cent. cannot be accounted for by the small number in the present series. After sanatorium treatment this percentage (32·7) was reduced to 17 per cent.

General Conclusions.

Adults.—(1) That the Von Pirquet test is of little value as a diagnostic and prognostic agent, except in a very limited number of cases.

(2) That a negative reaction is no proof that a patient is non-tuberculous.

(3) That a negative reaction may be obtained in advanced cases, but that a markedly positive reaction does not necessarily indicate a good prognosis.

(4) That the reaction is always positive when T.B. are present in the sputum, except in advanced cases.

Children.—(5) That the reaction may be negative in 30 per cent. of children with pulmonary tuberculosis.

(6) That after sanatorium treatment the percentage may be reduced to 17, the reduction indicating an improvement in the immediate prognosis.

THE RÔLE OF THE AMERICAN RED CROSS IN THE TUBERCULOSIS CAMPAIGN IN FRANCE DURING THE GREAT WAR.

By E. GLADSTONE DAVIES,

Formerly Associate Director of the Bureau of Tuberculosis of the American Red Cross.

UPON the declaration of war by the United States of America, the American Red Cross sent important contingents to France, establishing headquarters in Paris. Primarily the aim of this organization was of a purely military character, but it was soon recognized that the French civil population was in urgent need of assistance. Various sections, therefore, were created to cope with different pressing problems. One of these, "The Bureau of Tuberculosis and Public Health," was created in August, 1917, with the approval of the French Ministry of the Interior and the Service du Santé Militaire. The principal reasons for the establishment of this bureau were:

1. Nearly all the institutions in France for the treatment of tuberculosis had been temporarily requisitioned for military cases, and their medical staffs mobilized. The necessary facilities for the treatment of tuberculosis among the civilian population, refugees, and *repatriés* were consequently almost entirely lacking.

2. The Franco-German War of 1870 had demonstrated that war with its accompanying hardships was responsible for a formidable increase in the tuberculosis mortality. It was of extreme importance, therefore, to combat this recurring menace in the war then being waged.

3. An investigation made in France early in 1917 by Dr. Hermann Biggs, of New York, had revealed the necessity of some action being taken to combat the ravages of tuberculosis in that country.

As a result of this investigation the Rockefeller Institute appointed a Special Commission to co-operate with the French health authorities. The sphere of this Commission was limited to carrying on an extensive propaganda, to educational work, and to the creation and operation of dispensaries. It fell to the Bureau of Tuberculosis of the American Red Cross to augment this work, for its command of funds was so considerable that it was enabled to extend its assistance to the whole field of tuberculosis work. Close co-operation was maintained between the Commission and the Bureau throughout the work in France, and the sphere of each was clearly defined.

The early efforts of the Bureau were devoted chiefly to meeting the immediate needs of the various tuberculosis institutions, particularly those for the care of military cases. During this early period delegates were sent out to make a rapid survey of the general situation in France. As a result of this preliminary investigation, it was deemed advisable to formulate a programme, both theoretical and practical, as a basis for future work, since it was evident that the mere distribution of relief was not in itself sufficient to bring about any considerable amelioration in the tuberculosis situation. In drawing up this programme the Bureau was guided by the efforts which in America and England had effected a reduction of 60 per cent. in the tuberculosis mortality during a period of thirty years.

It was obvious that such a programme must be adaptable to the peculiar conditions in France, and sufficiently elastic both to meet the exigencies of war and at the same time prepare for the requirements of peace. The population was calculated according to the census of 1911, and the death-rate from tuberculosis on the figures of 1913. The number of living cases was estimated, according to the Biggs factor, as five times the tuberculosis rate. On this estimate of living cases a complete programme would require the establishment of the following equipment:

100 per cent. (basis for estimation)	...	The living cases.
15	..	Hospital beds.
10	..	Sanatorium beds.
1	..	Day camp beds.
2	..	Preventorium beds.
4	..	Open-air schools.
68	..	Dispensary and domiciliary treatment.

Space does not permit discussion of the accuracy of this programme, but it may be of interest to mention that the Newsholme factor for the estimation of living cases is 2.89 (*i.e.*, three times the deaths), that the Biggs factor is five, and the Phillips factor ten.

It was recommended that 25 per cent. of this programme should be attempted. Wherever it seemed possible to inaugurate a part of the programme in such a way that the work might be ultimately organized into a departmental (*i.e.*, county) unit, every assistance was given by the Bureau. When the operation of any tuberculosis institution could be hastened by a subvention, this was granted, and every effort made to reduce the admittedly long period required for the realization of a tuberculosis programme. On the basis of this programme the following activities were undertaken:

1. The departmental survey of all tuberculosis activities: those already operating, those in immediate prospect, and those in the project stage.
2. The amelioration of conditions in existing tuberculosis institutions.
3. The subvention of dispensary construction and their operation.
4. The subvention of hospital and sanatoria construction and their operation.
5. The creation and operation of sanatoria by the Bureau.
6. The subvention of popular educational propaganda.
7. The subvention and assistance to special fields of work.
8. Co-operation with the American Expeditionary Forces.
9. The organization and operation of a "Hospital Admission Bureau," and Social Service in the Paris hospitals.

In amplification of the above headings, it may be interesting to give a few of the more important details connected with each.

1. The inspection of all tuberculosis institutions throughout France was accomplished by specially trained delegates, who were required to investigate as thoroughly as time and circumstances permitted the tuberculosis situation in the regions to which they were assigned. Further, these delegates were required to submit careful reports on the condition and requirements of the various institutions visited, and to collaborate with the regional health authorities in the preparation of future schemes. As a result of these investigations, practically every department of France received assistance of some nature.

2. The inadequate accommodation for the treatment of tuberculosis necessitated the conversion and adaptation as sanatoria of available premises. These improvised sanatoria, although not entirely satisfactory, at least supplemented the shortage of beds at that period. The Bureau accorded subventions for the erection of cure galleries, recreation rooms, etc., and for the installation of X-ray apparatus, laboratories, sanitary and other equipment.

3. Subventions, varying from 10 to 40,000 frs. according to the importance of the centre, were given to 106 dispensaries, the majority of which had been created during the war, and when the Bureau terminated its activities in May, 1919, a further twenty-one were in course of creation. Training centres for visiting nurses were also subventioned.

4. Subventions—averaging 1,000 frs. a bed—were granted to various hospitals and sanatoria in course of construction or in the project stage. Two thousand seven hundred and twelve new beds were thus subventioned.

5. The number of patients applying directly to the Bureau for advice and hospitalization becoming more and more numerous with the influx to Paris of refugees and *repatriés* afflicted with tuberculosis, a "Hospital Admission Bureau" was created to deal with them, and to place them whenever possible in existing institutions. As the applicants for hospitalization far exceeded the number of beds vacant, the Bureau decided to equip, operate, and maintain a total of 888 beds in the following premises, which were transformed to serve as sanatoria under the direction of American doctors and nurses:

(a) *Sanatorium de Plessis-Robinson*.—In October, 1917, a vast property on the outskirts of Paris was transformed by the Bureau into a centre of tuberculosis for civilians, refugee women, and the children of Paris. It comprised an admission block, hospital for children, a preventorium and a sanatorium for women, with a total bed-capacity of 356.

(b) *Château de la Fontaine Bude*.—This establishment was transferred to the Bureau by the Œuvre des Tuberculeux de la Guerre, an American society which had for some time been actively engaged in tuberculosis work in France. This sanatorium, with a bed-capacity of 92, was reserved for cases among the male civilian population of Paris. Upon the cessation in May, 1919, of the Bureau's activities, this sanatorium and that of Plessis-Robinson, both fully equipped, were transferred to the Public Health authorities of Paris, and form important units in this city's tuberculosis scheme.

(c) *Asile Sainte-Eugénie*.—This was situated in an unoccupied wing in the Civil Hospital of Lyons, and was completely equipped by the Bureau for the purpose of hospitalizing tuberculous women repatriated through Switzerland. The percentage of tuberculous cases among these convoys of *repatriés* varied from 50 to 60 per thousand.

(d) *Champigny (Loir-et-Cher)*.—This small temporary sanatorium, with a bed-capacity of 30, was operated by the Bureau in connection with the dispensary at Blois, and formed the nucleus of a larger sanatorium to be constructed after the war.

(e) *Hôpital Bénévole No. 19 bis, Paris*.—This temporary institution, with a bed-capacity of 30, was transferred to the Bureau by the Œuvre

des Tuberculeux de la Guerre, and was reserved for military and civilian cases in the Paris district.

6. Subventions were granted by the Bureau in connection with the propaganda and educational work of the Rockefeller Commission.

7. Serbian Relief. (a) Scattered throughout France were 20,000 Serbian refugees, chiefly students. A high percentage of these were tuberculous, and, after thorough investigation, a considerable amount of relief was distributed among them, through various agencies. In addition, hospital huts which had been constructed and equipped by the Bureau at Malabry, near Paris, were operated and maintained to provide treatment for 200 Serbs. (b) French Red Cross (S.B.M.). A subvention was accorded this society for the creation of a Technical Bureau of Tuberculosis in order that it might more effectively engage in the tuberculosis campaign and give the necessary technical advice to its numerous branches throughout France. Further, the dispensaries of this society were subventioned wherever they formed a unit in a tuberculosis scheme.

8. The Bureau co-operated with the American Army in the preparation of tuberculosis propaganda for use in the American Army and provided technical advice in connection with plans for a special hospital where tuberculous American soldiers could be treated. During the offensive of Château Thierry, the hospital huts at Malabry were placed at the disposal of the American Army, and cases were treated there for a period of three months.

9. Annexed to the various hospitals of Paris were hospital huts capable of accommodating 1,200 tuberculous cases. Owing to lack of comfort and insufficient food these huts remained almost unoccupied. A special service was organized by the Bureau for improving the conditions in these huts and for making them more attractive to the many patients requiring treatment. Diet kitchens were installed, recreation rooms, and cure galleries. Food and clothing were distributed weekly. Social workers attached to the Bureau made frequent visits to the patients in these huts, and, when the patients were returned to their homes, these visits were continued, relief being given, and, whenever possible, suitable work found for the patients. The results more than justified the institution of this Social Service, the number of patients being increased during the first few months from 172 to 657, and eventually the 1,200 beds were maintained at full capacity. In connection with this service a convalescent home at Villejuif with a bed-capacity of 22 was equipped and maintained by the Bureau. The Hospital Admission Bureau, to which reference has already been made, succeeded in placing over 3,000 patients in various French institutions and in those created and operated directly by the Bureau.

Six months after the cessation of hostilities, the Bureau of Tuber-

culosis and other sections of the American Red Cross were dissolved. From this résumé of its activities, it will be seen that the Bureau undertook to accomplish a considerable amount of work, and assumed a responsibility which it satisfactorily discharged. It encouraged and stimulated French initiative, and by its assistance facilitated the completion of projects which would, owing to the exigencies of war, either have been abandoned or indefinitely postponed.