*Expenditures, Fiscal Year 1926, by Objects of Expenditure.—Continued*

| Objects | Gratuity | Reimbursable | Treaty stipulations | Tribal funds | | Total |
|---|---|---|---|---|---|---|
| | | | | Appropriated annually | Disbursed under permanent indefinite appropriations | |
| Transportation of things | 550,585.13 | 49,933.08 | 37,709.47 | 29,806.46 | 20,846.88 | 688,881.02 |
| Printing and binding, engraving, lithographing, and photographing | 974.35 | 1,732.76 | 168.36 | 1,590.43 | 1,484.08 | 5,949.98 |
| Advertising | 640.79 | 917.62 | ..... | 1,117.68 | 4,142.98 | 6,819.07 |
| Furnishing of heat, light, power, water, and electricity (service) | 106,452.44 | 6,383.65 | 1,421.05 | 10,174.81 | 11,775.07 | 136,207.92 |
| Rents | 48,186.93 | 14,276.62 | 41.75 | 9,310.27 | 4,733.56 | 76,549.13 |
| Repairs and alterations | 671,777.51 | 56,114.29 | 25,255.33 | 100,769.87 | 123,455.31 | 977,372.31 |
| Miscellaneous | 46,913.89 | 50,890.79 | 2,460.26 | 15,391.13 | 473,101.11 | 588,757.18 |
| Tuition in schools not operated by the Indian Service | 455,548.12 | ..... | 104,792.59 | 39,108.59 | 125,700.52 | 725,149.82 |
| Burial expenses | 5,545.95 | ..... | ..... | 4,167.10 | 268.33 | 9,981.38 |
| Equipment | | | | | | |
| Passenger carrying vehicles | 28,762.68 | 8,531.41 | 3,325.62 | 26,878.86 | 14,052.75 | 81,551.32 |
| Furniture, furnishings and fixtures | 160,985.89 | 4,247.52 | 10,821.72 | 19,060.72 | 22,928.71 | 218,044.56 |
| Educational, scientific, and recreational equipment | 17,224.30 | 613.60 | 320.13 | 892.56 | 5,551.63 | 24,602.22 |
| Live stock (other than purchased for slaughter) | 13,837.14 | 50,121.49 | 3,202.00 | 44,119.63 | 13,948.09 | 125,228.35 |
| Other equipment | 117,959.84 | 89,495.29 | 9,042.62 | 34,361.99 | 137,262.61 | 388,122.35 |
| Total | 338,769.85 | 153,009.31 | 26,712.09 | 125,313.76 | 193,743.79 | 837,548.80 |
| Purchase of land and interest in land | 53,595.00 | 3,800.00 | ..... | 2,000.00 | ..... | 57,415.00 |
| Structures and parts and nonstructural improvements to land | 349,266.83 | 169,308.35 | 74,232.20 | 73,257.20 | 128,613.56 | 794,678.14 |
| Outstanding obligations not classified | 39,180.71 | ..... | 950.55 | ..... | ..... | 40,131.26 |
| Total operating expenses | 9,022,981.67 | 1,469,650.05 | 856,145.43 | 1,641,087.52 | 2,116,900.99 | 15,106,765.66 |
| Per capita payments | ..... | ..... | 46,362.26 | 149,988.00 | 33,204,595.67 | 33,400,945.93 |
| Total expenditures | $9,022,981.67 | $1,469,650.05 | $902,507.69 | $1,791,075.52 | $35,321,496.66 | $48,507,711.59 |



PART II. DETAILED REPORT

# CHAPTER VIII

## HEALTH

Although in the medical work of the Indian Service the variation between the best and the worst is wide, taken as a whole practically every activity undertaken by the national government for the promotion of the health of the Indians is below a reasonable standard of efficiency. The health work of the Indian Service falls markedly below the standards maintained by the Public Health Service, the Veterans' Bureau, and the Army and the Navy, and those prescribed for the states by the national government in the administration of the federal grants to the states under the Maternity and Infancy Act.

The fundamental explanation of these low standards in the medical work of the Indian Service is lack of adequate appropriations. The appropriations for salaries have been too low to permit of the employment of a sufficient number of doctors, dentists, and nurses to render the service required by a people whose health is seriously impaired because of their lack of adjustment to the social and economic conditions of the prevailing civilization which confronts them. The appropriations have prescribed or necessitated salary levels that are not sufficiently high to permit of the maintenance of proper standard qualifications for entrance into the positions in the Indian health service. The course necessarily followed has been either to lower the entrance requirements so that many persons not properly qualified for the duties of the positions secure permanent appointments or to maintain high paper standards, to give permanent appointments to the relatively few who will apply for the positions at the salaries offered, and to fill the remaining positions by the temporary appointment of others who have not, and in many cases cannot, satisfy the established requirements. The low salaries have resulted in a high turnover, and as is commonly the case in such a situation, the better qualified, who have little difficulty in securing better paying positions elsewhere, are

the ones who voluntarily resign. The Indian Service can legitimately point to a number of highly efficient, able, well qualified professional workers in the field of health, but the average falls below a reasonable minimum standard.

Low appropriations also account for the common lack of adequate facilities for the care and treatment of the sick Indians. The government has apparently failed to approach this question of providing facilities from the scientific standpoint of what are the minimum essentials. It has seemingly given too much consideration to the fact that the economic and social conditions of the Indians are low and it has assumed, therefore, that it is unnecessary to supply them with facilities comparable with those made available by states, municipalities, and private philanthropists for the poorest white citizens of progressive communities. The Indian Service hospitals, sanatoria, and sanatorium schools are, with few exceptions, below minimum standards for effective work in the three essentials of plant, equipment, and personnel, as is set forth in detail in subsequent sections of this chapter. It is at once admitted that in many cases the facilities at these hospitals and sanatoria are superior to what the Indian has in his own home, but from the standpoint of the survey itself, that is not the issue; the facilities are not as a rule adequate to render efficiently and economically the needed service. The function of a sanatorium and a sanatorium school, and to a considerable extent of a hospital, is to demonstrate to the Indian what he must do for himself on leaving the institution and insofar as possible to educate him to a higher standard of personal care. This important function many of the hospitals and sanatoria of the Indian Service cannot perform because of deficiencies in plant, equipment, and personnel. They are underequipped for the primary service of curing or arresting the disease which necessitated bringing the Indian to the institution.

Lack of appropriations and, possibly until the recent reorganization of the medical service under the present administration, lack of vision and real understanding have precluded the establishment in the Indian Service of a real program of preventive medicine. For some years it has been customary to speak of the Indian medical service as being organized for public health work, yet the fundamentals of sound public health work are still lacking. The first



essential in planning, developing, and directing a public health program is knowledge of the facts. Vital statistics are the first instrument of the experienced qualified director of public health activities. They give him the facts of his problem. The Indian Service has for many years had rules and regulations requiring the collection and tabulation of some vital statistics, but they have achieved the form and not the substance. Really accurate figures based on reasonably complete records are not yet secured. The present director of the medical work of the service, a fully qualified surgeon from the United States Public Health Service, is handicapped by the lack of definite concrete information for his own use and for formulating plans for submission to Congress. The importance of accurate vital statistics as a basis for public health work and preventive medicine can hardly be overstated.

The public health program requires, too, the establishment of an adequate number of public health nurses and of clinics through which cases of incipient disease may be located and treated before they reach an advanced stage and before others have been subjected to contagion. The Indian Service has made an excellent beginning in public health nursing, but as will be shown in detail later in this chapter, the number of positions authorized is too small and the salaries offered are so low that the service has difficulty in securing persons to fill the positions already authorized. Almost no use has been made of the permanent clinic, although some encouraging beginnings are to be noted.

The reservation physicians and the school and hospital physicians are not generally public health men, nor do they as a rule follow the practices of public health officers, although they may be supposed to do so. Their actual work, as will be discussed in detail later, consists primarily of seeing Indians who come to them or who send for them. These doctors are primarily engaged in the relief of the sick and not in the prevention and eradication of disease. With few exceptions they do not keep complete records and analyze them as do trained, full-time public health officers whose duty is more the prevention of disease than the cure of persons suffering acute illnesses calling for immediate professional attention.

Absence in the past of adequately trained and supported public health physicians is nowhere more apparent than in the boarding

schools maintained by the government. Adequate physical examinations of the Indian children in these boarding schools and adequate records would have disclosed to a qualified public health physician the existence of a very serious health problem in these schools. His approach to this problem would have been primarily to seek the causes and to remedy them and to prevent the spread of contagion. The cure or relief of the individual sufferer would have been undertaken too, but emphasis would have been placed on prevention. A real public health physician would have promptly called attention to these vital facts:

1. The Indian children in boarding schools are generally below normal in health as compared with standards for white children.

2. The appropriations for food for these children are not sufficient to secure for them a suitable, balanced diet for well children, much less for children whose health is below normal.

3. The boarding schools are generally crowded beyond their capacity so that the individual child does not have sufficient light and air.

4. The boarding school dormitories are generally of the congregate institutional type so that those who are below par in health cannot be isolated from the others. Contagious diseases under these circumstances have almost free scope.

5. The normal day at the boarding schools, with its marked industrial features, is a heavy day even for well, strong children. It is too much for a child below normal. Added to insufficiency of diet and over-crowding, it may be an explanation of the low general health among children in Indian boarding schools.

As will be discussed at length in the following pages, the medical service at the boarding schools has on the whole been inadequate. The evidence seems to warrant the statement that the first requirement of a thorough physical examination of each child on admission and periodically thereafter has not been met. Examinations have been made, to be sure, but at one of the leading schools they were seen by members of the survey staff put through at the rate of seventy-two an hour. The boarding school doctors have not been called upon to direct the régime of the school from the standpoint of health conservation and development.

The Indian Service has recognized two great health problems, probably the outstanding two, namely, tuberculosis and trachoma.



The amount of tuberculosis is not known. Estimates supplied by the Indian Office based on figures for the Indians, exclusive of the Five Civilized Tribes, place the number with tuberculosis either active or arrested at over 25,000, or approximately one in ten.

The sanatorium or the sanatorium school has been the main line of attack on this problem. Both types of institutions, as developed in the Indian Service, are, as has been said, generally below a minimum standard of efficiency in plant, equipment, and personnel. For reasons to be discussed at length later, it has generally proved difficult to get the Indians to go to these sanatoria. The number of physicians and nurses on the reservations is not sufficient to aid the Indians in their own homes in fighting the disease and in avoiding contagion. Children in advanced stages of the disease are sometimes returned from the boarding schools to their own homes, where no adequate provision is made for their care or for the protection of other members of their family from contagion. Neither in the boarding schools nor on the reservations is enough done in examining the Indians periodically to detect cases in their incipiency, a procedure that is obviously imperative in a population wherein tuberculosis is so prevalent.

The Indian Service has for a number of years conducted an active campaign against trachoma, a disease which is serious chiefly because it causes blindness. The cause of trachoma is not yet definitely known. Two hypotheses have been advanced, one that it is an infectious disease, the other that it is due to dietary deficiency. Obviously from the practical standpoint, both hypotheses may be correct. The primary cause may be a specific organism which has a chance to develop and do damage in the presence of a deficiency in diet. As in tuberculosis, the best available means of combating the organism may be in building up the general resistance through diet and a strict regimen.

Whatever the facts regarding cause may prove to be, the Indian Service in the past has directed its preventive campaigning against trachoma practically entirely on the theory of contagion and has not experimented with dietary control. Even at the school at Fort Defiance, which is now exclusively a school for children with trachoma, the diet is not superior to that at other boarding schools. In fact, several schools with better farms have much better diets. The diet at Fort Defiance is notably lacking in the two great pre-

ventive foods, milk and fresh vegetables and fruits. The preventive work thus far undertaken has consisted primarily of instruction, some control over the use of towels and lavatory facilities, and limited isolation. The complete isolation now practiced at Fort Defiance and one other school is a very recent innovation.

The curative work in trachoma will be discussed at some length in the following pages. Here it will be sufficient to say that some evidence led the Service to believe that a radical operation had been discovered which would cure the disease. Proceeding on this belief, it employed special surgeons to perform this operation and to instruct agency and school physicians in its performance. The inadequacy of the medical personnel made it impossible to follow up the cases which had been operated, to give any after treatment or to observe the final effects. In fact, according to the beliefs entertained at the outset, the operation was in itself a complete cure and no after treatment was needed. The results, however, have not borne out the theory, and the Service has now taken steps to prevent the use of the radical operation except in extreme cases. As trachoma is a very difficult disease to diagnose, especially in its early stages, and as the Service attempted to make its regular medical officers responsible for the treatment of trachoma after a very brief period of training, it naturally followed that the radical operation was performed in some cases when it should not have been, even in some cases where it is doubtful if the Indian actually had trachoma at all.

Accurate data regarding infant mortality among the Indians are lacking, but all available information indicates a high birth rate and a very high infant death rate. Among many tribes primitive, crude, and unsanitary methods are used in childbirth, and with few exceptions infants are not properly fed when weaned. In a few jurisdictions Indian Service physicians and nurses have made marked progress in getting the women to accept skilled professional care in childbirth, and some instruction has been given in infant care, both in the homes and in the schools. Pamphlets on infant care have been distributed. What has been done, however, is only a beginning, significant chiefly as indicating the possibilities of success of a more wide-spread, more determined effort, better financed.



This brief introduction gives in summary the outstanding findings of the survey without pausing to present the supporting evidence. The evidence and a more detailed discussion will be found in the following pages where specific detailed recommendations are also made. The broad general recommendation is obvious. Appropriations should be made greatly to strengthen all the medical work of the Service, especially that which relates to prevention of disease. Certain specific broad recommendations should be here enumerated for emphasis:

1. The personnel in health work for the Indians should be materially strengthened both in respect to numbers and qualifications.

2. An adequate public health program should be inaugurated, with special emphasis on prevention. This program should emphasize: (a) Reaching the Indians in their homes through public health nurses, home demonstration agents, and social workers in an effort to change the home conditions that are responsible for disease, (b) establishing regular clinics for the benefit of Indians whose health is in the least doubtful so that diseases or susceptibility to disease may be discovered early and treated, (c) providing adequate hospital and sanatorium facilities so that those who cannot be cared for in their homes will receive proper care and will not be a menace to members of their families, and (d) establishing an adequate system of medical reports, records, and statistics so that all concerned in the administration and control of medical activities may have definite facts to use as a basis for analyzing problems, measuring results, and determining policies.

3. The whole régime at the Indian boarding schools should be revised to make them institutions for developing health. This revision should include: (a) A marked increase in quantity, quality and variety of food for all children, (b) a marked reduction in overcrowding, (c) a thorough physical examination of all school children at least once a year and oftener if the child has any defects, (d) a material reduction of the working day for all children below normal if not for all children, (e) a much greater effort to prevent the spread of contagious and infectious diseases, and (f) more thorough training in the care of the person and prevention of diseases.

**Conditions of Health and Disease Among Indians.** Reliable figures regarding births, deaths, and diseases are not available for Indians. For any well organized modern white community a detailed report on health would naturally begin with an analysis of the mortality and morbidity statistics. The Indian jurisdictions, however, have not yet reached the level of well organized white communities. A discussion of the existing vital statistics must therefore be concerned primarily with the limitations of the figures rather than with the facts regarding the health of the Indians. Nevertheless, it seems important to summarize the available statistics, since, though they must be regarded as essentially untrustworthy, they form the basis for any appraisal of health conditions or of a program for the future. These figures, it should be noted, do not include the data regarding the Indians of the Five Civilized Tribes of Oklahoma.

Indian Office records show for the Indian population a high birth rate and a high death rate, with excessively high infant mortality and a large portion of deaths from tuberculosis.

*Birth Rates.* The Indian birth rate is apparently from one-fourth to one-half higher than the birth rate for the general population, according to such data as can be obtained. The rate is high, despite the fact that many Indian births are not reported. The situation is shown in Table 1, where figures are given for the estimated Indian population of eighteen states.

Various inaccuracies inhere in these statistics. The births reported are for a single year and the numbers of births occurring in all little groups of a few hundred or even a few thousand people vary considerably from one year to another. Thus the highest and the lowest rates in this table are from two of the smallest populations. The fact remains, however, that the rates for the Indians, taken state by state, run pretty consistently higher than the rates for the general populations, while the rate for the whole group of 180,000 Indians is almost 50 per cent higher than the rate for the general population of the United States birth registration area. This agrees with the general impression that Indian women, like the women of most primitive people, are the bearers of many children.

That the situation has not materially changed over a considerable recent period is indicated in Table 2, which compares Indian



birth rate with birth rate in the general population between 1915 and 1925.

*Table 1*

Indian Service statistics showing, by states, the estimated Indian population and the number of Indian births reported for jurisdictions reporting vital statistics, together with the birth rates per 1000 estimated Indian population which have been derived therefrom. For comparison are included the birth rates reported by the United States Census Bureau for the general population for such of these states as lie within the birth registration area of the United States: 1925

| State | Estimated Indian population | Indian births reported | | Births per 1000 of the general population U. S. Census |
|---|---|---|---|---|
| | | Number | Per 1000 estimated Indian population | |
| Totals ..... | 180,884 | 5,699 | 31.5 | [a] 21.4 |
| Arizona ..... | 35,827 | 1,226 | 35.7 | [b] |
| California ..... | 18,812 | 526 | 28.0 | 20.4 |
| Colorado ..... | 792 | 28 | 35.4 | [b] |
| Idaho ..... | 3,963 | 113 | 28.5 | [b] |
| Kansas ..... | 1,522 | 17 | 11.2 | 20.3 |
| Minnesota ..... | 13,910 | 544 | 39.1 | 20.6 |
| Montana ..... | 10,869 | 322 | 29.6 | 15.2 |
| Nebraska ..... | 2,620 | 128 | 48.9 | 21.3 |
| Nevada ..... | 4,077 | 159 | 39.0 | [b] |
| New Mexico .... | 12,481 | 452 | 36.2 | [b] |
| North Dakota ... | 9,911 | 280 | 28.3 | 22.6 |
| Oklahoma [c] ..... | 16,861 | 335 | 19.9 | [b] |
| Oregon ..... | 3,793 | 114 | 30.1 | 17.9 |
| South Dakota ... | 24,241 | 787 | 32.5 | [b] |
| Utah ..... | 1,172 | 66 | 56.3 | 27.3 |
| Washington ..... | 10,220 | 284 | 27.8 | 16.4 |
| Wisconsin ..... | 8,005 | 234 | 29.2 | 20.1 |
| Wyoming ..... | 1,808 | 84 | 46.5 | 21.1 |

[a] Figure for the entire birth registration area of the United States.
[b] Figures not available for the general population of this state because it is not within the birth registration area of the United States.
[c] Exclusive of the Five Civilized Tribes.

*Infant Mortality.* Among a people with a high birth rate, infant deaths are generally more frequent, proportionately, than among a people who bear fewer children. The general inadequacy of the Indian Service statistics would not justify attempts to compute for the Indian population an infant mortality rate in accordance with

the accepted formula. Since it was found, however, that on eleven reservations,[1] where about 16.8 per cent of the Indian population live, records appeared to be kept with more than the usual care, an attempt was made, among other things, to determine what per cent the deaths of infants under one year of age and of children under three years of age, respectively, constituted of all Indian

*Table 2*

Indian Service statistics showing, for certain years, the estimated Indian population and the number of Indian births reported, together with birth rates derived therefrom. For comparison are included birth rates reported by the United States Census Bureau for the general population in the birth registration area of the United States: 1915 to 1920, inclusive, and 1925

| Year | Estimated Indian population | Indian births reported | | Births per 1000 population in U. S. birth registration area: U. S. Census |
|---|---|---|---|---|
| | | Number | Per 1000 estimated Indian population | |
| 1925 | [a] 180,884 | 5,699 | 31.5 | 21.4 |
| 1920 | 206,868 | 6,510 | 31.5 | 23.7 |
| 1919 | 205,468 | 6,344 | 30.9 | 22.3 |
| 1918 | 205,249 | 5,571 | 29.3 | 24.6 |
| 1917 | 207,903 | 5,340 | 29.0 | 24.7 |
| 1916 | 209,224 | 6,092 | 29.1 | 25.0 |
| 1915 | 205,450 | 6,542 | 31.8 | 25.1 |

[a] The 1925 estimate does not include all Indians under the supervision of the Indian Service in 1925, and the difference between the 1920 and 1925 figures does not represent a decline in population. It is due to the fact that some jurisdictions which furnished vital statistics in 1920 did not furnish similar figures for 1925. The apparent decrease in population in 1925 is thus due to the smaller reporting area.

deaths within these eleven jurisdictions, and to compare the results with conditions among the general population of the United States. The shortcomings of this method are recognized, but the results permit of a rough comparison. According to this comparison Indian deaths in infancy and early childhood on these eleven reservations appear to be twice as frequent in proportion to all deaths as in the general population, as is evident from the following figures:

[1] The eleven reservations referred to are: Blackfeet, Cheyenne River, Chippewa, Crow, Fort Belknap, Fort Berthold, Fort Peck, Keshena, Pine Ridge, Rosebud, and Tongue River. They represent a population of 41,608, or 16.8 per cent of the total Indian population exclusive of the Five Tribes.



*Table 3*

Deaths under one year of age constituted:
- 26.2 per cent of all deaths among Indians of 11 reservations;
- 13.6 per cent of all deaths in the population of the United States birth registration area in 1925.

Deaths under three years of age constituted:
- 36.9 per cent of all deaths among Indians of 11 reservations;
- 16.2 per cent of all deaths in the population of the United States birth registration area in 1925.

The comparative importance of deaths under three years of age in the Indian population and in the general population is further indicated in the last column of Table 4, which shows, by states, the per cent that deaths in early childhood constitute of all deaths in the respective areas and groups.

The exact significance of the percentage which early deaths form of all deaths is always open to question. A high rate of infant mortality, if accompanied by a high death rate among older people, does not reveal itself in the percentage based upon all deaths; nor does a low percentage necessarily reflect a good condition among young children, for it may merely reflect heavy fatalities among the older members of the population. Fine comparisons are therefore hardly justified. But one thing appears beyond question when the last two columns of Table 4 are compared with each other. Among Indians almost everywhere, deaths of young children occur with relatively great frequency. In fact, the relative numerical importance of deaths under 3 years of age is greater among Indians than among the general population in each of the eighteen states listed, except Utah and Wisconsin. Indeed, the percentage of Indian deaths under 3 years of age is double or more than double the corresponding percentage for the general population in Idaho, Minnesota, Nebraska, Oregon, and Washington.

Among Indians in the states listed 28.3 per cent of the deaths reported were of children under 3 years of age. Comparison of these figures with those given in Table 3 for the eleven reservations for which the data are believed more complete, suggests that the figures for the states in Table 4 would be higher if the records were well kept.

*Total Deaths.* Despite deficiencies in reporting Indian deaths, state totals of the Indian population on reservations visited by the survey staff show more than twice as many deaths per 1000 of the

*Table 4*

Indian Service statistics showing, by states, the estimated Indian population and the total deaths, the deaths from tuberculosis, and the deaths of children under 3 years of age reported for jurisdictions reporting vital statistics, together with the general death rate and the tuberculosis death rate derived therefrom, and also the per cent that Indian deaths under 3 years of age constitute of all Indian deaths. For comparison are included the general and the tuberculosis death rates and figures showing what per cent deaths under 3 years of age constitute of all deaths reported by the U. S. Census Bureau in the death registration area of the United States: 1925

| State | Estimated Indian population | Total deaths | | | Deaths from tuberculosis | | | Deaths under 3 years of age | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Indian | | | Indian | | | Indian | | |
| | | Number reported | Per 1000 estimated Indian population | Per 1000 population in death registration area: U. S. Census | Number reported | Per 1000 estimated Indian population | Per 1000 population in death registration area: U. S. Census | Number reported | Per cent of all Indian deaths | Per cent of all deaths in death registration area: U. S. Census |
| Totals | 180,884 | 4,629 | 25.6 | 11.8 | 1,132 | 6.3 | .87 | 1,309 | 28.3 | 16.2 |
| Arizona | 35,827 | 1,337 | 38.9 | [a] | 431 | 15.1 | [a] | 369 | 27.6 | [a] |
| California | 18,812 | 454 | 24.1 | 13.6 | 51 | 2.7 | 1.42 | 66 | 14.5 | 12.8 |
| Colorado | 792 | 26 | 32.8 | 12.1 | 10 | 12.6 | 1.52 | 7 | 26.9 | 17.4 |
| Idaho | 3,963 | 142 | 35.8 | 6.7 | 56 | 14.1 | .34 | 51 | 35.9 | 18.0 |
| Kansas | 1,522 | 22 | 14.5 | 10.2 | 4 | 2.6 | .45 | 5 | 22.7 | 14.6 |
| Minnesota | 13,910 | 255 | 18.3 | 9.7 | 60 | 4.3 | .66 | 82 | 32.2 | 15.0 |
| Montana | 10,869 | 222 | 20.4 | 7.7 | 67 | 6.2 | .59 | 65 | 29.3 | 17.6 |
| Nebraska | 2,620 | 85 | 32.4 | 9.1 | 18 | 6.9 | .33 | 34 | 40.0 | 16.6 |
| Nevada | 4,977 | 166 | 39.2 | [a] | 9 | 2.2 | [a] | 53 | 33.1 | [a] |
| New Mexico | 12,481 | 348 | 27.9 | [a] | 35 | 3.8 | .59 | 140 | 40.2 | 24.2 |
| North Dakota | 2,911 | 227 | 22.9 | 7.9 | 39 | 3.9 | [a] | 97 | 42.7 | [a] |
| Oklahoma [b] | 16,861 | 215 | 12.8 | [a] | 38 | 2.3 | .65 | 68 | 31.6 | 10.3 |
| Oregon | 3,793 | 100 | 26.4 | 11.2 | 16 | 4.2 | [a] | 25 | 25.0 | [a] |
| South Dakota | 24,241 | 570 | 23.5 | [a] | 157 | 6.5 | .30 | 136 | 23.9 | 21.2 |
| Utah | 1,172 | 42 | 35.8 | 8.9 | 4 | 3.4 | .79 | 7 | 16.6 | 11.1 |
| Washington | 10,220 | 222 | 21.7 | 10.1 | 53 | 5.2 | .62 | 67 | 30.2 | 15.8 |
| Wisconsin | 8,005 | 160 | 20.0 | 10.3 | 80 | 10.0 | .31 | 23 | 14.4 | 21.0 |
| Wyoming | 1,808 | 42 | 23.2 | 8.3 | 4 | 2.2 | | 14 | 33.3 | |

[a] Figures not available for the general population because this state is not in the death registration area of the United States.
[b] Figures not included for the Five Civilized Tribes.



estimated Indian population as for each 1000 of the general population of the country as a whole. The highest Indian death rate (39.2) is reported for Nevada. Other states with Indian death rates higher than 30 are Arizona (38.9), Idaho (35.8), Utah (35.8), Colorado (32.8), and Nebraska (32.4).

In Idaho Indian deaths are relatively five times as frequent as other deaths within the state. Other states show striking differences, all unfavorable to the Indian.

Deaths reported among Indians in Oklahoma, exclusive of the Five Civilized Tribes, yield a death rate of 12.8, a rate so low as to suggest many omissions in reporting. This rate is one point higher than the general death rate of the country as a whole, but lower than that for Indians in any other state. How the Indian death rate in Oklahoma compares with the general state rate cannot be determined, since Oklahoma does not record deaths in the general population with sufficient completeness to be included in the death registration area of the United States.

Kansas, with a death rate of 14.5, ranks next to Oklahoma in the approach toward a death rate lower than the rate for the reservation population for all states combined. But in Kansas likewise, the explanation is undoubtedly that an exceedingly large number of Indian deaths go unreported.

*Tuberculosis Deaths.* Incompleteness in reporting deaths and inexactness in reporting causes of death make it impossible to determine accurately the extent to which any given disease takes its toll. Table 4 shows, however, the number of the death certificates with tuberculosis as the stated cause of death. With all the known inadequacy of the reports, the Indian Service statistics in this table show more than seven times as many deaths from tuberculosis in each 1000 of the estimated Indian population as reported in each 1000 of the general population in the death registration area. The Indian tuberculosis death rate is 6.3 as compared with 0.87 for the registration area. The Indian death rate from tuberculosis in Arizona, 15.1, is more than seventeen times as high as the general rate for the country as a whole. The death rate from this one cause among the Arizona Indians is considerably higher than is the rate for all causes combined in the general population of the registration area.

In Table 5 the statistics presented show the tuberculosis death rate for each reservation with an Indian death rate from tuber-

culosis higher than the average for all reservations combined. In this, as in the other tables, for purposes of comparison the rate for the general population of the state in which the individual reservations are located is included.

*Table 5*

Indian Service statistics showing for reservations where the Indian death rate from tuberculosis, per 1000 estimated Indian population, is above the average rate for all reservations combined, the estimated Indian population and the number of Indian deaths reported as due to tuberculosis, with the death rates per 1000 estimated Indian population. For comparison are included the death rates from tuberculosis in such of the respective states as are included in the United States death registration area: 1925

| Reservations selected on basis of their very high tuberculosis rate and states in which located | Estimated Indian population | Indian deaths from tuberculosis | |
|---|---|---|---|
| | | Number reported | Rate per 1000 estimated Indian population |
| Arizona—State rate: [a] | | | |
| Pima | 5,691 | [b]276 | [b]48.5 |
| Salt River | 1,300 | 11 | 8.5 |
| San Carlos | 2,533 | 24 | 9.5 |
| Sells | 4,731 | 57 | 12.0 |
| California—State rate: 1.4 | | | |
| Fort Yuma | 863 | 7 | 8.1 |
| Colorado—State rate: 1.5 | | | |
| Consolidated Ute | 792 | 10 | 12.6 |
| Idaho—State rate: 0.3 | | | |
| Fort Hall | 1,760 | 34 | 19.3 |
| Fort Lapwai | 1,400 | 22 | 15.7 |
| Minnesota—State rate: 0.6 | | | |
| Red Lake | 1,698 | 18 | 10.6 |
| Montana—State rate: 0.5 | | | |
| Crow | 1,781 | 16 | 9.0 |
| Fort Belknap | 1,198 | 18 | 15.0 |
| Tongue River | 1,408 | 13 | 9.2 |
| Nebraska—State rate: 0.3 | | | |
| Winnebago and Omaha | 2,620 | 18 | 6.9 |
| New Mexico—State rate: [a] | | | |
| Jicarilla | 635 | 5 | 7.9 |
| Mescalero | 656 | 7 | 10.7 |
| Pueblo Bonito | 3,000 | 26 | 8.7 |

[a] Not in the death registration area of the United States, and hence the state rate for tuberculosis is not available.

[b] The Pima death rate is known to be inaccurate. The Indian Office states that the number of deaths reported in 1925 includes deaths, never previously reported, occurring as early as 1913. This extraordinary procedure on the part of the superintendent making the report was due to an attempted revision of the roll and was not immediately detected in the Indian Office.



*Table 5—Continued*

| Reservations selected on basis of their very high tuberculosis rate and states in which located | Estimated Indian population | Indian deaths from tuberculosis | |
|---|---|---|---|
| | | Number reported | Rate per 1000 estimated Indian population |
| North Dakota—State rate: 0.4 | | | |
| Standing Rock | 3,610 | 27 | 7.5 |
| Oklahoma—State rate: [a] | | | |
| Cantonment | 726 | 6 | 8.3 |
| Seger | 761 | 5 | 6.6 |
| South Dakota—State rate: [a] | | | |
| Crow Creek | 932 | 9 | 9.7 |
| Pine Ridge | 7,628 | 51 | 6.7 |
| Rosebud | 5,700 | 45 | 7.9 |
| Sisseton | 2,474 | 28 | 11.3 |
| Washington—State rate: 0.7 | | | |
| Neah Bay | 429 | 6 | 14.0 |
| Taholah | 1,134 | 9 | 7.9 |
| Tulalip | 2,130 | 14 | 6.6 |
| Wisconsin—State rate: 0.6 | | | |
| Keshena | 1,890 | 48 | 25.4 |
| Lac du Flambeau | 837 | 15 | 17.9 |

[a] Not in the death registration area of the United States, and hence the state rate for tuberculosis is not available.

*Deaths from Other Causes.* For many of the Indian deaths which occur on reservations no report is made to the Indian Office. In many cases where a report is made, it is defective in that some of the essential items are missing. On the eleven reservations before mentioned as having made an effort to secure accurate vital statistics, the death certificates were studied with a view to learning the relative importance of various conditions in producing deaths. But on about one-fifth of the certificates a statement of the cause of death was missing. In about one-third of the cases where a cause of death was given, the cause reported was tuberculosis.

Extraneous evidence thus indicates high general death rates, an excessive frequency of child and infant deaths, and a large number of deaths from tuberculosis among Indians, as compared with the general population in the death registration area of the United States. It must again be pointed out, however, that all the Indian Office statistics here presented are incomplete and that their defects seriously impair their usefulness. It is even conceivable that some

of the reservations appearing to have the lowest death rate from tuberculosis, for example, may be the very ones with, proportionately, the greatest number of deaths from tuberculosis, and at the same time the ones with the most inadequate and imperfect reporting.

*Tuberculosis.* Tuberculosis is without doubt the most serious disease among Indians. The high death rate from tuberculosis has been indicated in the statistics just given, but the extent of the disease is not known with reasonable accuracy.

*Table 6*

An analysis of reported causes of death on eleven reservations having a population amounting to 16.8 per cent of total Indian population, exclusive of the Five Civilized Tribes. These eleven reservations are regarded as representing the area of the less inaccurate reporting of vital statistics

| Cause | Deaths at all ages | | Deaths under 3 years of age | |
|---|---|---|---|---|
| | Number | Per cent distribution | Number | Per cent distribution |
| Deaths from all causes..... | 2,773 | 100.0 | 1,022 | 100.0 |
| Tuberculosis ..... | 727 | 26.2 | 95 | 9.3 |
| Pneumonia ..... | 425 | 15.3 | 250 | 24.5 |
| Heart conditions ..... | 110 | 4.0 | 9 | 0.9 |
| Other stated causes..... | 963 | 34.7 | 437 | 42.8 |
| Cause not stated..... | 548 | 19.8 | 231 | 22.6 |

The formula generally accepted in making tuberculosis estimates in the general population is based on the average number of deaths over a period of years. During the years 1916 to 1925 the number of Indian deaths reported from tuberculosis was 10,760, or an average of 1076 deaths each year. Intensive case-finding surveys in white communities, such as Framingham, Mass., Cattaraugus County, N. Y., and Fargo, N. D., have shown that approximately nine active and nine arrested cases may be expected for each annual death. Reports of death among Indians are incomplete to an unknown extent, but application of the formula to the figures just given indicates at least 9684 active and 9684 arrested cases, or a minimum of 19,368 tuberculous Indians living at the present time.



The American Public Health Association estimates the probable number of "contact cases," or persons directly exposed to tuberculosis, as being three times the number of active cases. This method would indicate 29,052 "contacts" among Indians on the various reservations.

In 1922 a somewhat cursory study of tuberculosis among Indians was made by the National Tuberculosis Association. The statistics were obtained from the Indian Office. They indicated that 29 per cent of all deaths were from tuberculosis, and that the average number of estimated cases each year during the period 1911-1920 was 23,705.

The types of tuberculosis included in these estimates are not known, but all inquiries made on the reservations themselves indicate that a large percentage of the cases are of the pulmonary form. In visits to reservations and schools, a large number of glandular cases were seen, and obviously they also constitute a very considerable proportion of the total. The prevalence of this form of infection is of the greatest interest, as it is ordinarily associated with a contaminated milk supply, and yet milk when provided at government schools is usually obtained from clean herds, and the Indians on the reservation rarely use milk. Most Indians consume large quantities of beef, and the supply generally does not come from tuberculin tested stock. This fact may supply a hint in the solution of this important problem.

Kober has pointed out that tuberculosis was no more prevalent among Indians than among whites during the early colonization days. From all available data, it would seem that there has been a progressive increase in its prevalence with a more intimate contact with the whites. In any case, in their present mode of life the Indians do not seem to possess the same degree of immunity as the whites. The course of the disease is more acute and fulminating, with less evidence of fibratic changes in lung pathology. Tuberculosis appears to take much the same course in the Indian as in the negro.

The Indian in all probability would respond as well to early care as a member of any other race, but in most instances a diagnosis is not made until the disease is well advanced. Although the disease usually takes a more rapid course in the Indian, perhaps making diagnosis more difficult, there seems to be no reason why the

physician in constant touch with such conditions should not more quickly suspect the presence of tuberculosis. Diagnostic facilities, such as X-Ray and laboratory and tuberculin tests, have not been available in the Service and it is only on rare occasions that such aid is sought from the outside.

The prevalence of tuberculosis in boarding schools is alarming. This condition is apparently due to the failure to make complete health examinations when the children are admitted, and, later, to the serious overcrowding practiced, the poorly balanced ration, and the industrial method of operating these schools. Instances were noted where a child with incipient tuberculosis was required to assume duties too difficult for his physical strength. A full-fledged case of the disease thus develops before the case is diagnosed and treated. To aggravate these conditions the child in an advanced stage of the disease is frequently returned to his family, there to infect others in the home and himself to be the victim of neglect on account of ignorance and lack of facilities to meet his needs. Under a recent ruling the Indian Office is attempting to provide beds for some of these cases in the school hospital when sanatorium facilities are not available.

At one hospital, a case was seen of a girl about 18 years old who had been sent home from a large non-reservation boarding school about a month previous to the visit of the survey staff. Physical examination of her chest revealed unmistakable evidence of infiltration throughout the left and part of the right side. The fibrosis was sufficient to indicate that the process had been going on for perhaps a year or more. The symptoms dated back approximately two years. This case was detected at the boarding school only about three months previous to the time she was examined by the survey physician and was hospitalized only a month at the school before she was sent home. At the time she was visited by the survey physician, she was in a small agency hospital which took all classes of cases. Danger of contamination existed for the maternity cases in nearby beds.

At one non-reservation boarding school the contract physician asserted that all cases of tuberculosis were detected on admission each fall, and therefore all cases found during the school year were developed at the school. One case from this school was observed at a sanatorium in March, 1927. A young man transferred there



from the school in January was found suffering with a far advanced case of tuberculosis, with the usual findings, including cavitation. In general he presented as typical a picture of the disease as one would ever expect to see. That this case developed within the five months previous to his hospitalization is unbelievable. It is far more probably evidence of a failure to make an early diagnosis, especially as the contract physician concerned was found to be examining the pupils at the rate of 72 per hour, according to an exact count made during the examinations. This physician says that during the school year 1925-26, twenty-two cases of tuberculosis developed at that boarding school, and during the period between opening of school in the fall of 1926 and March, 1927, at least nine cases of pulmonary tuberculosis had been detected. The State Board of Health, knowing of these assertions, offered to supply a trained tuberculosis clinician and staff to cooperate with the school in an effort, if possible, to detect these cases earlier. This offer was declined by the local officers, apparently without any reference of the matter to the Washington office.

This same school may be cited as evidence of the difficulty in caring for cases in the school. A young boy had been diagnosed as in an early stage of the disease. He had been hospitalized at the school hospital until objective symptoms were absent. He was then advised to take limited exercise on the school grounds. No sooner had the boy returned to the campus than the disciplinarian demanded that he assume regulation duties. This employee was informed of the physician's orders, but repeatedly ignored them. At the time of the survey visit, this lad was found repairing steam pipes in a wet and poorly ventilated room.

The establishment of sanatoria and sanatorium schools constitutes practically the only special activity thus far undertaken for the control and prevention of tuberculosis. No organized machinery, such as clinics, has been established for case finding and follow up. Because of the limited amount of public health nursing on reservations, this important method of prevention and attack is almost negligible. Except for the sanatoria and the sanatorium schools, which are in general disappointingly weak and ineffective, main reliance is placed on the general health organization of the Service.

The need for more special work to control and prevent tuberculosis may be illustrated by a typical case. At one reservation a home was visited not over a mile from the hospital. The house was of logs, had one door and two small, closed, immovable windows. The floor was of dirt; the equipment scanty. In this house a young mother was attempting to nurse twins only a few months old. She had a well-developed case of tuberculosis, as did a brother about fifteen years of age. No provision whatsoever was made for caring for sputum. Expectoration was profuse and promiscuous. Situations like this can, of course, be duplicated indefinitely, both in the Indian and white communities, but at this station the local hospital, less than a mile away, was only being used to about half its capacity. The wards on the second floor were vacant. These unused beds would have been ideal for tuberculous cases. The local officers were not only failing to use valuable bed space, but, in addition, were making little real effort to correct these or similar home conditions. The brother referred to had been operated for tuberculosis of the bone. The leg was still draining, and the only care being administered was by members of the household.

*Trachoma.* Trachoma is the second most prevalent disease among Indians. Its exact extent is not known, and while it does not produce mortality, it does leave permanent injury to the eye, which not infrequently results in blindness.

Trachoma is reported among whites living adjacent to Indian reservations. It is not known whether the disease spreads from the Indians to whites, from whites to Indians, or in both directions. A serious problem exists. The Indian Service and several of the states are making efforts to control the situation. This work should be amplified and should not be hampered for lack of funds or of expert personnel.

The most recent trachoma figures obtainable for a single year are those for the year ending June 30, 1926. The following tabular statement shows the number examined, the number of positive cases, and the number operated upon by special and agency physicians:

*Reports of Trachoma from Indian Office Files for the Fiscal Year, 1926*

| Type of physician making examination | Number of cases examined | Number found positive | Per cent positive | Number operated |
|---|---|---|---|---|
| Special physician ..... | 25,567 | 4,867 | 19.0 | 3,089 |
| Agency physician ..... | 46,587 | 6,266 | 13.4 | 2,229 |



No standard classification of this disease has ever been made by the ophthalmologists, and therefore diagnoses as trachoma have included such conditions as simple conjunctivitis, folliculosis, and other non-trachomatous lesions.[2] With all the inaccuracies in present statistics, however, the fact persistently emerges that trachoma is very prevalent among practically all tribes. The only exceptions found were at Neah Bay, La Push, and Taholah in Northwestern Washington. The disease seems to be no respecter of age. It is found among children as well as adults.

The cause of trachoma is not definitely known. One school adheres to the infectious and contagious theory, and the other to a diet deficiency theory. Some of the leading research authorities are now carrying out studies on both hypotheses, and it is hoped that their labors will be completed and will give a definite knowledge of this disease.[3]

The infectious and contagious theory has evidently received more credence among Indian Service authorities than the one based on diet deficiency, because, since 1923, the Indian Service has attempted to control the spread of the disease by rules and regulations

[2] Before the survey physician visited the various reservations, this fact had been verified time and again by the special Indian Service physicians who are devoting their time to this work. It has only been within the past year or so that all these specialists have been considered competent to diagnose the disease accurately. This fact was brought out in conferences with the district medical directors. It is only fair to add that these inaccuracies in diagnoses may be accounted for in part by the following facts. Many of the diagnoses were made after a single brief examination, and in a disease so difficult to comprehend in its earlier stages, even the highly trained specialist might err; the rapid turnover of the medical field personnel prevents close follow-up of cases so that many diagnoses are made without knowledge of previous findings, some avoidable duplication in statement of the number of cases is due to the fact that special physicians report on the same cases that the agency physician has already included in his report. Naturally many of the cases examined are "selected" and thus are by no means an accurate cross section of the population at large.

[3] Noguchi at the Rockefeller Institute has discovered an organism from trachomatous eyes with which he has been able to produce follicular conjunctivitis by sub-conjunctival injections of pure culture and, in some monkeys, dying from other conditions, has at least gotten a microscopic evidence of thickening and scar formation. While these findings reveal progress, they are by no means conclusive. Research similar to this is being done by the United States Public Health Service at Rolla, Mo., and at the Hygienic Laboratories in Washington, D. C. As yet a final solution of the problem has not been reached.

dealing with its transmission. The installation of the Pullman towel system in some schools, and the partial segregation of the trachomatous child from those with apparently normal eyes, are the two chief preventive activities.

Chemawa was the only school visited in which the Pullman towel system was not used in all dormitories. Even this system as it is applied apparently constitutes a source of danger, because not all schools have locked containers for soiled towels. Where containers are unlocked, several children may use the same towel. A more serious fault, perhaps, is the practice of dispensing a specified number of towels three times a day. This means that if the child wishes to dry his face and hands at some time other than the designated hour, he must make special request of the matron, use soiled linen, or not dry them at all. It is not infrequent to see children use soiled linen and, on several occasions, piles of readily available soiled towels were seen on the floors of the wash rooms.

In 1913, the United States Public Health Service, in its report on contagious and infectious diseases among the Indians, recommended the strict segregation of trachomatous pupils from healthy pupils. So far as could be ascertained on visits to these schools, the only effort to carry out this recommendation was being made at the Fort Defiance School, and it was started in 1927. The Indian Office reports another special trachoma school at Tohatchi, Arizona, started in the fall of 1927. At certain schools some pupils found in separate dormitory rooms were allowed to mingle with other pupils in practically every other school activity, thus nullifying the limited attempts made at segregation. Just how much infection is spread through the schools is not known, although frequently reports were heard in the positive.

The Indian Office has recently issued an order to agency superintendents requesting them to send children with trachoma to specified schools where the best hospital facilities are available and the trachoma-free child to those less well equipped from a hospital standpoint. This measure should be a temporary expedient only. Every school should have adequate facilities because the Indian child is so generally below par that all are in need of expert care.

The diet deficiency theory of trachoma has its advocates. Stucky, in his work among the mountaineers of Kentucky, has found splendid results following dietetic management of his cases. Other



workers have obtained gratifying results by the same means. Even though this method has not been proved, it is believed the Indian Service would have made greater progress by consolidating the two methods in its program. The importance of this joint attack is obvious when the Indian's diet on the reservation or in the school is considered. In both instances the diet is deficient. The difficulties to be met in improving this situation on the reservation are very apparent, but in the boarding school no reason is apparent for the restricted diet given. This point is well illustrated at the boarding school at Fort Defiance, which in January, 1927, was turned into a trachoma school. All children enrolled there suffering with the diseases were retained, those free were exchanged with other schools for their trachomatous children. In March, approximately 450 trachomatous children were at this school. A special nurse was detailed to treat their eyes twice daily under the direction of the local physician, a man well qualified to superintend this work. Considering these factors, this work was highly commendable, but there is another important consideration. In the first place, these children were put under practically the same routine that they would find in any other government school, including the overcrowding so generally prevalent. Secondly, a perusal of the weight charts posted in the various dormitories showed that 25 per cent of these children were listed as from one to seventeen pounds under their normal weight, computed on the usual height-age standards. Some of these children were recent arrivals from day schools, and other reservation schools. Although the mere presence of fat is no indication of the health of children and weight is not necessarily an accurate guide to their physical condition, yet careful observation of the pupils seen indicated that their bodies were not well nourished.

No additional allowance for food was made when this institution was changed to a trachoma school,[4] so the children were subsisting on the same faulty diet found in practically all schools. Little or

[4] No extra appropriation was available when the Fort Defiance School was changed to a special school for children suffering from trachoma, and hence the Indian Service had to operate it on the appropriation made when it was an ordinary boarding school. The Service is not criticized for its action in going ahead with segregation despite the lack of funds for adequate care. The procedure was justified under the conditions, but attention must be called to the situation found because it demands speedy correction.

no fresh milk, butter, fruits, or vegetables were furnished them. A limited amount of milk was, however, used in the small sanatorium and hospital. It seems a questionable procedure to try to heal a localized condition by localized applications, when the whole body lacks the food necessary to nourish it.

The Indian Service began the treatment of trachoma, both medically and surgically, in 1911. In 1924 a definite procedure for eradicating the disease was adopted based on advice from recognized authorities in the field of ophthalmology. This procedure had its origin when a few Indians of the Blackfeet nation attending the Carlisle School some years ago were found to have trachoma and were operated on in Philadelphia. In 1923 they were found during the course of one of the first trachoma surveys on that reservation. From all appearances, their eyes had remained cured in spite of frequent contact in their homes, for periods ranging from eight to fifteen years.[5] During the summer of 1924, the physician operating on these original cases treated a fairly large number at Fort Browning with the assistance of the reservation physician. Special clinics followed, and a number of physicians were detailed to do this work in the field. These were physicians selected on the grounds of ability or interest in the disease. They were required to assist and observe the technique of an operation believed at that time a cure for trachoma. This apprenticeship was frequently short, and some of the first physicians probably started out with a somewhat distorted idea of their problem. At that time no cases among Indians had remained cured long enough to warrant the complete acceptance of the specific operation (tarsectomy) proposed. The work, however, was started and pushed as rapidly as possible. The next step was to extend this service by attempting to have all agency physicians serve as trachoma specialists. Circular No. 2122, under date of June 22, 1925, stated in part, "We shall require all of our physicians to learn to perform the approved operations for the cure of trachoma, or give place to those who will learn, but we cannot make effective this requirement until they are provided with instruments." This order was again strengthened

[5] At the time of the visit of the medical representative of the survey to the Blackfeet Reservation, an effort was made to see some of these cases that had been reported to have remained cured from eight to fifteen years, but the agency authorities said they could not locate them.



in Circular No. 2147, under date of October 3, 1925, which stated in part, "It is desired again to state that the duties of special physicians are to instruct the station physicians in the subject of their specialties. Station physicians must learn to treat trachoma and perform operations recommended by Dr. Fox and other eminent ophthalmologists. The office desires that every physician in the Indian Service shall become a trachoma specialist." Several circulars issued before this time (Nos. 1856, 2013, 2015, 2125) stated that the agency physician was to be held responsible for the treatment of this disease, and gave him a list of the required instruments. It was suggested that their training was to be obtained from the traveling specialists on visits to their reservation or, in a few instances, by attendance at clinics held in Fort Browning, Albuquerque, Phœnix, etc.

Obviously the local physician's ability to diagnose and his operative judgment were usually a reflection of the specialist visiting his reservation, or the result of the contact he had had at one of the larger clinics.

Naturally some of the first specialists trained were enamoured of the possibilities of radical surgery, and others were more conservative. This difference was found in observing the methods used by these men. One specialist was asked how he would set about the eradication of trachoma, if sufficient funds were made available. In brief, his reply was that he would perform a tarsectomy on every Indian, irrespective of the stage of the disease. At the time he made the statement, he was performing these operations on small children, and the extent of involvement of cases operated upon would indicate that he was doing this very thing.

On the other hand, radicalism has by no means been universal. Some physicians in constant touch with trachoma have observed more conservative procedures, and, greatly to their credit, they have advised the Indian Office in detail of their experiences, showing that not all physicians in close touch with the work could conscientiously accept standardized requirements.[6]

Within the past year considerable progress has been made in improving conditions. Generally speaking, specialists as well as

[6] A typical instance is found recorded in Special Agent File No. 732, Series No. 69495, 1925.

agency physicians are more conservative both in the diagnosis of trachoma and in the course of treatment applied.[7]

The most serious fault in the trachoma campaign has been the complete acceptance of a method not sufficiently proved as correct treatment and the attempt to standardize its use. This procedure is the more serious in view of the lack of definite knowledge of the causative factors involved. This method has resulted in large numbers of cases being handled, and has given a false picture of the real facts, because trachoma is not eradicated 100 per cent by any one operative procedure. The specialists have been so busy in operating new cases that they seldom had the chance to check up on their past efforts. Not infrequently two years elapse before the physician is able to return to the jurisdiction, and then it is difficult to locate all the cases previously operated upon. During March and April, 1927, a special physician was detailed to one of the schools. In trachoma work he did sixty-four tarsectomies, and after a period of observation of from twelve to forty days reported "recovery" in forty-one cases. Nine of these recovery cases were re-examined with the local physician who had assisted in most of the operations, and six were found to have definite granules on both their upper and lower lids. None of these children was receiving treatment at the time, and the nurse in charge of the local hospital reported that no follow-up treatment had been ordered.

Ten cases at Phœnix were re-examined in 1926 by the school physician and the sanatorium superintendent. These cases were operated on a year before by various specialists, chiefly the one referred to previously as stating he believed in a general application of tarsectomy. They found that recurrences were 100 per cent in tarsectomy cases, and over 50 per cent in selective grattage. These

[7] While this report was being prepared the Indian Office issued two very significant circulars intended to lessen the generalized application of surgical measures in the treatment of trachoma. No. 2347, under date of July 22, 1927, outlined a more conservative procedure and urged the physician to exercise more precaution in the method of treatment employed; and the other, No. 2369, under date of September 20, 1927, prohibited the use of tarsectomy or radical grattage without consent from the Washington office. For each case in which either of these procedures is deemed advisable, it will require, first a statement from the physician giving the following information: Name, age, sex, tribe, symptoms, approximate duration of disease, methods of treatment previously carried out, response to treatment, and the special indications which make either of the above surgical operations necessary at the time.



operations were performed on the promise that the surgical procedure used would cure the disease once and for all without after care, an idea deduced from the writing of specialists whose methods the Indian Service physicians were required to follow.

A review giving more encouraging results was observed at the Fort Totten school. In November, 1926, 332 children were examined, 129 of whom were positive. Either a grattage or tarsectomy was performed on all these positive cases.

In May, 1927, the special physician who had performed the original operation, accompanied by the physician on the survey staff, re-examined one hundred of those operated upon. The results are grouped in the following tabular statement:

*Results of review in May, 1927, of Trachoma operations performed at the Fort Totten School in November, 1926*

| Operation | Total | Found cured | | Found in need of treatment | |
|---|---|---|---|---|---|
| | | Number | Per cent | Number | Per cent |
| Grattage ..... | 87 | 55 | 63.2 | 32 | 36.8 |
| Tarsectomy ..... | 13 | 7 | 53.8 | 6 | 49.2 |

Those listed as "cured" showed no evidence whatever of other pathology than well healed scars, the natural sequence of either type of operation. Those listed in "need of treatment" were those still having some remaining abnormal pathology, such as trachoma granules or proud flesh. In only five of the grattage cases were trachoma granules found to recur, and none recurred in tarsectomy cases. The findings at the Fort Totten school, however, are more favorable than those generally encountered.

Special physicians have not only themselves been unable to follow-up their former cases at frequent intervals, but they have not been able in most instances to be assured that a course of follow-up treatment would be given by the local authorities. This is not in all instances the fault of the local authorities, because the Indian will migrate and fail to return for treatment, or he will not always follow the physician's orders at his home. The records of an experienced nurse in the Indian Service indicate that the number of visits required to secure observance of instructions is about

three times as many among Indians as among whites. If a case can be cured by a single operation, statements to the effect that cases are followed until cured may be true, but if the case requires protracted care and treatment it is not true. Thus figures regarding cures are open to serious question. No cases or figures are available in the Indian Service to show the course of treatment and results in these cases over a period of years.

The cure of trachoma is not as yet an established fact. Some specialists who have been in contact with the disease for years say there is no known cure. This belief was more or less general among agency physicians. On the other hand, some specialists contended that the tarsectomy operation brings about a permanent cure. The latter view is not regarded as based on sound knowledge, because cases among Indians at least have never been carefully followed over a sufficient period of time and then, as has been said, there is always the question of the diagnosis in the first place.

Generally speaking, nothing is known of the epidemiology of trachoma. Surveys have been made to determine its possible incidence. Transmission experiments have been conducted, but nowhere in the literature has been found any complete epidemiological study. In this matter the Indian Service could render not only the Indian but also the whole world a signal service in collecting careful data on trachoma. The field laboratory is ideal. There are numerous groups of Indians that could be used as controls for such a study.

*Venereal Disease.* The statement is commonly made that venereal diseases are widely prevalent among Indians. No accurate facts are available to substantiate the assertions. The para-syphilitic diseases, such as general paresis and locomotor ataxia, are reported very infrequently in Indian communities in which a high percentage of syphilis is said to exist. The few Wassermanns that have been made were on cases suspected of the disease, and hence results, although positive, are not a criterion of the situation in the general Indian population. At one reservation the agency physician asserted that 85 per cent of the tribe were infected. He had had some Wassermanns made, but could not show a single report at the time of the survey visit. The most frequent reports of these diseases were found among communities composed largely of mixed bloods. This type of population obviously comes into closer contact with the low grade white than does the full blood, and thus the incidence might reasonably be expected to be higher. But reliable facts to substantiate such assertions are lacking.



A few years ago an attempt was made to do routine Wassermanns on the Taos Indians, but, due to poor handling, it was never possible to complete the study. At present, the physicians at the Consolidated Chippewa Agency are attempting to do routine Wassermanns on all Indians on their reservations. At the time of the survey visit, the work was barely started, but the Indians were coming in fairly well. If this effort can be extended to the majority of Indians in this jurisdiction, irrespective of a suspicion of infection, reliable figures will have been secured for at least one group.

Many agency physicians say that the Indians will not come to them for treatment for venereal diseases, but go instead to outside practitioners. The general impression gained was that the Indian was quick to seek treatment in the acute stages of the disease, but it was difficult to get him to continue after the acute symptoms had subsided. A vast field for investigation and the institution of control practice for this disease among the Indians awaits intelligent interested physicians.

*Typhoid Fever.* Physicians very commonly reported that they had had no cases of typhoid fever on their present reservations or on previous assignments for years. The older physicians report only an occasional case in the past. This fact was a distinct surprise, because the Indians generally depend upon a very questionable water supply. At several reservations and schools, according to analyses made by state boards of health, the water was reported contaminated. The water supply at Zuni, for example, persistently showed B. coli pollution. For years, the raw sewage of the Black Rock School, four miles upstream, was dumped untreated into the river, but rarely was there a case of typhoid. The reason for this is hard to determine. Very little milk is used, and thus one very important source of infection is eliminated. Possibly the Indians may have derived some immunity by frequent ingestion of contaminated water. Clearly, however, typhoid is not now a problem among Indians, or as some writers say, the disease has not yet been extensively introduced among them. Numerous cases of dysentery, however, are reported.

*Other Diseases.* In respect to other diseases the Indian situation presents comparatively few significant variations from that of the general population.

With regard to infectious and contagious diseases, until recently almost no effort has been made to compile statistics except for tuberculosis and trachoma. Cases of smallpox were found only occasionally; vaccination has been compulsory in schools since 1907, though it is probable that a fairly large number of adults and children still remain to be reached before maximum protection is assured. Measles was found frequently, 140 cases at one school at the time of the visit of the survey staff, and it is likely that measles accounts for part of the high infant mortality, though records are not available to substantiate the contention. Little scarlet fever was found, and only occasional cases of diphtheria, the latter invariably among mixed bloods. Scattered cases of whooping cough were reported, and there have been epidemics of chickenpox and mumps.

Considerable indifference in regard to diseases of childhood was observed, especially in the boarding schools. In some instances the old feeling appeared to exist that such diseases were to be expected, and the sooner all children had them the better. In diphtheria, on the other hand, Tulalip and Sherman have immunized all their pupils, and the Consolidated Chippewa Agency is now immunizing Indian children on the reservation and in public schools. The Indian Office has distributed circulars among field physicians to encourage immunization.

Sporadic outbreaks of epidemic cerebro-spinal meningitis have occurred in Montana, Washington, and Oregon for the past few years. During the spring of 1927 about thirty cases developed among the Blackfeet tribes in Montana. Immediate action on the part of the reservation physicians, the state health authorities and the district health officer prevented its spread.

Cases of malaria have been reported among the Indians in southeastern Oklahoma, among the Cherokees of North Carolina, and in the Pueblo of San Juan, New Mexico. The occurrence of this disease in New Mexico seems quite out of the ordinary because of the marked difference in climate and altitude from the usual malarial regions. A trained worker is now making a study of this situation.



Impetigo is widely prevalent. In the schools it is frequently due to faulty hygiene or a lack of prophylaxis and steps have been taken to prevent its spread by intensive treatment and isolation.

In order to determine the extent of hookworm the International Health Board has recently made a survey of the Cherokee Nation in North Carolina. Cases of hookworm also exist in southeastern Oklahoma. In the Navajo country a visitor suggested the presence of hookworm, and the microscopic examination of fifty stools revealed four positives. Nothing further has been done to determine the prevalence of this disease among the Navajos.

Erysipelas has frequently recurred at the Rapid City non-reservation boarding school during the past few years. The district medical officer has made a careful study of the matter to institute methods of eradication.

Goitre, which in the general population is usually localized to communities within the so-called goitre belt of the United States, has been reported among Indians in Wyoming, at Keshena, Wisconsin, and around Bishop, California. In the Pacific Northwest no cases are reported among Indians, although not infrequently cases are found among whites.

Available figures indicate but few deaths due to cancer; heart disease accounted for 110 deaths in the table for eleven reservations previously presented, but its exact prevalence is not known.

*Certain General Factors Affecting Indian Health.* Certain general factors influence the health of the Indians: (1) Environment; (2) food; (3) alcohol, opium, peyote; (4) racial status.

Climatic conditions affecting health vary as much among Indians as among whites, since Indian communities are scattered throughout nearly all the states of the Union. The main body of the Indian race, however, is confined largely to the Southwest (Oklahoma, Arizona, and New Mexico, principally), the Pacific Coast (Washington and California, principally), and the Northwest (Montana, the Dakotas, and Minnesota, principally). Climatic peculiarities of these sections of the country to some extent affect housing facilities, water supply, sewage disposal, and other environmental factors which influence Indian life.

For the most part, the dwellings in the Southwest are of a temporary nature, the hogan, wickiup, tepee or tent. That the primitive dwellings are temporary is in one sense a great blessing, for they

are abandoned lightly and new clean ones constructed elsewhere, thus curtailing the spread of disease, which even so, is inevitable under the existing conditions of overcrowding.

On Indian reservations in this part of the country, water generally is scarce. Sometimes it is difficult even to get enough to drink, so lack of cleanliness of body, clothing, and homes is a natural consequence and is found with discouraging frequency. In addition to lack of cleanliness in the house, overcrowding is a serious problem. Whole family groups sleep on the ground and privacy is unknown. Contagious and infectious diseases have full sway over the entire household if one member becomes ill. Scarcity of water, overcrowding, lack of adequate ventilation, careless disposition of sewage, and exclusion of sunshine are almost universal in the typical Indian dwelling.

The temporary nature of the primitive Southwest Indian home has been mentioned, but the homes of the Pueblo Indians of New Mexico, on the other hand, are of great permanence. For generations these natives have dwelt in their ancestral homes of adobe brick, patching and repairing from time to time as they crumble and wear. Although certain unsanitary conditions surrounding them are detrimental to health, as contaminated water, century-old graveyards in the main patio of the village, sewage in the streets, corrals in the yards adjoining their houses, and the lack of water-closet or privy of any kind whatever, yet houses themselves are neat, and ventilation is assured by means of the picturesque corner fire place found in nearly every room. The porous soil of the desert and the prophylactic benefits of the sun, however, check to some extent the influence of the disease-bearing germ bred by such conditions.

In other sections of the country, the government has attempted to correct the bad housing by a model-home campaign and has built frame houses for the Indian, but since the training in housekeeping was in many instances inadequate, the effort has often been ineffective. The story of the Indian owning a fine six-room frame building, and living adjacent to it in his tepee is fact, not fancy. When the Indians do live in the houses provided, they often barricade themselves behind tightly-closed doors and windows to avoid fresh air, and they may live for years in an increasing accumulation of



dirt, because they have not learned to adapt themselves to life in a permanent house. Building houses for Indians as is sometimes done, in a locality itself lacking in sanitary efficiency, without providing home demonstration or other social workers to carry on an educational campaign to assist them in fitting themselves to the new situation, is a waste of money.

The most important single item affecting health is probably the food supply. Whatever the situation may have been in the past, the Indian is now given, whether as rationer or as pupil in a government school, a very poorly balanced ration. Consequently when he becomes able to select his own diet, he neither raises on his farm nor buys from the trader a diet superior to that which for years perhaps has been imposed on him. In too many instances his lands are so poor that he cannot depend upon them for his food production.

At the boarding schools the food supply is more regular, but its excess of starches and meat have been a factor in retarding the development in the Indian of a taste for vegetables and milk. It is extremely serious that the government has not inculcated better food habits. The cause has been primarily that the government has not allowed sufficient funds with which to feed these children. Doubt has been expressed as to whether, until recent years, the government has given adequate thought to this problem or if it has recognized in the operation of Indian schools that diet and nutrition must be dealt with by technicians in this field if the maximum of health is to be secured, in the long run, at a minimum cost. Only within the past few years have even a few among the government schools provided an average of one pint of milk a day for each child. Some are not now providing any fresh milk or butter.

The history of alcohol and the Indian goes back to his first contact with the white man. The liquor problem apparently was of some importance in all the jurisdictions visited in this survey, excepting certain pueblos. In most instances the supply came from the oustide. "Canned heat" and commercial liquor are secured from whites.

Certain tribes prepare fermented drinks from berries, corn, or pine bark brewed in earthen jars long used for the purpose and thus retaining in their pores organisms causing fermentation. Certain infusions of leaves or roots of various herbs are also drunk.

Apparently the most commonly used drug is peyote, often used in a religio-therapeutic manner. It is derived from a small cactus found along the lower Rio Grande and southward into Mexico. The Native American Church in Oklahoma is said to be founded on the use of peyote in its ceremonials. The habit-forming character of this drug has not been definitely determined, although many Indians were reported to use it constantly, notably the Kiowa and Comanche, Cheyenne and Arapaho, Potawatomi, Winnebago, Sac and Fox, Omaha, Osage, Kaw, Ponca, Tonkawa, Shoshone, Northern Cheyene, Uintah, and Ute tribes. The drug does not come within the Harrison Narcotic Act, though it can be detained at custom houses under the act of June 30, 1926.

Opium and its derivatives are reported used by individuals in some tribes. The tribes in Nevada and California were reported as perhaps the worst offenders, though a trace of its use is reported in other places.

To what extent intermarriage with whites has affected the health of the Indian is uncertain. Some writers contend that long continued inbreeding within a single tribe has pernicious results, but others hold that such imbreeding is often desirable where the stock is pure and strong. Other factors than inbreeding that would account for Indian poor health are that they have been subject to new diseases against which they have not had time to build up an immunity; they have been starved or fed inferior food; they have been poorly cared for, nursed, hospitalized, and guided. The result is a weakened race. A constant inbreeding may bring additional disastrous consequences, biologically or through forced association with persons educationally inferior. This is a condition that needs immediate attention, for no palliative measures can overcome conditions of inferiority created by too complete tribal segregation.

*Special Difficulties of the Indian Health Situation.* A number of special difficulties are present in the Indian health situation.

The medicine man is still a potent factor among many tribes. In some tribes the general impression gained is that his influence is gradually diminishing, but many still practice the same old incantations and religious rites. "The white public thinks the practice of the medicine man should not be used, but many of us still rely on this practice today," said a California Indian. On some reservations the physicians are called in for consultation by the medicine man. This may seem absurd, but it is evidence of the gradual breaking down of the old undesirable custom. In such instances the white doctor has an opportunity to render service that he would not have if he held aloof.



Lack of knowledge of the Indian's language is frequently a barrier to appropriate medical service. Notwithstanding the spread of schools, many older people do not speak or understand English. Usually the only means of communication between health officers and the non-English speaking Indians is through interpreters, a method not satisfactory for many reasons.

Another real difficulty in health work is due to the past activities of the Indian medical service. In some instances the physician has been little better than the Indian medicine man, and the Indians have been forced to doubt his ability and interest. Today, however, a number of physicians with ability and a genuine interest for the Indians are winning their confidence and respect. Had there been more of these in the years past a far better situation would exist now. The type of hospital and the manner of its administration have kept away many a case in need of care. Within the past few years more and more Indians are going to hospitals off the reservation, where they learn to appreciate and expect a higher type of service than can generally be found in their government hospitals.

Clashes in personality and lack of sympathy for Indian ideas and feeling have not been confined to the medical personnel. These unfortunate attitudes have existed also among some agency employees, and have added to the difficulties encountered in inducing the Indians to accept the white man's methods.

The isolation of Indians from convenient transportation centers causes many difficulties in rendering the necessary services. Many places, miles from highways, have barely a wagon track leading to them. Some are beyond rivers or creeks that are impassable at times. Rains or snow may very quickly wash out or render useless a trail that was passable a few hours previously. One has only to attempt these trips to understand fully the difficulties faced daily by field health employees during some seasons.

The mode of transportation of employees has shifted from horse and wagon to motor car, and, not infrequently, on some reservations, back to the horse again. The appropriation allowed for purchasing new equipment is very small, thus necessitating the use of

cars for a number of years. Although no figures on the cost of maintenance of cars in the service seem to be available this cost is believed to be excessive. The inevitable wear and tear on cars, as well as some of the avoidable abuse they get, often leaves them in bad condition within the first year. The lack of trained mechanics to keep cars in shape results in additional deterioration. Thus the conveyance is frequently as poor as the roads over which it must go. Only within the last few years have orders been issued to insure the physician the right to a specific car. Formerly when he wanted to make a call, he competed with some other employee for a conveyance. Thus many a call went unanswered.

Open cars are usually provided for employees so that the only protection from wind, rain, and cold is in many cases a set of tattered curtains. Doctors and nurses are frequently forced to make calls at night as well as day in real discomfort.

The telephone service available on most of the reservations is poor. Occasionally district or sub-agents do not have any such communication and thus the physician may be reached only with great difficulty.

Other difficulties confronting the field health worker are discussed elsewhere in this chapter.

**Organization of the Medical Service.** The present medical branch of the Indian Service is well informed as to the major needs in the Washington office and the field. It is, however, most seriously handicapped by old legislation and the difficulty of securing adequate appropriations. For many years the Indian Service has sought and secured considerable increase in appropriations for hospitals and other medical work, and has materially improved conditions, but it has not been able to meet the real needs. The recent reorganization of the medical service effected under the present administration has brought about an even keener appreciation of the changes necessary to place it on a par with other federal health services.

The Chief Medical Director reports that whenever practicable the regular administrative men in the Indian Office have made every possible effort to rectify undesirable conditions that had their origin in the past, but old legislation and insufficient funds prohibit in many instances meeting the minimum needs, to say nothing of



a normal expansion of activities. The Indian medical service has been starved throughout its history and does not offer any opportunity for reductions in a wisely directed general policy of economy.

The discussion that follows of the medical organization is made in light of existing conditions and is not intended as a reflection on the ideals of the present Indian Service. A careful analysis of the problem must be made, and upon that a constructive program based. This will require time and study.

*Office of the Chief Medical Director.* At the request of the Secretary of the Interior, the United States Public Health Service detailed one of its surgeons to the Office of Indian Affairs in 1926 to serve as Chief Medical Director, supervising all medical, dental, hospital, and sanatorium activities and also acting as chief medical advisor to the Commissioner of Indian Affairs.

The Chief Medical Director, since his incumbency, has of necessity devoted his attention chiefly to becoming acquainted with the needs in the Washington office from an administrative standpoint and with the problems that exist in the field. The lack of organization and the paucity of reliable vital statistics and of records of medical activities have made his problem difficult. It is by no means solved.

The solution of the Indian health problem depends upon a close interrelation of the economic, social, and educational activities of the Indian Office. For this reason the medical service can be of the greatest effectiveness if operated so as to interlock with other activities. The highly specialized character of health work demands that its policies and administration shall be under the direct control of a technically trained medical worker, with full authority in the technical matters related to his specialty.

The medical needs of the Indian Office in the past were presented to the Bureau of the Budget and the Appropriations Committees, by non-medical employees, and therefore it may be questioned whether these important bodies fully comprehended the seriousness of the situation.

The Chief Medical Director has no control over the appropriations made for the various health activities. For example, appropriations are made for specified hospitals and sanatoria, rather than for the hospital service at large. Emergencies arise, such as epidemics or over-crowding of certain institutions, when a shifting

of funds is imperative for the best interests of the Service. Such emergencies cannot be properly met with a rigidly mechanical fiscal scheme.

The office personnel associated with the Chief Medical Director in the Washington office consists of a senior stenographer, an assistant clerk, and one special physician detailed from the field service.

The specialized service connected with the Washington office consists of a public health nurse, who has the direction of the field nursing and matrons service. A relatively large part of her time is spent in local units in the field, however, thus making it difficult to administer effectively this service as a whole. No district supervising public health nurses are provided in the field service.

In the near future, a trained vital statistician will be attached to the medical service to start an evaluation of the mass of medical reports in the Indian Office. No funds are at present available to provide this worker with the necessary clerical assistants.

The position of epidemiologist has been created for some time, but it has never been filled. The delay is due in part to the desire of the present administration to reorganize the field service. It would seem difficult if not impossible to utilize the best efforts of an epidemiologist without a more adequate field personnel.

Thus far no positions have been created for special supervision in the fields of tuberculosis, trachoma, dentistry, child welfare, venereal disease, and hospitals.

It is reported that at some time in the past a system of medical cost-accounting was attempted, but as a result of federal economies, it has been discontinued.

Within the past year, the Indian Office has taken more cognizance of the services that may be available from federal and national agencies specializing in particular phases of health work. This feature of a newer conception of the problem before the Service is especially commended.

*District Medical Directors.* The Indian territory west of the Mississippi is divided into four districts. The Public Health Service is now supplying two public health physicians to serve as district directors and pays their salaries. The Indian Service pays their traveling expenses; it is assuming full responsibility for the director of the third district. The fourth district is at this writing without separate direction.



In addition to the full time services already granted by the Public Health Service, the Chief Medical Director has been privileged to call on any one of the six Public Health Service surgeons, stationed at various points in the United States, and this action has frequently been taken.

In like manner, a very commendable service is being rendered by sanitary engineers and other specialized field personnel of the Public Health Service. Several water supply and sewage disposal systems at Indian schools and reservations have been studied. Detailed reports with recommendations for their improvement have been submitted and action is being taken to apply the necessary remedies. The water situation in the Cherokee country of North Carolina was recently appraised at a cost of only eight dollars to the Indian Service.

The duties of the full-time district directors are of an investigational and advisory nature. They do not include the exercise of authority over the internal affairs of schools, hospitals, sanatoria, and agencies or disciplinary powers over their personnel. Such matters are handled by the Washington office.

Their duties in general are as follows:

1. Inspection of Indian schools, hospitals, sanatoria, and agency health activities.
2. Study and reporting on standardization of methods and facilities, including personnel.
3. Coördination of the Indian Service medical and sanitary activities by means of conferences with service officers in the district.
4. On instructions from the Washington office, investigations and adjustments of controversies.
5. Reports on matters affecting the Indian medical service and public health policies.
6. Promotion of cordial relations with state and local sanitary authorities, and other public health organizations.

Perusal of the duties outlined above shows that the district director is required to cover a wide field of activities. To perform these duties fully would require a very intensive study and analysis of each unit of the Indian Service visited. Each district comprises an Indian population of approximately 62,000. If this population were concentrated in one state or fraction thereof the problem

would be comparatively simple. But the units of population are frequently small, and some are situated at the far extremities of the district. Two of the districts comprise five states, and two seven states. The area covered by the average western state is considerable in itself. Generally the Indian community is located at a long distance from the main line railroads and highways. Thus a great deal of time is necessarily consumed in travel from point to point. These factors greatly reduce the time spent at the different jurisdictions and the service rendered the Indians by the district director.

The specialized type of service rendered by the district medical director is as important to the preservation of Indian health as is that rendered by a state health officer to the preservation of health in any state.

Each officer maintains an office at about the geographical center of his district. At two of these offices only part time clerical service is available. When the district officer is away on field trips, with the exception of the two instances just noted, the office is closed. The district officers necessarily spend the major portion of their time away from their offices, and frequently on their return from the field find their desks filled with accumulated correspondence and reports. It is difficult at times for the field personnel to get in touch with the district medical director when he is away from his office.

Thus far it has been impossible for these officers to make careful statistical analysis of the problems in their districts, such as trends in mortality and morbidity. So far they have mainly attempted to correct the most outstanding deficiencies.

*Special Physicians.* Twelve positions have been established for special physicians, whose duties are chiefly concerned with the problem of trachoma. All these positions are reported filled.

A recent re-assignment of territory has been devised with the idea of permitting each physician to follow up his previous work at three months' intervals. In the past it was the exception for these physicians to be able to follow-up previous operations within periods of less than two years and in some instances some cases were never seen again.

The personnel for these positions has been recruited from doctors already in the Service, except in the cases of the two newest



(1927) physicians, who were obtained from the Public Health Service.

Qualifications of these special physicians are similar to those of the regular physicians of the field service. Five of these physicians have had short post-graduate courses in ophthalmology, one as far back as 1890. Some received their only special work in this line at certain trachoma clinics held at Fort Browning and Albuquerque in 1924. These clinics covered periods of approximately from ten to thirty days. One of these physicians was detailed to Philadelphia for special training under a leading ophthalmologist for a period of two months in 1924.

Although the major part of the work of these physicians has been with trachoma, they perform a fairly large number of tonsillectomies and frequently make examinations for tuberculosis. Their diagnoses of tuberculosis are based usually on a single examination, and naturally if the findings are not clear-cut, an early case may be missed. This is especially true in examining children.

*School, Agency, and Hospital Physicians.* The number of positions included under the designations school, agency, and hospital physician is 121. Only 104 of these positions were filled at the time this report was prepared. The fact that seventeen authorized positions are vacant is due in part to the difficulty in getting physicians to accept positions in the service, and, possibly, in part to the fact that the Indian Office is not now as much disposed to accept the "old" practitioner as was the custom in the past.

Twenty-five of the present physicians entered the service at 50 years of age or more. The most usual age at entrance was 37, and the average age 42.5. Sixteen are now about 60 years of age, the most usual age is 51, and the average age is 49.8 years. Thirteen have been in the service more than 25 years, twenty-four from 15 to 25 years and sixty-seven less than 15 years. The rate of turnover for physicians is about 54 per cent each year.

Practically all these physicians have been in private practice. The average period is twelve years.

Their schooling preliminary to medical training shows that on an average they all had four years of secondary work, and an average of 0.9 year of college.

Their medical training was obtained in a variety of schools throughout the country. Three of the medical schools listed had

gone out of existence by 1886, 14 discontinued between 1908 and 1918, and one in 1926. Two were fraudulent and two others were not classified by the American Medical Association.

The Indian field service physician who has had post-graduate medical work prior to entering on duty or during his time in the Service is the exception. Generally the Indian Service physicians are not members of the state or local medical societies and rarely attend such meetings. Several of the physicians are anxious to take special work and to attend current medical meetings, but it is not possible for them to leave their respective stations without securing some one to fill in during their absence. Many times this is difficult if not impossible and until recently physicians have had to pay for this substitute service out of their own salaries. As district conferences have been held only in rare instances the physicians have had little or no opportunity, much less incentive, for contacts to improve their practice or knowledge. The Service has suffered seriously as a result and the outside practitioner has often looked down on the Indian Service physician as at least uninterested in medical problems.

The work of keeping abreast of developments in the medical field has never been encouraged by the Indian Office which does not allow travel expenses or subsistence for its specialists, much less its field personnel, to attend such meetings. The only exceptions found have been in trachoma work. The modern practitioner must have these outside contacts if he is to keep abreast of the times.

Practically no provision has been made for supplying agency physicians with medical literature. Only rarely were recent editions of any of the standard texts on medicine found at any of the reservations or hospitals. The meagre salaries paid have not permitted the physicians to secure medical literature at their own expense. Certainly a few standard texts and copies of current medical journals should be available to physicians on every reservation.[8]

The territory assigned to most of these physicians is usually too extensive for effective work. No generally applicable figure for a

[8] The Office of Indian Affairs is now planning to provide each station with a number of text books and medical journals.



ratio of physicians to unit of population or area covered can be given. Indian reservations vary in so many important particulars that each jurisdiction must be considered separately. At Crow agency, for example, three physicians are available for 1800 Indians. The distances to be covered and the location of the Indians would require this apparently high ratio of physicians to population. At Pine Ridge only two physicians serve 7800 Indians scattered over an area of approximately 2400 square miles, a ratio altogether too low for effective service in that country. With the exception of the physicians stationed at Talihina, Chilocco, and Phœnix, all other full-time physicians encountered were required to do agency as well as hospital or sanatorium work. It is safe to say in general that where there is one physician now, at least two are needed, and where there are two, at least three are needed.

Until within the past year or so, a school, agency, and hospital have been largely under the direction of the agency superintendent. The physicians had no authority even over hospital employees. Some physicians taken into the Service undoubtedly required the closest sort of supervision. In some instances, however, the reservation situation was impossible because the superintendent, a layman, had little conception of medical matters and might even be hostile to real health work. It has not been so many years since physicians were expected to roll up their sleeves and build fences or do any other manual labor at hand. Within the past year a superintendent objected to supplying the agency physician with running water in his office. Other such instances might be cited. The chief object in mentioning them now is to show some of the difficulties under which the good as well as the poorly qualified physician was forced to work. On the other hand, many superintendents are men of a higher order. Not infrequently they turn over all medical activities to the physician and depend upon his judgment in such matters. Fortunately some of the superintendents have had capable medical men. In a few instances it has been found that the superintendent had a far clearer grasp of the health situation and needs than did the physician. A new era is now dawning in the Service. With efficient direction at the Washington office, the physicians are being handled judiciously.

That the Indian medical service has not been attractive to the younger and more ambitious physician is not surprising. The

position has not had high enough standing either on the reservation or in the community. Not infrequently agency employees say that in case of illness in their own family they seek outside medical advice, even to traveling considerable distances over the road, but this situation is by no means universal. The Indian Service has had, and still has a number of capable physicians, but by and large the medical personnel has not been of a standard equal to that in other medical services of the government. Sometimes it has even found itself with men of questionable morals and character, but has had to be slow in removing them because of the difficulty of securing anybody else. The bitter criticism voiced from time to time by private citizens against Indian Service physicians has in some cases been based on fact, as has been seen during the course of this survey. The existing situation would be well nigh hopeless if it were not for the few really earnest and capable physicians and the interest displayed by the present administration in improving conditions. Within the past year or so a much higher grade of physicians has been added to the Service and the plans for the future will undoubtedly improve the situation.

The general causes for dissatisfaction among Indian Service physicians have been their subordination to lay authority in professional matters, the low salaries paid, and the poor housing facilities available. All these complaints are founded on a considerable amount of fact. The first has been touched on. The effect of low salaries, especially on physicians now in service, is by no means uniform. A few physicians who have been with the Indian Service for years are doing all that could be asked. The service rendered by one in particular is worth several times his present salary. If he were paid far more he could not handle one more case than he does, because he has been and is working to the limit of his physical strength. Some who clamor for more salary would probably do no more than they do now and would not do it much better. The item of salary does, however, affect the facility with which the Service can attract new men with suitable qualifications. If salaries were reasonable and working conditions favorable, undoubtedly many capable men would, from altruistic motives, enter the Service at a lower income than they could realize in private practice.

The salaries in the Indian Service have been much lower than those offered in other government medical services, consequently



it has to draw its personnel largely from persons who could not secure appointments to the other services. The Army, Navy, Public Health Service, and Veteran's Bureau have devised a salary gradation depending upon an officer's years in service and his ability. Thus, a physician entering any one of these services can look forward to a future with a more responsible position and an income commensurate with his ability and added duties. The Indian Service physician has in the past entered at a definite salary with no promise of a further really material increase unless all other physicians are raised at the same time, irrespective of tenure of office or ability. It has been the policy of the present medical administration to raise all physicians to what might be considered a minimum salary and gradually weed out those who were incompetent. During the past year it has been possible in some instances to increase the salaries of a few physicians who may be considered exceptional. The maximum pay now offered should be the minimum. Any physician worth employing should start at the present maximum figure, and, in addition, should have a definite future toward which to work.

A physician may have been in the Service for years in a position where he was both superintendent and physician and received a superintendent's salary; yet if he is transferred to a full time physician's position, he is forced to accept a much lower rate of pay. An instance of this was seen in the field where a physician in the service for twenty years was reduced in pay when transferred to a full-time medical position.

The present practice of deducting a specific amount from the salary of every physician for the quarters he occupies is unfair. One case will be cited as an example, in principle, of numerous others seen in the field. At one agency the physician and his wife, who is the school hospital nurse, are obliged to live in a single room 10 x 10 feet in the hospital and to share the patients' sanitary facilities. This situation is due to two factors. The nurse must be on duty twenty-four hours a day and at present no residence is available for a physician. From the salary of each of these employees is deducted the same amount as if they had quarters outside the hospital.

Physicians who are obliged to live in some of the houses available can hardly be expected to maintain the standards expected of a doctor. At one reservation, for example, the physician is housed

in a very simple frame structure. At the time of the visit from the survey staff several window panes were broken out and the openings had been covered with paper or cloth. All water had to be carried in from a distance, as the shallow well on the place was contaminated. A new doctor had just been transferred to this station and found his quarters in this condition.

The allowance for transporting household goods is so limited that the average employee transferred from one agency to another cannot afford to possess furniture or the other household equipment so necessary to contentment and satisfaction. The equipment supplied is often of poor quality and in a bad state of repair.

The duties of resident physicians as outlined by the Service in formal statements may be summarized as follows: The care of medical work in their jurisdiction and administrative direction of hospitals and sanatoria, and direction of all nurses and other medical and hospital employees.

Physicians on reservations often confine their medical activities mainly to the dispensing of drugs. They depend primarily upon the Indians to seek their advice rather than themselves seeking the cases in need of attention. Lack of training and appreciation of public health methods is evidenced by the lack of adequate records. Although the Indian office called for reports they were not generally made fully and accurately. The various forms supplied in the past have not been well designed to bring out necessary information, and they have not been really used in analyzing the data, so that it has been a simple matter to slight report making. Not until the appointment of the present district medical directors was there anyone to take a real interest in such data and to assist and encourage the agency physician to keep the necessary records.

Without accurate statistical information a constructive program cannot be formulated and consequently there has rarely been a definite plan of work. The work has been to take care of the next case, and sometimes apparently the object is to do it with the least time and effort. On all reservations visited Indians were observed coming to the doctor's office and asking for medicine either for themselves or for friends or members of their families. The Indian, almost without exception, is given the particular drug he requests or a substitute of some sort without being asked more details about the malady present. Physical examinations are almost never made



in these cases. At one reservation several written requests from Indians for medication were received. The physician said that he had never examined or attempted to examine the cases. His position was that as the Indians' funds were being used to supply these drugs, the Indian was entitled to whatever he asked for, just as if he had come to a local drug store. Samples of their requests are listed:

| 1. | 2. | 3. |
|---|---|---|
| Iodine | Camphorated oil | Cough medicine for old man |
| Camphor | Iodine | Cough medicine for children |
| Turpentine | Castor oil | Castor oil—for two families |
| Salve for sores | Fever tablets | Iodine |
| Bandage | Cough medicine | Lysol |
| Aspirin | Aspirin | Salts |
| Cathartics vegetable | Salts | Aspirin |
| Lysol | Physic pills | Turpentine |
| Castor oil | Lysol | Liniment |
| | Bandage | Salve |
| | Absorbent cotton | |

These requests obviously might have indicated the presence of serious maladies, yet a medicine was dispensed on request and the case forgotten.

At only one reservation visited was it asserted that a thoroughly complete family or individual case record was maintained. The physician who had maintained such records had been transferred to another field, and these records were not available for examination.

The lack of such records not only reflects upon the type of medical service rendered, but indicates the difficulties a newly transferred physician faces. He starts in ignorance of what has been done. No foundation has already been laid and he has but slight, if any, incentive to start a system of records.

Lack of time and the great distances to be traveled are common excuses for not having records. These factors are of course, important, but they do not explain away the situation. In a few instances it was found that a part of the necessary records was being kept and the amount of work done by the physicians responsible was up to the average of others working under comparable conditions. The real answer is the lack of initiative of most field physicians and lack of practical use of the records in planning and developmental work. On outlining to a certain physician the type

of family and individual medical record deemed advisable and reasonable of compilation, he replied that if that was what the Indian Office wanted, he would do it. If he were alert and thoroughly interested in his profession, however, it would seem that he would want to keep such records for his own use, regardless of the desires of the Office. The progressive practitioner of today keeps accurate records of his cases.

The character of the medical service that has been available is doubtless in part responsible for the limited use of available hospital beds. It is frequently said that the hospital personnel is too limited to care for more cases. The lack of personnel is admitted, but a question may be raised as to what would have been the result if the hospitals had been filled to capacity, thereby creating a more serious demand for additional help.

In the past the physicians have been required to render surgical as well as medical service. Most of these physicians are not surgeons, and although they admit it to a colleague, they are slow to admit it to the agency personnel, because they fear being unfairly judged. A doctor not trained and experienced as a surgeon must take risks and may render inferior service to patients.

At one large boarding school a full-time physician was employed. His duties were confined entirely to the school which offered him an opportunity to do a constructive piece of work. The service rendered at this school is so typical of others that portions of it will be discussed. The physical director, a young ambitious man, spent a few weeks one summer at one of the state universities studying physical education. He returned and started to carry out some anthropometric studies. During the course of this work he observed that a limited chest expansion, a rapid pulse, and underweight frequently connoted tuberculosis, as was evidenced when some of the pupils thus indicated broke down later in the school year. The physician might easily have utilized this man's work as a basis for rendering a service to the pupils, thus encouraging the physical director along the right lines and making a worth while contribution to the knowledge of Indian anthropology. Instead, he resented the fact that a layman was counting a pulse and suggesting the possibility of the presence of tuberculosis.



A similar lack of interest was shown at the daily sick roll. Over seventy children filed into the dispensary one evening, the majority coming for "eyes." They were rushed through quickly. The fact that trachoma treatment was given in several cases was noted and, on a closer examination, the eyes being treated were found to be healthy. These children's eyes needed refraction and not the irritating solution they were receiving. A question was raised regarding one girl suffering from trachoma. She was reported to be a regular dispensary case, but the child denied having been in for treatment since her first examination over six months previously, and the only available record substantiated her claim. She said that the drops hurt her eyes and she did not want to come.

Although the type of service rendered by this physician was known, he was subsequently transferred to another reservation where he says he prefers to work.

Physicians now connected with boarding schools are not generally giving any definite instruction in health to pupils, thus neglecting a very valuable opportunity for service.

An outstanding exception to this type of routine, pro forma service should be mentioned. The physician at one school has perhaps the most complete educational and medical background of any physician encountered. His diagnostic ability in general medicine and tuberculosis was evidenced by the number of cases on record, and his records were the most complete and intelligible found. They covered all the pupils in the school and many Indians in the jurisdiction. Several cases were examined in his presence and the findings independently arrived at subsequently compared with his records made six or more months previously. With the exception of one case, the notes corresponded in each instance.

It is commonly said in the Indian field that the practice of obstetrics is difficult if not impossible among Indians, especially full bloods. This service has generally been rendered by women relatives or friends, Indian midwives, or medicine men whose methods are crude and often brutal. How high a mortality results from their practices is not known, but obviously it must be excessive, especially in the case of the primipara.

Indian women, especially in the less advanced tribes, are loath to permit a white person, either physician or nurse, to attend them

at confinement, and usually it is only after the women, the midwives, and medicine men have exhausted their primitive crude methods that the physician is called in. In spite of so great a handicap, the physician is often able to complete the delivery and save both mother and child. The frequency of instrumental deliveries among Indian women is not known, but from the scanty facts available it would seem that cases requiring such treatment are fairly common. The number of cases in which the physician has to be called after primitive methods have failed, suggest that there must be many more where much pain and suffering could be avoided if delivery were made by a skilled physician. The Indian Service physician is deserving of the highest credit and commendation for the large number of lives he saves under exceptionally difficult conditions.

Some Indian women, however, are more and more placing themselves under the agency physicians. They are the women in the younger generation who have been away to schools and learned something of modern methods, the mixed bloods, and those who have lived for long periods in contact with the whites.

Some of the most encouraging medical work was found in the field of obstetrics. Several physicians are particularly interested and are doing splendid work. The work of one in particular is worthy of mention. The physician has been at this station for about twenty years. As there is no hospital on the reservation, all deliveries were made in the homes. The physician had to travel through wind and snow and frequently to cross the river at high water, when even some of the Indians refuse to make the attempt. From 1911 to June, 1927, the total number of births on this reservation was 996. This physician delivered 391 or 39 per cent of them. The percentages througout the years showed a decided increase. In 1927, 68.1 per cent of all births were delivered by the physician, as compared with 9.2 per cent in 1912. Three per cent of the deliveries between 1917 and 1927 were instrumental. As the Indians on this reservation are mainly full blood, and it is definitely isolated, these results are remarkable. The high percentage of work among full bloods would indicate that with the proper personnel, such service could be rendered on other reservations if the agency physicians



were more keenly interested and alert. It would be well to state in passing that during a recent five-year period, 49 per cent of the deaths which occurred on this reservation were of children under three years of age.

Although it was not possible to secure similar figures on other reservations visited, it was found that a considerable number of births were being conducted in the hospitals. Reference will be made to them under the section dealing with hospitals.

The proportionate number of deliveries in homes on other reservations could not be secured because the physicians did not keep an accurate record of such work. The fact that they signed the birth certificate was not evidence that they attended the case at the time of delivery.

The Indians' demands for a physician at child-birth are clearly increasing, especially on those reservations where a definite effort is made to induce the Indian to request such attention and the physician remains long enough to become acquainted with his clientele. It is believed that considerably more Indian women would accept the services of physicians if their interest were solicited and adequate facilities made available.

Despite the many adverse criticisms which it has been necessary to make as the result of this first hand study of the medical field service, it is nevertheless true that a marked change for the better has been inaugurated since its reorganization. The conditions found are known and regretted, but the Indian Service can do little to overcome them until it can raise the standards for its medical personnel to the level of personnel in other medical services of the government. To achieve this it will have to establish a salary scale comparable with those in the other services.

*Contract Physicians.* There are sixty-one positions for contract physicians, thirteen of which are vacant. The officers have resorted to the contract service plan for three reasons: Inability to secure full-time service; the belief that the medical needs on certain jurisdictions did not require full-time service; and because, in several jurisdictions, the authorities had requested a contract in preference to a full-time service in the light of past experience. In general, this type of personnel has been only a make-shift.

Until recently the physicians embraced in this classification have generally been selected on the lowest bid.[9] Such a system tends to bring in the old practitioner who is not a marked success. The very meagre remuneration offered tends to purchase the minimum amount of service to the Indian. With but few exceptions the service rendered by these physicians has been similar to that of the typical full-time agency physician. One marked exception should be noted in a contract physician who has been in the Indian Service for seventeen years. He produced remarkably complete records of his work with the Indians throughout that time. If a busy private practitioner can accomplish this with a scattered Indian population as well as a white clientele, there seems to be no reason why a full-time physician on a reservation or at a school cannot do as much.

At Haskell, Sherman, and Chemawa, all boarding schools of approximately 1000 pupils each, a part-time service was found. These physicians spent on an average of about one full day a week at the schools. In all instances, they complied with the letter of the contract. All children were examined twice yearly, but in one case at least it was observed to be at the rate of over seventy an hour. The physicians' duties further include visits to hospital cases and attention to acute illnesses. This work is generally dispatched with speed. Sometimes the physician remains less than fifteen minutes. The majority of children in boarding schools are in a questionable state of health and require infinitely more attention than they are securing.[10]

A sentiment is fairly general in the Indian country in favor of a contract with a regular practicing physician. It is based chiefly on the fact that a man capable of making a success of a private practice is more aggressive and will demand a greater respect from the Indian. There is an element of truth here, but as has been stated, the successful practitioner is not always chosen. If a prosperous practitioner be selected, he may be so busy with his own cases that he cannot devote the necessary amount of time to the

[9] The Indian Office has always had the power to reject the lowest bid and accept the higher one, and this course was followed in case the superintendent recommended such action.

[10] The Indian Office states that these schools are to be supplied with full-time physicians this coming school year.



Indians. This is especially true in reservation work. The contract physicians on a reservation may wait for the Indians to call them. In the schools they may hurry through their work.

Doubtless it will be necessary for the Indian Office to continue some of this service until they can attract more full-time physicians.

The surgeon is possibly the one type of contract physician that could be used to advantage. All agencies are in need of first class medical service at all times, but it is only occasionally that they need a surgeon. Obviously a contract with some local surgeon of ability would provide the maximum of service to the Indians. A start in this direction has been made at Cloquet, Minnesota. The Cloquet plan is faulty in that the agency is expecting the surgeon to do field work as well. They will not be successful, because a busy surgeon cannot be expected to do routine reservation work.

*Dentists.* The dental service was begun in 1910. There are ten positions open for dentists, all filled at this time, and funds are now available for three more positions. One of the dentists is permanently stationed at Klamath. This is reported to be an economy measure made necessary by the large amount of money being spent from tribal funds to pay for individual dental work. From this fact it might be assumed that the remaining dentists were able to cover their respective territories, which include the remainder of the Indian reservations in the United States, or possibly that the Indians on these reservations were not in need of dental service, but this is not the case.

Apparently no detailed precise program of dental work has been mapped out. A dentist is not required to visit specified reservations or schools at designated times. Although the Office exercises general supervision the occasion and duration of his visits are regarded largely as matters for him to decide, although sixty days is considered the limit of time to be given one place. As the district covered by these men is large, it is rarely possible for them to return oftener than once every two years, so that obviously much of their previous work is lost.

Dentists are not expected to visit non-reservation schools or places where the services of local dentists can be secured at a reasonable price. Chilocco School reports that it receives dental service from a physician in Arkansas City. On closer questioning, they admitted that the only children who received dental care were

those who had funds to pay for it. The Indian Office reports that any child in need of such care can receive it regardless of whether or not he has funds to his credit.

At the schools visited by the district dentists, the hospital, if there is one, is made available for their use. In other places, temporary quarters are established. Each dentist is equipped with a portable outfit furnished by the Indian Office.

The dental service at the present time is inadequate to meet needs in the Indian schools and on the reservations. The work attempted is largely of an emergency character. No prosthetic work is done. The cheaper filling materials are used unless the patient can afford to pay for better ones.

Some of the larger schools are practically without dental service, and the appearance of the mouths of many of these children indicates the need of a more permanent service.

No dental hygienists are employed, and thus a very effective and economical preventive facility is lacking.

Dentists, like all traveling specialists, are very poorly housed on reservations, although their quarters are generally as good as are available for temporary visiting officers.

*Nursing Service.* The nursing service is rendered by four fairly distinct groups of nurses; the graduate or hospital nurse, the public health nurse, the traveling nurse, and the so-called practical nurse. In addition, there are field matrons who are classed with the health personnel and required to do some health work. The public health nurse, or field nurses as they are at present designated, and the field matrons are under the jurisdiction of a supervising nurse.

The Indian Office has announced the policy of discontinuing the employment of any more field matrons and practical nurses. If the new policy is carried out the hospital positions are to be filled by regular graduate nurses, and field matron positions by trained public health nurses. From the standpoint of health work, this will materially improve the situation.

The duties announced for workers in these classifications have been given as follows: To assist in medical, sanitary, and welfare work under the direction of physicians assigned to their particular sections or hospitals.

Obviously the above outline of duties is very general; therefore, for purposes of classification, each group of nurses will be considered separately.



At the present time there are one hundred and five positions for graduate nurses in the hospitals and sanatoria of the Indian Service, and fifty-one of them were permanently filled on July 1, 1927, by persons who had qualified under the civil service system. Several more were filled by persons classified as temporary who had not satisfied the requirements for permanent appointment. On July 1, 1927, the temporary nurses employed included eleven qualified graduate nurses who have not taken the civil service examination, twelve practical nurses who are hired locally because they are available and have had some practical nursing experience, and eight practical nurses who were certified as practical nurses only, but are occupying graduate nurse positions. The practical nurses are paid $100 a month while the salary for the position of graduate nurse is $125. In view of the fact that the tenure of office of this group is "temporary" and in many instances hospitals are without such assistants at long intervals, there being twenty-nine vacancies, July 1, 1927, these employees will not be considered in the present discussion. These nurses are employed by the local agency when necessary, and no special report is made to the Indian Office except as the agency accounts for its expenditure of funds. Attention, therefore, will be confined to the permanent graduate hospital nurses and the graduate public health nurses.

The prerequisites for graduate hospital nurse positions are as follows: (1) Graduation from a recognized school of nursing requiring a residence of at least two years in a hospital having a daily average of fifty patients or more (or having a daily average of thirty patients or more and employing at least one full time resident instructor in nursing) giving a thorough practical and theoretical training; and (2) evidence of state registration. Certificates of state registration or a certified copy thereof must be submitted with the application, together with certificate from the training school conferring graduation and showing the number of patients daily, and the applicant's training; provided that the requirement under "(1)" as to the daily average of patients will be waived for applicants entitled to preference by reason of military or naval service *as a nurse.* Original diplomas should be submitted as evidence of graduation.[11]

[11] United States Civil Service examination, June 30, 1927.

Since these graduate nurses are employed in hospitals and sanatoria the discussion of them will be facilitated by considering at the outset the standard ratio of nurses per unit of patient population. The accepted standards for hospital nursing service in the average general hospital are conservatively estimated as a minimum of one nurse to five patients in general wards, and one nurse to every three patients in semi-private hospitals where a portion of the beds are for pay patients.[12] These ratios take into consideration the assistance of pupil nurses in training, but do not include the additional employees necessary to operate the hospital. It is therefore advisable here to mention the auxiliary staff in Indian Service although this phase of the subject will be discussed more in detail later under Hospitals. The graduate nursing service in Indian hospitals is augmented by hospital matrons (housekeepers) and other untrained employees.

The hospitals at Chemawa, Haskell, and Sherman are the only three in the Service where an attempt is made to train nurses and where this type of additional nursing service is utilized.[13] The character of this service, however, is not comparable to that for pupil nurses in general hospitals.

The practical nurse found in most Indian Service hospitals is, in some instances, in full charge of the hospital. She may or may not have had previous training. This type of personnel cannot of course render anything approaching skilled expert service even if there were a higher ratio of nurses to patients. One sometimes finds, too, evidence of an unsympathetic attitude toward patients and hears complaints from the Indians of neglect. Likewise complaint is sometimes made by the one physician attached to such a hospital, whose work must include, in addition to general medical practice, obstetrics and both major and minor surgery, that he is hampered by lack of trained assistance from nurses, not only during operative work but also in after care of surgical patients.

The accompanying tabular statement shows the number of available hospital beds in the Indian Service, the number of permanent nurses employed, and the estimated number of graduate nurses needed.

[12] *Modern Hospital,* October, 1921, p. 370.

[13] Training classes for nurses were started at Chilocco and Albuquerque in 1927.



*Indian Service statistics showing ratio of permanent graduate nurses per unit of bed capacity for all classes of Indian Service hospitals, 1926*

| Class of institution (1926) | Bed capacity | Graduate nurses in Indian service | Ratio of nurses to beds | Estimated graduate nurses needed (1:10) | Per cent deficient |
|---|---|---|---|---|---|
| Sanatorium Schools | 510 | 6 | 1:85 | 51 | 88.2 |
| Sanatoria ..... | 261 | 4 | 1:65 | 26 | 84.6 |
| Hospital for Insane | 92 | 0 | 0 | 9 | 100.0 |
| School and Agency Hospitals ..... | 934 | 21 | 1:44 | 93 | 77.4 |
| Agency Hospitals... | 68 | 4 | 1:17 | 7 | 42.9 |
| School Hospitals... | 670 | 11 | 1:60 | 67 | 83.6 |
| Total ..... | 2535 | [a] 47 | 1:55 | 255 | 81.6 |

[a] These figures are for a somewhat earlier date than those previously cited.

As Indian Service hospitals are as a rule small and unsuitable for training schools, the major portion of the nursing service should be supplied by graduate nurses as is the practice in other federal hospitals. The estimated ratio of such nursing service per unit of population should be one to five, preferably, and not less than one to ten, providing the ratio of one to five is secured by other suitable employees devoting their time solely to care of patients.

With due allowance for the fact that not all hospital beds were in use, it is, nevertheless, true that these hospitals were still greatly understaffed. An analysis of the total hospital employees for 1927 will show approximately the same deficiency.[14]

These figures indicate clearly that the nursing service rendered the patients hospitalized must have been far below accepted standards. First hand observation showed this to be the case in every institution visited. These nurses are on duty twenty-four hours a day; there are no regular hours or half-days off, and it is only on rare occasions that any time off is possible. Many of these hospitals have only one graduate nurse and some have none. Because of a like deficiency in other hospital employees, these nurses devote a large proportion of their time to the multitude of activities incident to hospital work, such as cooking, cleaning, and household

[14] See pages 284 and 297.