
1939	129	2.0
1940	126	2.0
1941	253	4.2
1942	649	10.7

Additional data will be found in Tables 4, 5, 6, 10.

During the winter of 1942, 43 new cases occurred at the rate of 30 to 50 per week; the Government established medical detachments to combat the disease and also instituted a delousing program. In Bulgaria the months of maximal incidence have usually been February, March, and April.

c. *Intestinal infections.* Diseases of the enteric group—typhoid fever, paratyphoid, and the dysenteries—constitute a major military hazard. The Bulgarian Government has recently (1942) given typhoid vaccination to a large but unspecified number of people; this fact is of relatively little weight since the total sanitary situation remains favorable to the spread of all varieties of intestinal infection. In 1938, 2,911 cases of typhoid were reported; in 1939, 2,417 cases. The morbidity rates for these two years were 46.6 and 38.4

per 100,000. The morbidity rates for cases reported as "diarrhea and dysentery" were 23.4 and 14.1 for 1938 and 1939. It is noteworthy that the case fatality rates for diarrhea and dysentery were reported as 1.5 per cent and 15.0 per cent during the same two years [see Table 10—Incidence of Contagious Diseases].

The reports do not distinguish between bacillary and amoebic dysentery. It is probably that both kinds are present and that the bacillary type is the more common. Large outbreaks due to the Shiga bacillus and to the Flexner bacillus have been recorded. Numerous cases of mild enteritis likewise occur.

Cholera appeared during the first World War but is not known to have reappeared in recent years. Contagious abortion (brucellosis) of cattle exists in Bulgaria but precise data are not available and no reports of human brucellosis have been found.

d. Venereal Diseases. Very little information is available as to the prevalence of venereal diseases in Bulgaria. In the year 1939, 22 urban deaths were ascribed to syphilis, or 1.3 per thousand deaths. The cities of Burgaz and Varna on the Black Sea are reported to have a high incidence of "venereal disease" but no detailed information has been found.

e. Acute Infectious Diseases and Exanthemata. Scarlet fever and diphtheria are unusually prevalent. Thus in 1939, there were 5,699 reported cases of scarlet fever, or 90.6 per 100,000 of population. In the winter of 1942-43 new cases occurred at the rate of 120 per week. In 1939 there were 5,366 cases of diphtheria or 85.3 per 100,000 [see Table 10: Incidence of Contagious Diseases—1938-39]. A campaign of diphtheria immunization was conducted in 1942.

Meningitis increased sharply in incidence in 1939. Thus in Sofiya the incidence was 2.7 cases per 10,000 of population [see Table 9: Contagious Diseases—Sofiya—1938-39]. During the winter of 1942-43 new cases occurred in Bulgaria at the rate of 5 to 10 per week.

Sandfly Fever. Sandfly fever (papataci fever), a virus disease conveyed to man by species of *Plebotomus*, has been reported from Bulgaria. The disease resembles dengue in that it produces a high morbidity rate and can seriously interfere with military activities.

2. Diseases of Potential Military Importance.—a. Endemic.—

(1) *Relapsing Fever.* Data are not available concerning the occurrence of relapsing fever in Bulgaria. Louse-borne relapsing fever is, however, endemic and occasionally epidemic in Yugoslavia and other Balkan countries. The high incidence of typhus, a louse-borne disease, is additional evidence that louse-borne relapsing fever may break out. Less evidence exists on the subject of tick-borne relapsing fever. The tick *Argas persicus* which is a possible vector in Iran also occurs in Bulgaria.

(2) *Fievre boutonneuse.* This disease is a rickettsial infection and is transmitted to man by *Rhipicephalus sanguineus*, the brown dog tick. The principal range of the disease is the Mediterranean area. It occurs in Rumania and Greece, and its vector is known to occur in Bulgaria. Hence the occurrence of fievre boutonneuse in Bulgaria is probable but no reports of its presence have been received.

(3) *Epidemic kerato-conjunctivitis*, a virus disease of potential military importance, has been reported from other parts of the Balkans but there are no reports from Bulgaria.

b. Diseases That May be Introduced from Other Regions.—

(1) *Cholera.* There are no reports of cholera having occurred in Bulgaria in the last two decades. A large outbreak occurred in 1913 and cholera occurred elsewhere in the Balkans at the end of the last war. Because of its situation between Turkey and Russia, Bulgaria is believed to be constantly threatened with cholera.

(2) *Plague.* There is no evidence of the recent occurrence of plague in Bulgaria. Two cases were observed at Varna in 1924. Plague could conceivably be introduced through the ports of Burgaz and Varna at any time.

(3) *Trench Fever.* This is a louse-borne rickettsiosis which appeared in the Balkans during the first World War. It has been reported on the Eastern Front during 1942 and, like other louse-borne diseases, could occur in Bulgaria.

3. Serious Diseases of Non-Military Importance but Likely to Affect Small Numbers of Troops.—a. Tuberculosis. In 1939, 4,392 deaths were ascribed to tuberculosis. In 1939 in the urban population all forms of tuberculosis caused 2,262 deaths (162 per 100,000). In the village population there were 2,130 deaths (119 per 100,000). In the United States during the same year the death rate for tuberculosis (all forms) was 46.5. Thus the death rate in Bulgaria is approximately 3 to 4 times as high as that in the United States, if it be assumed that the statistics are comparable.

b. Anthrax is endemic among human beings and domestic animals. Between 1900 and 1933, 13,749 animals died of it in Bulgaria. During the decade 1926-1935, there were 7,241 human cases and 597 deaths. Other statistics will be found in Table 10—Incidence of Contagious Diseases. Anthrax of lower animals occurs in many parts of Bulgaria especially near river lowlands, such as those of the Danube and the Maritsa. It is most often found among animals grazing in pasture lands from which flood waters have recently receded. The disease is rare in mountain regions. Its incidence among animals is greatest in the warm part of the year. It is seen most often among sheep and cattle, less often among horses, goats, swine and buffaloes.

c. Rabies is virtually uncontrolled in Bulgaria. In 1937 there were 1,371 cases reported in animals, including 1,081 dogs, 86 cattle, 88 swine, 57 cats, 11 buffaloes, and others. During the same year 5,196 persons were given antirabic treatment. In 1928 the reported canine population was 1,384,520.

d. Helminthiases. Worm infestations are stated to be frequent in Bulgaria but little exact information is available.

Echinococcus disease is known to be present in about one-third of the cattle and in three-fourths of the sheep. Reported infection rates in dogs range from 3 per cent to 52 per cent. One author states definitely that there are no statistical data extant concerning prevalence of the disease in human beings in Bulgaria. It has been observed that in cases seen in Bulgaria the incidence of pulmonary involvement is higher than in cases reported from other countries.

Fasciola hepatica infestation is said to be very widespread in animals and has been known to occur in human beings.

4. Diseases Causing High Morbidity and/or Mortality Rates Among the Native People.

a. Malaria.

b. Tuberculosis all forms; lupus.

c. Acute Infectious Diseases—scarlet fever, diphtheria, epidemic meningitis. For the past decade a very virulent form of scarlet fever has prevailed in eastern Europe and the Balkans. Although definite data from Bulgaria are not avail-

able, the case fatality rate in Rumania has ranged as high as 15-20 per cent in some localities. Diphtheria also has been serious, a particularly severe epidemic having prevailed in central Europe in the past winter.

d. Typhus.

e. Typhoid fever, paratyphoid fever, and the dysenteries.

f. Venereal diseases.

g. Anthrax.

b. Papataci fever.

i. Erysipelas. This disease is relatively common in Bulgaria. Thus Table 9, which contains statistics for contagious diseases in Sofiya, shows that 237 cases of erysipelas were reported in that city in 1938 and 286 cases in 1939. Table 12 contains statistics for the whole of Bulgaria for six months of 1938 and shows a grand total of 1,143 cases. It is possible that the disease might be introduced into the armed forces.

5. *Miscellaneous*.—a. *Yellow Fever*. Yellow fever is not known to have occurred in Bulgaria. However, it is thought that the disease could conceivably be introduced from Africa by airplane or might be introduced by a boat docking at Burgaz or Varna in the spring or summer. No report is available of the occurrence of *Aedes aegypti* in Bulgaria.

b. *Tetanus* is said to occur frequently and is reported to be relatively mild.

c. *Poliomyelitis*. Small numbers of cases occur during all seasons. The maximal incidence is found in October. One hundred and twenty cases were reported in 1939; there were 72 in 1940, and 421 in 1941. It is reported that the government plans to open a special hospital near Sofiya for cases of poliomyelitis.

d. *Pellagra* is of comparatively frequent occurrence but no statistics as to prevalence are available.

e. *Leptospirosis* (Weil's disease). An extensive treatise on the epidemiology of Weil's disease (1937) makes no mention of Bulgaria although the occurrence of the disease in Greece and Russia is recorded.

f. *Epidemic jaundice*. No record has been found of the occurrence of epidemic jaundice in Bulgaria.

g. *Infections of the Eyes*. Trachoma is known to be common among the native population and could be transmitted to the military personnel. *Infectious kerato-conjunctivitis* has been reported from the Balkans. Concerning *gonorrhoeal ophthalmia* no data are available.

Bibliography

1. Angeloff: Das Veterinärwesen und die Tierseuchenbekämpfung in Bulgarien, Deutsche tierärztl. Wchnschr. 47: 717-722, 1939.
2. Angeloff: Milzbrandbekämpfung bei Tier und Mensch in Bulgarien, Deutsche tierärztl. Wchnschr. 47: 457-463, 1939.
3. Annuaire de la Croix Rouge Internationale, Geneva, 1939.
4. Baehr, G.: Medical Experience in Southeastern Europe, M. Rec. 92: 350-351, 1917.
5. Batschwarov, W.: Ueber die Krankenhäuser in Bulgarien, Deutsche med. Wchnschr. 62: 74-75, 1936.
6. Batschwaroff, W.: Arztliches aus Bulgarien, Deutsche med. Wchnschr. 67: 408-409, 1941.
7. Béroff, V.: Un Cas de Myase Rampante Cutanée, Clinica Bulgarska, No. 8, 1938. (Abstract: Arch. balk. de med., chir., et spec. 1: 125 (Jan.-Mar.) 1939.)
8. Blumenberg, W.: Über den neusten Stand der Epidemiologie der Weilschen Krankheit, Ergebn. d. Hyg., Bakt., Immunitätsforsch. u. exp. Therap. 22: 168-237, 1937.
9. Bulgarian Red Cross Society, Jubilee Volume 1885-1935: pp. 318, Sofiya, 1936.
10. Bulgarie, Direction Générale de la Statistique: Annuaire Statistique du Royaume de Bulgarie (Glavna Direktsiia Na Statistkata: Statisticheski Godishnik Na Tzarstvo Bulgariia).
11. Buresch, I., and Drensky, P.: Beitrag zur Erforschung der Zecken (Ixodidae) Bulgariens, Mitt. d. bulg. entomol. Gesell. 7: 116-124, 1932.
12. Cochran, D. M.: Poisonous Reptiles of the World, a Wartime Handbook, Smithsonian Institution War Background Studies, No. 10, pp. 37, Washington, 1943.
13. Croix Rouge Bulgare, Edition Mensuelle.
14. Danailov, G. T.: Les Effets de la Guerre en Bulgarie, Paris, no date (1932?).
15. Drenski, K.: The Varieties of Anopheles Maculipennis Meigen and Their Relation to the Distribution of Malaria, Mitt. d. bulg. entomol. Gesell. 10: 31-44, 1938.
16. Drenski, K.: Die Kugelbauchmilbe Pediculoides ventricosus Newp. und die "Copra-Itch," Krankheit in Bulgarien, Mitt. d. bulg. entomol. Gesell. 6: 94-97, 1931.
17. Drensky, K.: The Antimalarial Experimental Station at Petritch 1928-1933, Mitt. d. bulg. entomol. Gesell. 8: 85-96, 1934.
18. Drensky, K.: Malaria Control and Investigations in Petritch (Bulgaria), Ztsch. f. Hyg. u. Infektionskr. 122: 550-559, 1939-40.
19. Drensky, P.: Quelques Notes sur la Zoogeographie de la Bulgarie, La Bulgarie devant le IVe Congrès des Geographes et Ethnographes Slaves, pp. 59-65, Sofiya, 1936.
20. Drenski, P.: Kleine Entomologische Mitteilungen II, Mitt. d. bulg. entomol. Gesell. 7: 62-66, 1932.
21. Drensky, P.: Blutsaugende Fliegen aus der Familie der Tabanidae in Bulgarien, Mitt. a. d. Kgl. Naturwiss. Instit. in Sofiya, 2: 55-128, 1929.
22. Drensky, P.: Die Parasitären Fliegen der Familie Oestridae in Bulgarien, Bull. Inst. Hist. Nat. Sofiya, 6: 125-149, 1933.
23. Dryenski, P. and Dryenski, K.: Contribution to the Study of Phlebotomus and Three-Day Fever in Bulgaria, Mitt. d. bulg. entomol. Gesell. 4: 31-56, 1927.
24. Ganoff, V.: La distomiase en Bulgarie, Medicinsko Spisanie, No. 1, 1938. (Abstract: Arch. balk. de med., chir., et spec. 1: 153 (Jan.-Mar.) 1939.)
25. Enciclopedia Italiana, art. Bulgaria, Vol. 8, pp. 66-102, 1930.
26. Gellert, J. F.: Mittelbulgarien: das Kultur-geographische Bild der Gegenwart, Berlin, 1937.
27. Guntscheff, N.: Myiasis linguae, Deutsche Ztschr. f. Chir. 255: 751-755 (July 20) 1942.
28. Hackett, L. W.: Malaria in Europe, London, Oxford Press 1937, pp. 336.
29. Iwanoff, K.: Anthrax in Domestic Animals in Bulgaria, Arch. wiss. prakt. Tierheilk. 70: 371-376, 1936.
30. Izvestiia na Glavnata Direktsiia na Narodnoto Zdrave (Bull. of the State Dept. of Public Health, Bulgaria).
31. Karalambef, N.: A Propos du Traitement de Morsures de Viperidae, Clinica Bulgarska No. 4, 1939. (Abstract Arch. balk. de méd., chir., et spec. 2: 97-98 (Jan.-Mar.) 1940.)
32. Lafteheff, S. N.: Rapport de la Société Bulgare de la Croix Rouge Sur Son Activité Depuis L'Année 1930-31, Jusqu' au 31 Decembre 1937, pp. 30, Sofiya, 1938.
33. League of Nations: European Conference on Rural Life . . . Bulgaria, pp. 59, Geneva, 1940.
34. League of Nations Health Organisation. Enquiry into the Quinine Requirements of the Malarial Countries and the World Prevalence of Malaria, Geneva, 1932.
35. League of Nations Health Organisation: The Public Health Services of Bulgaria, by I. Golosmanoff, pp. 74, Geneva, 1926.
36. League of Nations Weekly Epidemiological Records (furnished by Public Health Methods, U. S. Public Health Service).
37. League of Red Cross Societies Bulletin 23: 9 (Jan.-Mar.) 1942.

38. Markoff, K., Moroff, T.: Zur Kenntnis der Malariaemücken in Bulgarien, Arch. f. Schiffs- u. Tropen Hyg. 33: 430-432, 1929.
39. Mikhov, N. V.: Sources Bibliographiques Sur l'Histoire de la Turquie et de la Bulgarie, Sofiya, 1914-1934.
40. Mikhov, N. V.: Bibliographie des Articles de Periodiques Allemands, Anglais, Francais et Italiens sur la Turquie et la Bulgarie, Sofiya, 1938.
41. Missiroli, A.: Hackett, L. W., and Martini, E.: Le Razze di *Anopheles maculipennis* e la loro Importanza nella Distribuzione della Malaria; in alcune Regioni d'Europa, Riv. di malar. 12: 1-58, 1933.
42. Molloff, W.: Die Echinokokkenkrankheit beim Menschen in Bulgarien, IIIe Congr. Internat. de Path. Comp., Athens 2: 137-142, 1936.
43. Mollow, W.: Über Malaria in Bulgarien, Acta Conventus Tertii de Tropicis atque Malariae Morbis 2: 240-250, 1938.
44. Nedelkoff, S.: Le Charbon en Bulgarie, Paris med. 111: 141-143, 1939.
45. Oswald, B.: Yugoslavian (Balkan) ticks (Ixodeidea) Parasitology 31: 271-280 (Sept.) 1939.
46. Pascheff, C.: Sur l'échinococque de l'orbite, Arch. balk. de méd., chir., et spec. 1: 63 (Jan.-Mar.) 1939.
47. Pawlow, P., Guenev, C.: Recherches sur un Trypanosome (T. Evansi Steel 1885) Trouvé dans le Sang d'un cheval de la Région de Bourgas en Bulgarie, Ann. de Parasitol. 17: 158, 1939-40.
48. Poumailloux, M.: Quelques Réflexions d'Ordre Medical sur la Bulgarie actuelle, Paris méd. 111-112: 105-108 (Feb. 11) 1939.
49. Radcoff: Dysentérie en Bulgarie, Bull. Office internat. d'hyg. pub. No. 8, 1938. (Abstract: Arch. balk. de méd., chir., et spec. 2: 94 (Jan.-Mar.) 1940.)
50. Rockefeller Foundation, International Division: Annual Reports.
51. Russeff, C.: Die Organisation des Veterinärwesens in Bulgarien, Deutsche tierärztl. Wchnschr. 43: 805-807, 1935.
52. Sliwensky, M.: Verbreitung, Klinik u. Therapie der schweren Malariaformen in Bulgarien, unter besonderer Berücksichtigung des Schwarzwasserfiebers. Festschrift Bernhard Nocht zum 80 Geburtstag, pp. 582-585, Hamburg, 1937.
53. Statistical Year-Book of the League of Nations 1936-37. Geneva, 1937.
54. U. S. Department of Commerce: World Trade in Dental and Surgical Goods prepared by George R. Donnelly, Washington, U. S. Govt. Printing Office, pp. 264, 939.
55. U. S. Public Health Service: The Notifiable Diseases: Prevalence in States, 1939. Supplement No. 163 to Public Health Reports, Washington, U. S. Government Printing Office, 1941.
56. U. S. Public Health Service: Sanitary Reports and Statistics.
57. Wateff, S.: Über Volksernährung und einige Volksheilmittel in Bulgarien, Wien. med. Wchnschr. 90: 792 (Oct. 12) 1940.
58. Weyer, F.: Die Malaria—Überträger. Eine Zusammenstellung der wichtiger Anophelesarten mit Angaben über Verbreitung, Brutgewohnheiten Lebensweise u. Praktische Bedeutung, Leipzig, Thieme, pp. 141, 1939.
59. Whipple, C. E.: Poultry Improvement in Southeastern Europe, Foreign Agriculture 6: 379-383 (Nov.) 1942.

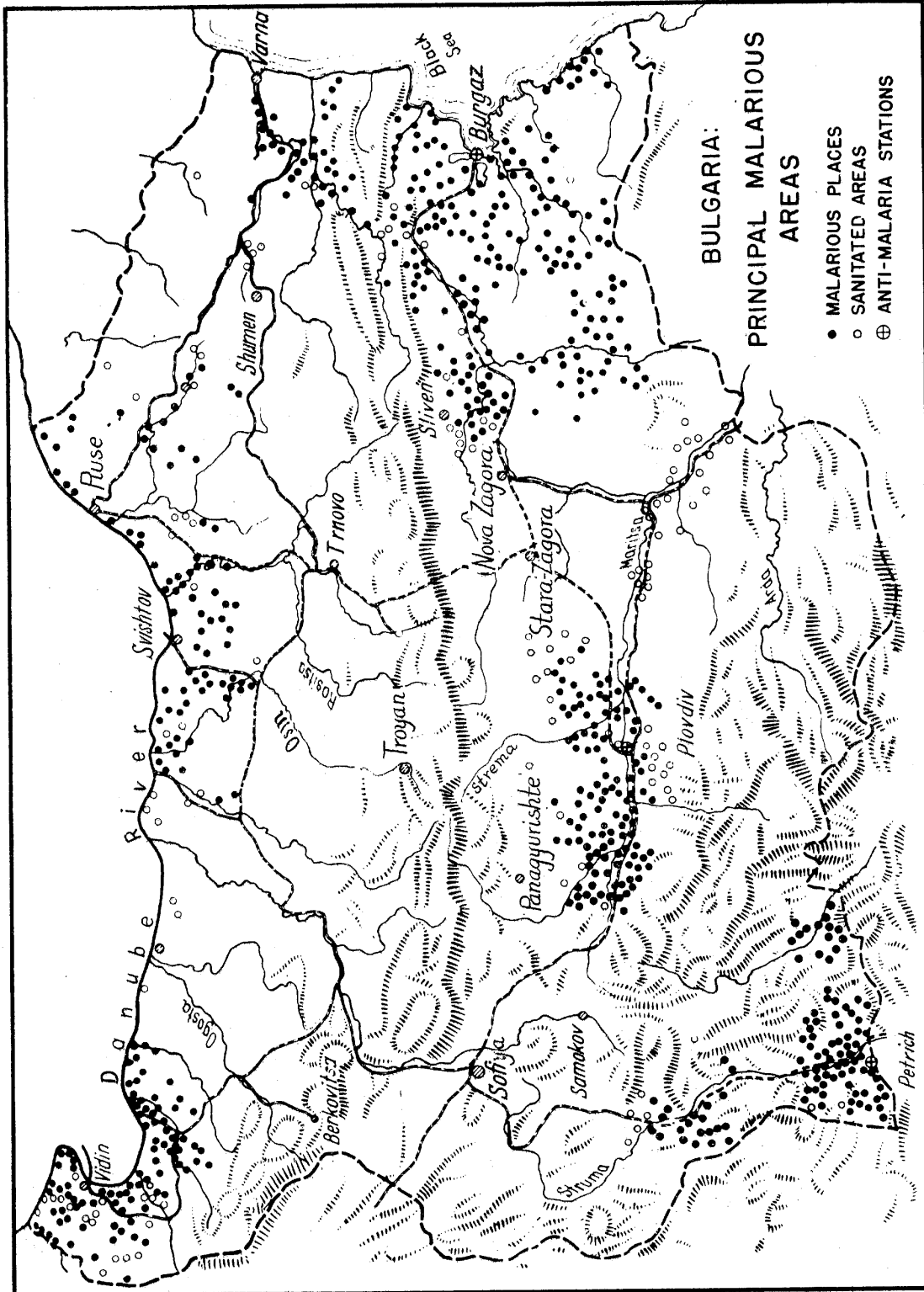
TABLE 1
TICKS FOUND IN BULGARIA WHICH ARE KNOWN TO BE DISEASE VECTORS IN BULGARIA OR ELSEWHERE

TICK	DISEASE	PATHOGEN	ANIMAL AFFECTED
Rhipicephalus sanguineus	FIEVRE BOUTONNEUSE Canine piroplasmosis	Rickettsia rickettsi (?) Babesia canis	MAN dogs
Rhipicephalus bursa	Bovine anaplasmosis	Anaplasma marginale	cattle
Ixodes ricinus	Bovine anaplasmosis Canine piroplasmosis Bovine anaplasmosis ? Tick paralysis ?	Anaplasma marginale Babesia canis Anaplasma marginale unknown	cattle dogs cattle cattle, sheep, goats, man
Boophilus annulatus	Texas cattle fever	Babesia bigemina	cattle
Dermacentor reticulatus	Equine piroplasmosis Canine piroplasmosis	Babesia caballi Babesia canis	equines dogs
Argas persicus	Fowl spirochaetosis RELAPSING FEVER (Iran) ??	Spirochaeta gallinarum Borrelia duttoni	fowl MAN

TABLE 2
HOSPITALS OF BULGARIA—LOCATION AND CAPACITY [1938]

NAME	LOCATION	BEDS	NAME	LOCATION	BEDS
Darjavná Bolnítz (State Hospital)	Burgaz	250	Darjavná Bolnítz (State Hospital)	Krdzhali	50
" " " "	Varna	360	" " " "	Lom	150
" " " "	Vidin	200	" " " "	Nevrokop	50
" " " "	Vratsa	200	" " " "	Orekhovo	80
" " " "	Kyustendil	80	" " " "	Petrich	80
" " " "	Lovech	350	" " " "	Razgrad	150
" " " "	Pazardzhik	250	" " " "	Samokov	60
" " " "	Plovdiv	600	" " " "	Svishtov	150
" " " "	Pleven	300	" " " "	Sevlievo	90
" " " "	Ruse	430	" " " "	Ustovo	80
" " " "	Sliven	150	" " " "	Ferdinand	50
" " " "	Sofiya	350	" " " "	Yambol	70
" " " "	Stara-Zagora	450	" " " "	Aitos	20
" " " "	Trnovo	240	" " " "	Asenovgrad	15
" " " "	Khaskovo	300	" " " "	Botevgrad	35
" " " "	Chirpan	150	" " " "	Bela	30
" " " "	Shumen	200	" " " "	Belogradchik	10
" " " "	Bela-Slatina	50	" " " "	Elena	15
" " " "	Gabrovo	80	" " " "	Elkhovo	50
" " " "	Dupnitsa	100	" " " "	Karnobat	30
" " " "	Kazanlk	80	" " " "	Kula	20
" " " "	Karlovo	50	" " " "	Lukovit	30
			" " " "	Ladzhene-Kamenitsa	20

Figure App. II-1



~~Declassified~~

TABLE 2 (Continued)

NAME	LOCATION	BEDS
Darjavna Bolnitsa (State Hospital)	Malko Trnovo	10
" " " "	Nikonol	30
" " " "	Novi Pazar	10
" " " "	Popovo	20
" " " "	Panagyurishte	20
" " " "	Provadiya	20
" " " "	Radomir	20
" " " "	Razlog	20
" " " "	Troyan	20
" " " "	Trevna	10
" " " "	Kharmarli	10

CONVALESCENT HOSPITALS

Zdravna Klimatichna Stantzia	Berkovitsa	36
" " " "	Vetreno	30
" " " "	Drenovo	30
" " " "	Kubrat	25
" " " "	Omortag	40
" " " "	Pirdop	20
" " " "	Teteven	30
" " " "	Trn	50
" " " "	Trgovishte	30
" " " "	Chepelare	30
" " " "	Krumovgrad	20
Alexandrova Bolnitsa (University Hospital)	Sofiya	900
Rabotnitscheska Bolnitsa "Tzaritza Icanna"	Sofiya	580
Bolnitsa "Kniaginia Maria Louiza" (Maternity Hospital)	Sofiya	150
Sofiska Bolnitsa za Gradobolni	Sofiya	200
Bolnitsa za Rovmatitche-Bolni	Sveti Vrach	60
Bolnitsa za Duchevo Bolni	Gara Karlukovo	300
Bolnitsa za Duchevo Bolni Majo	Gara Bola	400
Bolnitsa za Duchevo Bolni	Nova Zagora	30

STATE SANATORIUMS AND ASYLUMS

Sanatorium "Ferdinand I"	Iskrets	420
Troyanski Sanatorium	Troyan	200
Morski Dorski Sanatorium "Tzaritza Icanna"	Varna	320
Sanatorium za Gradobolni Detza	Peshtera	30
Priut za Dushevo Bolni	Kotel	40
Priut za Maloumni Detza	General-Nikolayev	60
Priut za Bolni ot Prokaza (Lepra)		15

In addition to the aforementioned state hospitals there were in 1938, 89 private hospitals (there were 91 in 1939) concerning which the following data are available:

NAME	LOCATION	BEDS
Bolnitsa "Drujestvo Tcherven Krast" (Red Cross Society)	Sofiya	100
Bolnitsa "Kniaginia Klementina"	Sofiya	100
Bolnitsa "Ruski Tcherven Krast" (Russian Red Cross)	Sofiya	50
Bolnitsa "Pamotnik"	Sofiya	50

TABLE 3
HOSPITALS AND DISPENSARIES, 1939
From Statisticheski Godishnik (Annuaire Statistique) 1940

ADMINISTRATIVE REGIONS	HOSPITALS					COMMUNITY		
	STATE				MATER-NITY HOSPI-TALS	INSANE ASYLUMS	GENERAL	PRIVATE
	FIRST CLASS	SECOND CLASS	THIRD CLASS	SPECIAL				
Burgaz	2	2	3	—	—	—	6	
Vratsa	2	4	3	—	—	—	14	
Plovdiv	2	3	3	—	—	—	7	
Pleven	4	2	6	—	1	—	20	

ADMINISTRATIVE REGIONS	HOSPITALS					COMMUNITY		
	STATE				MATER-NITY HOSPI-TALS	INSANE ASYLUMS	GENERAL	PRIVATE
	FIRST CLASS	SECOND CLASS	THIRD CLASS	SPECIAL				
Sofiya	4	3	3	1	—	—	26	
Stara-Zagora ¹	3	2	2	—	—	—	12	
Shumen	3	1	4	—	1	2	9	
TOTAL	20	17	24	1	2	2	94	
Cities	20	16	21	1	2	2	89	
Villages	—	1	3	—	—	—	5	
Burgaz	355	110	70	—	—	—	160	
Vratsa	337	280	40	—	—	—	240	
Plovdiv	850	140	65	—	—	—	315	
Pleven	980	150	120	—	300	—	325	
Sofiya	1,485	200	75	150	—	—	950	
Stara-Zagora ¹	900	100	35	—	—	—	180	
Shumen	990	100	80	—	400	60	100	
TOTAL	5,897	1,080	485	150	700	60	2,270	
Cities	5,897	1,040	450	150	400	60	2,155	
Villages	—	40	35	—	300	—	115	
Burgaz	5,427	2,101	1,006	—	—	—	2,523	
Vratsa	7,620	6,646	680	—	—	—	4,386	
Plovdiv	12,629	3,819	627	—	—	—	4,844	
Pleven	14,392	2,974	1,352	—	374	—	4,558	
Sofiya	24,088	3,441	1,252	3,239	—	—	8,760	
Stara-Zagora ¹	11,340	1,698	482	—	—	—	2,411	
Shumen	12,717	1,770	1,034	—	889	669	793	
TOTAL	88,213	22,449	6,433	3,239	1,263	669	28,275	
Burgaz	88,213	28,630	11,678	—	—	—	21,870	
Vratsa	88,053	63,728	6,231	—	—	—	30,022	
Plovdiv	239,560	28,383	7,629	—	—	—	55,869	
Pleven	231,249	61,812	24,264	—	88,953	—	44,865	
Sofiya	473,822	36,292	20,328	46,442	—	—	157,765	
Stara-Zagora ¹	372,042	20,418	7,550	—	—	—	19,530	
Shumen	237,050	23,722	15,327	—	143,994	11,516	6,980	
TOTAL	1,729,989	262,985	93,007	46,442	232,947	11,516	336,901	

TABLE 3
HOSPITALS AND DISPENSARIES, 1939 (Continued)
From Statisticheski Godishnik (Annuaire Statistique) 1940
INSTITUTIONS FOR THE FIGHT AGAINST TUBERCULOSIS

TUBERCULOSIS SANATORIA	PRIVATE	STATE	TUBERCULAR CASES	HOSPITAL SECTIONS FOR TUBERCULAR	STATIONS IN FAVORABLE CLIMATES	DISPENSARIES	
						STATE	PRIVATE

NUMBER OF INSTITUTIONS AND SECTIONS

—	—	—	—	1	—	2	—
—	—	—	—	—	1	2	—
—	—	—	—	2	2	3	1
1	—	—	—	4	2	3	—
1	3	—	—	1	2	3	1
—	—	—	—	3	—	—	—
—	—	—	—	1	3	2	—
2	3	—	—	14	9	15	2
1	—	—	—	14	7	15	2
1	3	—	—	—	2	—	—

NUMBER OF BEDS

—	—	—	—	36	—	—	—
—	—	—	—	185	60	—	—
200	—	—	—	149	60	—	—
480	143	—	—	120	75	—	—
—	—	—	—	283	—	—	—
—	—	—	—	320	180	65	—
680	143	—	—	320	953	300	—
200	—	—	—	320	953	240	—
480	143	—	—	—	60	—	—

NUMBER OF PATIENTS CARED FOR

—	—	—	—	318	—	657**	—
—	—	—	—	—	492	236	—
—	—	—	—	1,240	184	754	912
925	—	—	—	1,017	439	1,591	—
1,977	575	—	—	1,348	809	1,720	23
—	—	—	—	1,611	—	—	—
—	—	—	—	592	893	433	762
2,902	575	—	—	592	6,427	2,357	5,720
—	—	—	—	—	—	—	935

¹Includes "Alexandrovska" Hospital, headquarters of Minister of Public Instruction.

~~Restricted~~

MEDICAL AND SANITARY DATA ON BULGARIA

Appendix II - 11

TABLE 3 (Continued)

INSTITUTIONS FOR THE FIGHT AGAINST TUBERCULOSIS							
TUBERCULOSIS SANATORIA		HOSPITAL SURGICAL SECTIONS FOR TUBERCULAR CASES		STATIONS IN FAVORABLE CLIMATES		DISPENSARIES	
STATE	PRIVATE					STATE	PRIVATE
NUMBER OF DAYS OF TREATMENT							
—	—	—	*3	—	563	—	—
—	—	—	—	11,374	185	—	—
—	—	—	—	7,314	405	267	—
56,051	—	—	—	13,343	544	—	—
151,929	41,201	—	—	21,040	279	6	—
—	—	—	—	—	—	—	—
—	—	89,977	—	12,859	341	—	—
207,980	41,201	89,977	—	65,930	2,317	273	—

TABLE 3

HOSPITALS AND DISPENSARIES, 1939 (Continued)
From Statisticheski Godishnik (Annuaire Statistique) 1940

ANTI-VENEREAL DISEASE INSTITUTIONS				INSTITUTIONS FOR THE FIGHT AGAINST MALARIA				INSTITUTIONS FOR INFANT WELFARE CONSULTATION CLINICS			
STATE HOSPITAL SECTIONS		DISPENSARIES		ANTI-SYPHILIS CLINICS		FOR THE FIGHT AGAINST MALARIA		NURSERIES FOR INFANTS		STATE AND COMMUNITY PRIVATE	
STATE	PRIVATE	STATE	PRIVATE	STATE	PRIVATE	STATE	PRIVATE	STATE	PRIVATE	STATE	PRIVATE
1	2	—	1	1	1	—	—	52	—	—	—
2	1	—	—	2	—	—	—	76	—	—	—
1	1	1	—	1	1	1	1	60	1	—	—
2	2	—	—	1	2	—	—	80	—	—	—
2	3	—	—	1	2	—	—	99	4	—	—
1	—	—	—	—	—	—	—	64	—	—	—
3	1	—	1	—	2	—	—	68	—	—	—
12	10	1	2	6	8	—	—	499	5	—	—
12	—	1	2	6	6	—	—	97	5	—	—
—	—	—	—	—	2	—	—	402	—	—	—
20	—	—	—	—	35	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—	—
35	—	—	—	—	50	—	—	—	—	—	—
70	—	—	—	—	40	—	—	—	—	—	—
100	—	—	—	—	220	—	—	—	—	—	—
20	—	—	—	—	—	—	—	—	—	—	—
90	—	—	—	—	65	—	—	—	—	—	—
365	—	—	—	—	410	—	—	—	—	—	—
365	—	—	—	—	370	—	—	—	—	—	—
—	—	—	—	—	40	—	—	—	—	—	—
*2	*2	*2	—	—	—	*2	*2	—	—	—	—
1,214	754	—	—	—	35	—	—	15,731	—	—	—
1,005	24	—	—	—	—	—	—	16,923	—	—	—
546	1,315	621	—	—	50	—	—	17,662	665	—	—
1,995	83	—	—	—	40	—	—	14,815	—	—	—
1,473	1,049	—	—	—	220	—	—	22,483	1,789	—	—
33	—	—	—	—	—	—	—	14,108	—	—	—
2,823	20	—	—	—	65	—	—	27,079	—	—	—
9,089	3,245	621	—	—	410	—	—	128,801	2,454	—	—
405	383	—	—	—	—	—	—	2,513	—	—	—
458	80	—	—	—	—	—	—	3,135	—	—	—
295	221	266	—	—	—	—	—	3,733	293	—	—
669	117	—	—	—	—	—	—	4,327	—	—	—
643	610	—	—	—	—	—	—	5,143	541	—	—
86	—	—	—	—	—	—	—	2,956	—	—	—
1,546	99	—	—	—	—	—	—	2,543	—	—	—
4,102	1,510	266	—	—	—	—	—	24,350	834	—	—

*2Number of sick visited.
*3Number of days of treatment in these sections is included in the number of days of treatment in the respective hospitals.

TABLE 4
Sanitary Reports and Statistics, U. S. Public Health Service
April 13, 1943
BULGARIA—TYPHUS FEVER CASES REPORTED
BY DISTRICTS—1940

DISTRICT	MONTH												TOTAL	
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.		
Asenovgrad													1	1
Berkovitsa				1										1
Shumen					4									4
Elena					1									1
Elkhovo		1												1
Ferdinand						1								1
Khaskovo						3								3
Yambol	1													1
Ikhtiman								1						1
Karnobat					1								1	2
Kubrat				1										1
Krumovgrad		10												10
Lom				2	2									4
Nevrokop	1	1												2
Nikopol				1										1
Omortag	3			1										4
Orehovo				4										4
Orehov				2										2
Pazardzhik	3	12	3	9	1	1								29
Peshtera	3				10		1	1		2	5			22
Pleven				1	2									3
Plovdiv						3								3
Popovo				2										2
Razlog		3	1		1						2			7
Ruse					1					1				2
Samokov	2						2	2						6
Sevlievo							1	1						2
Sofiya										1				1
Trgovishte		1												1
Trnovo						1								1
Trogau					1									1
Yambol					3									3
Total														126

TABLE 5
Sanitary Reports and Statistics, U. S. Public Health Service
April 13, 1943
BULGARIA—TYPHUS FEVER CASES REPORTED
BY DISTRICTS—1941

DISTRICT	MONTH												TOTAL	
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.		
Acadánlar						7	3							10
Aitos						2								2
Ardino							1	1	1					3
Asenovgrad			12	11	1									24
Bitolj										10	1			11
Borisovgrad							1							1
Burgaz											1			1
Breznik		5	1											6
Brod											1			1
Dupnitsa								1						1
Elena							4		1					5
Ferdinand					2									2
Gabrovo											1			1
Gorna Dzhumaya			1											1
Ispirikh					11		1			1				13
Kazanik			3				1							4
Kharmanli						1								1
Korel						1			1					2
Kubrat			1											1

TABLE 5 (Continued)

DISTRICT	MONTH												TOTAL
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	
Kyustendil									2				2
Lovech			2										2
Lukovit						1							1
Nevrokop	1	10	7										18
Omortag				2		2							4
Orekhovo											7		7
Pazardzhik	1												1
Peshtera								2		1			3
Pleven												21	21
Prilep												2	2
Provadiya						1							1
Radomir		1											1
Razgrad			1										1
Razlog											6	2	8
Ruse		1											1
Sevlievo	1												1
Shumen				1	1								2
Sofiya	17	4	1	1	4							3	30
Svilengrad		7											7
Szilagy		2											2
Trgovishte				22	6								28
Chirpan							8		2	1			11
Teteven			1	1									2
Troyan						1							1
Varna					1								1
Yambol								2	3				5
Total													253

TABLE 6
Sanitary Reports and Statistics, U. S. Public Health Service
April 13, 1943
BULGARIA—TYPHUS FEVER CASES REPORTED
BY DISTRICTS—1942

DISTRICT	MONTH												TOTAL
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	
Ardino				4	4								8
Asenovgrad								1					1
Babušnica										22	5		27
Bela											5		5
Bela Station					22								22
Bitolva			9										9
Brod											2		2
Shumen	2	4	1	26	5	1							39
Dobrich			11	13	4	5	2						35
Drăma										2			2
Ferdinand		2	7	5	6	1							21
Ispirikh			19				1						20
Karnobat					2								2
Kotel										1			1
Kubrat		1	1	17		1							20
Krumovgrad			2										2
Lom		1	1		6						5		13
Lukovit			3	4									7
Nevrokop							1			1	2		4
Nikopol			1										1
Novi Pazar				24	42	18							84
Nova Zagora				13	9	2							24
Omortag											2		2
Orekhovitsa					2								2
Orekhovo	7		35										42
Pazardzhik										1	2		3
Peshtera					9								9
Pirot				21									21
Pleven											1		1
Plovdiv											1		1

DISTRICT	MONTH												TOTAL	
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.		
Popovo			6	2									2	10
Razgrad			2		1		1							4
Razlog					3	2								5
Ruse	2	6	81			1								90
Sliven		3	9	5	3	6								26
Sofiya	2	1				1				2		1		7
Surdulica			20	4										24
Sveri Vrach		1												1
Trgovishte		1	7			2								10
Varna			1	1		11	5	2						20
Vranje									2					2
Vratsa		1		4										5
Yambol		6	4		1	2						1		14
Total														649

TABLE 7
BULGARIA—PRINCIPAL CAUSES OF DEATH
Village Population, 1938¹ and 1939²

NAMES OF MALADY, AND NUMBER IN INTERNATIONAL NOMENCLATURE	NUMBER OF DEATHS		DEATHS PER 1,000 DEATHS		DEATHS PER 10,000 INHABIT.		
	1938	1939	1938	1939	1938	1939	
1. Pneumonia	(27)	3,981	3,634	171.6	159.6	22.8	20.3
2. Old Age	(39)	2,800	2,861	120.7	125.6	16.1	16.0
3. Heart disease	(24)	2,061	2,116	88.8	92.9	11.8	11.8
4. Congenital defects	(38)	1,846	1,676	79.6	73.6	10.6	9.3
5. Pulmonary tuberculosis	(10)	1,601	1,644	69.0	72.2	9.2	9.2
6. Cerebral hemorrhage	(22)	1,035	1,062	44.6	46.6	5.9	5.9
7. Diarrhea and dysentery	(29)	923	743	39.8	32.6	5.3	4.1
8. Cancer and tumors	(15)	732	734	31.6	32.2	4.2	4.1
9. Non-pulmonary tuberculosis	(11)	490	486	21.1	21.3	2.8	2.7
10. Nervous ailments	(23)	416	430	17.9	18.9	2.4	2.4

¹Statisticheski Godishnik na Tsarstvo B'lgaria, 1939—(Statistical Year-Book of the Kingdom of Bulgaria), Sofia, 1939, pp. 132-133.

²Ibid. 1940, pp. 132-133.

TABLE 8
BULGARIA—PRINCIPAL CAUSES OF DEATH
Urban Population, 1939¹

NAME OF MALADY, AND NUMBER IN INTERNATIONAL NOMENCLATURE	NUMBER OF DEATHS		DEATHS PER 1,000 DEATHS		DEATHS PER 10,000 INHABIT.	
	1938	1939	1938	1939	1938	1939
1. Heart Disease	(24)	2,700		156.3		19.3
2. Pneumonia	(27)	2,103		121.7		15.1
3. Tuberculosis of respiratory organs	(10)	1,785		103.3		12.8
4. Cerebral hemorrhage	(22)	1,498		86.7		10.7
5. Old Age	(39)	1,253		72.5		9.0
6. Congenital defects	(38)	1,023		59.2		7.3
7. Cancer or tumors	(15)	1,006		58.2		7.2
8. Diarrhea and dysentery	(29)	646 ²		37.4		4.6
9. Non-pulmonary tuberculosis	(11)	477		27.6		3.4
10. Diseases of the digestive tract	(32)	390		22.6		2.8

¹Statisticheski Godishnik, 1940, pp. 126-129.

²The average annual deaths, 1933-36, numbered 1,117.

TABLE 9
BULGARIA—CONTAGIOUS DISEASES—SOFIYA—1938¹-1939²

DISEASE	CASES		DEATHS		CASES PER 10,000		DEATHS PER 100 CASES	
	1938	1939	1938	1939	1938	1939	1938	1939
Typhoid fever	329	125	27	8	1.1	4.3	8.2	6.4
Paratyphoid	56	31	—	1	0.2	1.1	—	3.8
Scarlatina	620	1,191	66	55	2.2	41.5	10.6	4.6
Diphtheria	695	660	28	28	2.4	23.0	4.0	4.2
Meningitis	40	77	14	26	0.1	2.7	35.0	33.8
Measles	63	949	—	7	0.2	33.1	—	0.7
Mumps	368	528	—	—	1.3	18.4	—	—
Whooping cough	174	145	4	11	0.6	5.0	2.3	7.6
Chickpox	333	294	1	—	1.2	10.2	0.3	—
Erysipelas	237	286	7	9	0.8	10.0	3.0	3.1
Other	59	112	7	18	0.2	3.9	11.9	16.1
TOTAL	2,974	4,398	154	163	10.4	153.2	5.2	3.7

¹Statisticheski Godishnik, 1939, pp. 141.

²Ibid. 1940, pp. 143.

MEDICAL AND SANITARY DATA ON BULGARIA

Appendix II - 13

TABLE 10
BULGARIA—INCIDENCE OF CONTAGIOUS
DISEASES, 1938-1939¹

NAME OF DISEASE AND NUMBER OF INTERNATIONAL NOMENCLATURE	NUMBER OF CASES		NUMBER OF DEATHS		CASES PER 100,000		DEATHS PER 100 CASES	
	1938	1939	1938	1939	1938	1939	1938	1939
Spotted typhus (2)	91	129	12	11	1.5	2.0	13.2	8.5
Typhoid fever (1)	2,911	2,417	252	227	46.6	38.4	8.7	9.4
Diphtheria (7)	5,728	5,366	488	486	91.6	85.3	8.5	9.1
Scarlatina (5)	4,056	5,699	514	461	64.9	90.6	12.7	8.1
Diarrhea and dysentery (29)	1,466	899	168	133	23.4	14.1	11.5	15.0
Measles (35)	5,858	10,357	41	162	93.7	164.6	0.7	1.6
Whooping cough (6)	5,908	3,505	283	139	94.5	55.7	4.8	4.0
Anthrax (2)	995	753	72	43	15.9	12.0	7.2	5.7

¹Statisticheski Godisnik, 1940, pp. 141.

TABLE 11
BULGARIA—OBSTETRICAL CARE, 1938¹ AND 1939²

PLACE OF BIRTH AND TYPE OF CARE	CITIES		IN PER CENTS VILLAGES		TOTAL	
	1938	1939	1938	1939	1938	1939
At home—physician	5.8	5.5	1.7	1.8	2.4	2.4
.. .. —midwife	64.2	62.6	16.7	17.2	24.4	25.1
.. .. —neither	17.6	11.0	80.0	78.9	69.0	67.1
In hospital		20.8		2.1		5.3
Elsewhere—no professional care	0.1	0.1	0.0	0.0	0.0	0.1

INFANT MORTALITY—1938 AND 1939²

Per 1,000 live births	118.1	105.3	149.6	146.1	144.4	138.9
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¹Statisticheski Godisnik, 1939, pp. 111.²Ibid., 1940, pp. 111.³Ibid., pp. 121.