REVIEW OF REVIEWS

FACTS ABOUT TUBERCULOSIS IN TURKEY.

The following was taken from the "Foreign Letters" section of *The Journal of the American Medical Association*, Vol. 91, No. 22:

"In Turkey, tuberculosis ranks second to malaria in frequency. Owing to the absence of adequate control of the milk supply, the lack of health education, and the general destitution following many years of continual warfare, the increase of tuberculosis all over the country, and especially in the cities, is alarming. The isolated location of the villages, sunshine almost all the year round, the fact that men, women and children are spending most of the day outdoors working in the fields, and the total abstinence from alcohol seem to be the chief reasons for the lower incidence of tuberculosis in rural communities. The compulsory physical fitness certificate for marriage being only a recent requirement, the general postwar poverty, early marriage and absence of birth control are responsible for the higher incidence of the disease among women. While more pulmonary tuberculosis is seen in the cities, the inhabitants of rural communities are suffering more from arthritis, bone tuberculosis and glandular tuberculosis. Because of lack funds, the ministry of hygiene, in the past, has not been able to take effective measures against this wide-spread disease, though there are special free dispensaries in Constantinople and Smyrna where free examination and treatment are given and where leaflets, pamphlets and brochures concerning tuberculosis are distributed. There is a fifty bed government sanatorium on a sunny island in the Marmora Sea near Constantinople. The beds are always occupied and there is a long waiting list. Next year another fifty beds will be added. There are two private sanatoriums on the other islands. At the Constantinople municipal hospital, a new wing is being added for from fifty to a hundred beds for the gratuitous treatment of cases. In the 1929 budget the ministry of hygiene has made provision for an active campaign in communities where the incidence of tuberculosis is high.

"Tuberculosis not yet being a reportable disease, accurate statistics are not available except for the city of Constantinople, where deaths have occurred during the last twenty-five years as shown in the accompanying table.

DEATHS AT CONSTANTINOPLE

Year	Total deaths	Deaths from tuberculosis
1902	14,771	2,753
1905	15,755	2,836
1909	26,630	2,864
1910	16,720	2,838
1912	21,662	2,886
1915	18,490	3,018
1918	30,645	3,515
1920	19,155	2,732
1922	16,156	2,685
1924	15,139	2,781
1926	13,520	3,424

"During the last ten years the population of the city of Constantinople has varied from 850,000 to 1,000,000. In regard to the high death rate it should be taken into consideration that quite a number of sufferers from tuberculosis have come to Constantinople for treatment or other purposes from other parts of the country."

TUBERCULOSIS IN THE UNITED STATES VETERANS' BUREAU

The following conclusions were arrived at by Philip B. Matz, after a study of the tuberculosis problem in the United States Veterans' Bureau:

1. It has been estimated by the Medical Service that, of a total living ex-service population of 4,380,000, the approximate mortality from tuberculosis is 5,580 per annum. It has also been estimated that the ratio of tuberculosis mortality to tuberculosis morbidity is 1 to 9.5. Accordingly, there are at the present time approximately 53,010 cases of tuberculosis of all forms among the ex-service population, which means a morbidity ratio of 1.21 per 100.

2. In view of the fact that all tuberculous ex-service men are eligible to hospitalization by the United States Veterans' Bureau, it would seem that the large number of ex-service men with active tuberculosis, together with the number having arrested tuberculosis who are likely to become active, constitute potential hospital material. It is therefore believed by the Medical Service that the problem of the hospitalization of tuberculous ex-service men will continue to play an important part in the activities of the Medical Service of the United States Veterans' Bureau for a number of years to come.

3. Inasmuch as the results of treatment depend to a considerable extent upon the stage of disease at the time of admission to the hospital, the small percentage of incipient cases and the large percentage of moderately advanced and far-advanced cases admitted to the Bureau institutions would explain in part the differences in the results obtained in the hospitalization of tuberculous patients of the Bureau as compared with those of civilian institutions. There is another reason, particularly for the larger mortality rate in Bureau hosptals as compared with civil sanatoria: this is that the Bureau is obliged to hospitalize any tuberculous ex-service man who applies for and is in need of hospitalization. A great many of the patients admitted for treatment in the Bureau institutions are terminal cases, and die soon after entrance. These cases are in a large measure responsible for the high mortality rate from tuberculosis in the Bureau hospitals.

4. It has been the observation and experience of the Medical

Service that, at the particular stage of tuberculous disease when rest is most essential, many of the patients become noncooperative, are prone to abuse rest hours, resort to excessive activity while absent on leave, or curtail their hospital residence. These, it is believed, are additional reasons why the results of treatment of tuberculous disease in the United States Veterans' Bureau are not quite so favorable as those in civil sanatoria.

5. The Bureau statistics indicate that 20 cent of the tuberculous beneficiaries, discharged from hospitalization as apparently arrested or arrested, gave evidence of reactivation; 75 per cent of this number showed evidence of activity within one year after discharge. This accounts in part for the large number of readmissions to United States Veterans' hospitals, as shown in the 1927 statistics of the Bureau. The latter indicate that there were twice as many readmissions as there were first admissions for pulmonary tuberculosis.

6. A study of Bureau statistics shows that while the hospital load of tuberculosis patients has decreased since 1922, the compensation load has nevertheless materially increased.

7. It is noted that that type of tuberculosis patients now being admitted to the Bureau hospitals is changing; by this it is meant that at the preesnt time more far-advanced cases are being admitted than were admitted in previous years, some of these being in the terminal stages. If this continues, the hospital facilities for infirmary beds will have to be increased.

8. A study of the relationship of the period of hospitalization to the stage of tubercluos disease shows that the more advanced the stage the longer was the hospitalization period, except in the cases in which there was unimprovement during the hospital stay, in which patients, were transferred to their homes for treatment, or in which death took place during the hospital residence.

9. A study was made of a large group of Bureau patients for the purpose of ascertaining the effect on the tuberculous condition of incomplete and numerous hospitalizations. This study showed that frequent and incomplete hospitalizations offset, to a considerable extent, the large amount of good which usually follows continuous hospital residence. It is difficult to determine how best to overcome the tendency of patients to curtail their hospital residence and resort to frequent and short periods of treatment. The Bureau is endeavoring to impress upon the tuberculous beneficiaries and their families the importance of continuous hospitalization, of the good

results, from such regime, and of the ill effects resulting from numerous incomplete and short hospital residences.

10. Bureau statistics show that there were 60,386 beneficiaries receiving compensation for tuberculosis as of March 31, 1928. These constituted 23 per cent of the total compensable load. The total annual outlay for the compensation of tuberculous ex-service men and women approximates $47,076,756.00. This is equivalent to an average monthly compensation of $64.97 Of the total number of 60,386 compensable beneficiaries, 4,595 are on a temporary-partial status, 37,543 on a permanent-total status. It is interesting to note that the number of compensable tuberculous cases has increased from 36,600 in 1922 to 57,748 in 1927. The latest figures on compensation for tuberculosis which is of March 31, 1928, indicate that there are 60,386 tuberculous-ex-service men on a compensation status.

—(*The American Review of Tuberculosis*, Vol. XVIII, No. 6.)

CONVALESCENT SERUM IN MEASLES

A. Clement Silverman, of Syracuse, N. Y., writes in *The Journal of the American Medical Association* about an experiment in the use of convalescent serum for measles, carried out during a recent epidemic of measles in Syracuse. The plan used is described as follows:

"Selection of Donors.—Since every adult in whom measles was reported was looked on as a potential donor, the diagnosis was verified in each case by a diagnostician from the bureau of communicable diseases. The patient's physician was communicated with and during convelescence the patient was asked to serve as donor after the object and purpose of the procedure had been explained. The history and physical condition was considered in selecting donors so as to rule out syphilis, tuberculosis and malaria. Only those having had true, primary, uncomplicated measles were selected and the serum was distributed only after the Wassermann test had been found negative and the donor had remained free from disease for some time subsequently. Only adult patients were used as donors. The blood was drawn as far as possible between the seventh and tenth days after defervescence of the patient. Only once was a second bleeding done by the end of a month, because of the urgent need. The maximum amount of blood withdrawn was 500 cc. Each donor was given from $10 to $25, depending usually on the amount of blood obtained.

"Preparation and distribution of Serum.—The preparation of the serum was carried out by the laboratory in the usual way. Five per cent phenol (carbolic acid) in an amount to make 0.5 per cent was added as a preservative and the serum was bottled in 4.5 cc. doses. Although it was aimed to pool two or three serums whenever possible, the urgency was usually so great that for the most part individual serums were used. At four different times during the epidemic a temporary shortage of serum occurred, but the New York State Health Department helped out with such amounts as it could spare. The supply was made

available to physicians without cost at the city laboratory on giving the name, age and address of the patient for whom it was to be used. In return, physicians were asked to fill out and return the reports that were mailed to them. Stamped, addressed envelops were enclosed with the blanks asking for the result of the serum administration.

"Administrative Data and Observations.—During the epidemic about 7,000 cc. of convalescent blood was obtained from twenty-one different donors at a cost of $430, if only the compensation for the blood is considered. This gives an average of 333 cc. at a cost of $2.50 each. As about 415 doses were bottled, the average cost per dose, not counting regular administrative expenses, is about $1. It is interesting to know that about 42 per cent of the serum was administered by pediatricians, about 39 per cent by physicians or the health department and 19 per cent by general practitioners.

"The scheme for measles control worked out very well, but at times the shortage in personnel was keenly felt. In distribution of serum close cooperation was necessary between the distributing section and the epidemiologic service. At times of shortage it was often necessary to decide between different claims for serum.

"It might be added by way of an administrative observation or impression that with more effort more serum could have been obtained and administered. With the pressure of a rapidly developing measles epidemic, the regular personnel is likely to become swamped. For short periods it may be necessary at least to double the personnel in order to keep up with the epidemiologic work. In other words, it is not intended or desired to give the impression that the formulated plan was followed out perfectly. In agreement with Godfrey, I feel that a thoroughly organized scheme for measles control presupposes almost complete subordination of all health work in the city to fight against measles. In a few weeks of a measles epidemic, more babies may be lost than could be saved in a year by a baby clinic.

"The indications usually are to use serum in all infants over 6 months and under 3 years. Infants whose mothers have had measles are usually wholly immune to measles in the first three or four months after birth, and less certainly up to five or six months. Infants whose mothers have not had measles previously do not have any natal immunity and need to be protected even in the first six months of life. Children 3 years old or over usually stand measles fairly well, but if there has been recent illness, or if the general condition or nutrition is poor, or if there is a tendency to bronchial, pneumonic or tuberculosis infection, the child should be protected regardless of age.

"Ordinarily it is better to gave the serum late in the incubation period, that is, from the sixth to the eighth day, so as to give a modified form of the disease with its lasting or permanent immunity. In the case, however, of debilitated infants or those with illness, malnutrition, rickets, and so forth, it is more advisable to give the serum early enough or in sufficiently large dosage to prevent that disease entirely, even though the injection may have to be repeated at a later time.

"Naturally, one does not expect a clinical method to give a perfect result in all cases. Failures with convalescent serum may occur in from 1 to 3 per cent of cases. These may be unexplainable or may be due to a batch of poor serum or to the fact that the various factors influencing the size of the effective dose were not fully considered. At times it may happen that an un-

known exposure occurred at a time previous to the known infection and that the serum was really given too late. It often occurs that when seroprevention is intended, modification or attenuation will occur and vice versa, even though indications have apparently been followed.

"These seem to be reliable guiding principles in connection with the employment of convalescent measles serum or blood. It would not seem fair to consider unsuccessful results as failures if these principles have not been followed in one or more particulars."

Silverman tried also Ferry's and Degkwitz's sera in this epidemic of measles. His impressions about the efficacy of these sera in the prevention of measles are not very optimistic.

"The opportunity to test out the animal serum presented itself during this epidemic, and the series, though small, will be reported separately. At this time only a brief analysis of the results is given.

"Ferry's and Degkwitz's serums were tried out in chlidren over 4 in a measles outbreak in children's institutions, and a few private patients were also treated when convalescent serum would ordinarily not be used.

"In the first tests with Ferry's serum, one child came down with the first symptoms of the disease the day the serum was given and another child showed the symptoms four days later. None of the other treated patients or the controls became sick. The child who came down with measles four days after the serum had been given did not appear to have the disease modified. Two children, given the serum three and five days, respectively, after exposure came down with severe measles. Intracutaneous tests with 1 cc. of serum twenty-four hours before the appearance of the exanthem failed to cause local inhibition of the rash (phenomenon of Debré).

"The Degkwitz serum was given to fourteen children on the first rise in temperature to 100 F. or more about nine days after exposure. All came down with measles, as was expected, except that in three the fever disappeared after the first rise and the first symptoms of measles did not supervene until from three to six days afterward, when the temperature again went up. The disease in these treated patients did not differ from that in the controls, when the symptoms and the duration and height of fever were compared. In addition, two of the treated patients developed severe serum reactions and two developed bronchopneumonia as a complication. Of forty untreated patients in the institution only one had a mild bronchopneumonia.

"In my experience, therefore, neither the Degkwitz nor the Ferry serum showed any evidence of value in measles."

INTRADERMAL USE OF CALMETTE'S VACCINE

Dr. Arvid Wallgren, of Gothenburg, Sweden, has been doing some very interesting work with Calmette's Vaccine. Dr. Wallgren uses the B. C. G. virus in intradermal injections, and believes this method to be far superior to the common method of administering the vaccine by mouth.

The following quotations are taken from an article by Wallgren

which appeared recently in the *Journal of the American Medical Association:*

"When, about a year and a half ago, I began experimenting with B C G, it was not directly with the intention of investigating its immunizing properties but rather with the object of studying the immediate effects of the vaccination on the child as well as the other questions associated with this subject. Very little was then known about the clinical course of the vaccination, and, indeed this is so even to-day. The children had only rarely been clinically observed for a sufficiently long period. I believe that I have the right to try the vaccine on children, as Calmette and his co-workers in various countries had stated that the B C G was absolutely harmless. My own experiences confirm this. I have used practically only the intradermal method as the best suited for the observation of the local reaction. This article is to be considered as a preliminary report of my experiences.

"In France, new-born children have been vaccinated whether they were exposed to tuberculosis infection in their homes or not. I have deviated from this procedure and have inoculated only those children whose parents or other relatives in their environment were tuberculous. I have done this, not because, I think vaccination dangerous, but because there are some inconveniences associated with this method to which there is no reason to subject children who run no risk in their homes.

"Before inoculation, one must be convinced that the child is free from infection with virulent tubercle bacilli. There is no purpose in vaccinating a child already infected. It can do no good and may possibly be harmful. In addition, a previous infection renders it impossible to determine the immunizing effect of a vaccination. New-born children, however, can be vaccinated immediately after birth before any contamination has taken place.

If there has been the slightest chance of infection, the child, before, vaccination, should be subjected to repeated tuberculin tests. Even if it reacts negatively on admission, it should not be considered free from tuberculous infection. It may have been infected just before admission, and then the allergy is not demonstrable until after six to seven weeks. I have therefore placed these children in quarantine in my hospital or in a babies' home free from any risk of tuberculous infection. If, after the lapse of this time, the child is still tuberculin negative, I consider it fit to be vaccinated.

"A child that has been observed for a sufficiently long time and has not reacted to tuberculin is now ready for inoculation. The B C G we owe to the courtesy of Professor Calmette. It was brought to Sweden by Dr. Wassén, bacteriologist at the Municipal Bacteriological Laboratory of Gothenburg, who has been a co-worker in my experiments, and who has himself prepared the vaccines. The inoculation had been made in one sitting in the outer surface of the thigh.

"After the inoculation, one can feel at the site of injection a small nodule, which persists for several days and then disappears. A few weeks afterward, a new infiltration appears. This increases in size, suppurates, and perforates the cutis, and the resulting fistula has healed in from one and one-half to three months. The great tendency to spontaneous healing, an absolute condition for using the vaccine in children, is thus very evident.

"The majority of the children who became tuberculin positive showed sup-

puration of the primary focus. I have never seen tuberculin allergy develop in those cases that did not show any demonstrable reaction, but in not a few cases there was only small nodule formation without suppuration. The regional lymph glands were charged in several of the tuberculin-positive children, but not in all. All of the children who showed definite lymph-gland enlargement reacted to tuberculin. To judge from these experiences, a demonstrable primary focus is an absolute prerequisite to the development of allergy, but a definite swelling or suppuration of the regional glands need not necessarily occur.

"How long this tuberculin allergy lasts I cannot as yet tell. One child who was reexamined one year after the onset of allergy, and who had not been in contact with virulent bacilli, still, reacted to 1 mg. of tuberculin. Probably the allergy can last several years in some cases and only a short time in others. Nothing definite can as yet be said.

"A child that becomes tuberculin-sensitive after inoculation with B C G, I consider vaccinated. The tuberculin sensitiveness is the only evidence that the vaccination has really taken. If the inoculation confers immunity at all, this manifests itself as the ability to react positively to tuberculin. Before this we can tell nothing about the general reaction of the organism to the inoculated virus. I cannot deny the possibility of immunity earlier; for instance, when suppuration begins and the child does not yet react to tuberculin. It is safer, however, to consider a child successfully vaccinated only after the onset of allergy.

"Up to the present time, I have seen thirty-three children who were tuberculin sensitive after inoculation during their stay in the hospital. These children have almost all, after a shorter or longer interval left the hospital and have since been living in their contaminated homes. Before discharging a child, I have always warned the parents not to expose it unnecessarily. I have told them that the child probably has a greater resistance after vaccination than before, but that it can still receive a dangerous infection from the consumptive parent.

"From what has been mentioned, it follows that unless the child reacts to tuberculin I do not consider it successfully vaccinated. Until this time, I try to keep the child free from exposure, and have succeeded, with only few exceptions, in preventing the parents from taking the child home, if the source of infection is still there. Beforehand one can never tell how long the child will have to remain in the hospital. As allergy ordinarily occurs after from six to seven weeks, this period may be considered the usual length of the necessary quarantine."