Most of us are vaguely aware—though we are more comfortable when we can forget—that the health of the American Indian is in a deplorable state. Reported here is the beginning of a promising venture to help the Indians to do something themselves about improving matters.

Sanitation Problems of the American Indians*

H. NORMAN OLD
Sanitary Engineer Consultant, Branch of Health, Bureau of Indian Affairs, Department of the Interior, Washington, D.C.

In one of his best and most dramatic television addresses in the "Life Is Worth Living" series several weeks ago, Bishop Fulton J. Sheen referred to the deplorable health conditions in some of the Asiatic countries. He cited the fact that 25 per cent of the children die at birth and 40 per cent do not survive the first five years. Annual per capita income was cited as from $27 to $53.¹

GENERAL BACKGROUND
Let us look at part of our own national household in this respect—the American Indian, particularly the Navajo, referred to ² as "the poorest and sickest of our people," with annual income per family of less than $400. The diarrhea and enteritis death rate among Navajo children in 1947 is given ³ as 105 compared to 5.3 among the general population—approximately 20–1, while the tuberculosis death ratio among all tribes varied with location from 4 to 1 to as high as from 20 to 1 as contrasted to the general population. Among the Papagos of the Southwest it is reported ⁴ that out of 260 infants born each year 25 per cent die within 12 months; at the age of 6 about 40 per cent will have died and at the age of 18 only 125, about 48 per cent, will survive. The life expectancy of a Papago baby is said to be 17 years compared to about 68 years for the total population of the United States.

It is estimated that the pre-Columbian Indian population of the territory now known as Continental United States was approximately 800,000 which had been reduced at the beginning of the present century to about 240,000. This reduction is charged chiefly to epidemic diseases imported by the white man—such as smallpox, tuberculosis, yellow fever, malaria, and cholera—particularly between 1750 and 1860. There is record ⁵ of a devastating smallpox epidemic originating in an employee on a Missouri River steamboat in 1837 which reduced the Mandans from 1,600 persons to 31 and took a total of not less than 10,000 lives. A cholera epidemic in 1849 is said to have wiped out 2,000 Cheyennes. From that low point of about 240,000 there has been a gradual increase within the past 50 years to ap-

---

¹ Presented before the Engineering Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 23, 1952.
approximately 400,000 American Indians at present.

In view of this rather paradoxical situation, high death rate with population increase, it is logical to ask "How has this group been able to refute the term 'Vanishing Americans' and become increasing Americans?" The question is readily answered by a glance at the birth rate which varies with the tribes, but in past years has averaged just about double that of the general population of the country. So, from the standpoint of public health, we derive little encouragement in the population growth. A high percentage of the diseases presently accounting for the excessive death and morbidity rates among American Indians are those either directly or indirectly associated with the environment—such as dysentery, diarrhea and enteritis among infants and children, tuberculosis and respiratory infections—all preventable, or at least controllable.

**CONTRIBUTING FACTORS**

Discussion of sanitation problems faced in Indian communities or reservation homes must be predicated upon the several contributing factors by which the Indian population is nearly half a century in arrears with respect to the application of sanitary science to disease prevention. High on such a list is the economic situation under which many of the tribes exist. Family income at several reservations has been referred to previously. The total picture in 1945 indicated that when non-Indian farmers were obtaining a net annual income of $2,541, Indian farm families received a net income of $501. This is partially explained by the type of reservation land allotted to the Indian by this "most prosperous nation in the world." Of the approximately 56 million acres 26 per cent has annual rainfall of less than 10 inches, 65 per cent less than 15 inches and 80 per cent less than 20 inches. Another factor is the inadequacy of educational facilities. In the case of the approximately 65,000 Navajos, for instance, it is said that less than one year of school is the average, despite the treaty stipulation in 1868 which obligated the federal government to furnish one house (or room) and one teacher for every 30 children of school age. While the situation in this respect shows some recent improvement, it is believed that about 18,000 Indian children are not attending any type of school. Most of these are Navajos. Of course, tied in with educational deficiencies is the matter of language difficulties, particularly in the older age groups. Illiteracy with respect to the English language is estimated to run as high as 80 per cent among some of the southwestern tribes.

Failure on the part of the federal government until very recently to provide public health services as distinguished from medical or curative measures has contributed materially to the seriousness of the present situation. Some 61 hospitals ranging from a rated capacity of from 25 to 350 beds are operated by the Bureau of Indian Affairs in the United States and Alaska but, with the exception of some immunization procedures and limited field nursing services for a few of the tribes, no preventive disease measures or public health educational programs reaching the individual Indian home or community have been attempted. Several contracts including small federal subsidies have been entered into with over-burdened state or local health units for extension of sanitation services to the Indian population of the area. However, these services certainly do not appear to reach the home environment. This in itself presents a problem not encountered in conventional public health administration. A population of 400,000 in one county or even one state is readily adaptable to conventional procedures. The scattering of this num-
ber in groups of from a few hundred to 65,000 over some 26 states presents an entirely different picture.

Still another contributing factor is the matter of lack of organization among the 200 or more tribes with over 90 different tongues and complexity of tribal traditions. It is doubtful that this feature can ever be entirely overcome, but one cannot help thinking of the potential power and influence toward group advancement that would reside in an organization of 400,000 miners, garment, steel or textile workers.

METHOD OF APPROACH

In view of the foregoing approach the starting point for environmental improvements seemed a bit obscure. Obviously to await material elevation of the economic status and educational reforms on a large scale would mean years of delay. This was one of the problems faced in 1948 by Fred T. Foard, M.D., when he was assigned by the Public Health Service as chief of the Branch of Health of the Bureau of Indian Affairs. As a result of his negotiations with the Service the author in June, 1950, was assigned as a full-time sanitary engineer consultant for the purpose of securing factual information and developing a sanitation program. Since that time sanitary surveys have been made of all the larger reservations and many nonreservation installations—some 45 or 50 locations in the United States. The visual observations have been supplemented by discussions with agency and area (regional) staffs, tribal councils, and individual Indians as well as state and local health officials.

Without going into too much detail it may be of interest to refer briefly to some of the findings. The surveys confirmed the belief of the writer that sanitation services among the Indians must take into account primarily home and community conditions rather than stop at bureau installations such as boarding schools, hospitals, and agency headquarters which have been inspected occasionally by Public Health Service regional personnel during the last 24 years.

Environmental conditions on the reservations are such that it is difficult to establish a priority schedule. Adequacy and safety of the domestic water supply, due to the method of hauling and storing water, might be given a shade of priority consideration over excreta disposal.

WATER SUPPLIES

In general the water supply sources are lakes, surface streams and irrigation ditches, unprotected springs, poorly constructed dug wells, and in a few instances fairly acceptable driven or drilled wells. It is unusual to find an individual or private supply. Therefore, transportation of the water in barrels, cans or metal drums, frequently over distances of many miles, is necessary. At a reservation in South Dakota water must be hauled from the agency well to 8 or 10 day schools between 30 and 145 miles distant. At a home within a Wisconsin reservation where one child had died and several others had been hospitalized due to dysentery, the writer noticed a new radio-equipped automobile costing nearly $2,000, but no well and no privy. When asked why $50 or $75 was not used for such improvements, the mother's reply was "What for, plenty water down creek." The average Indian mother is just as much interested in protecting her children as is the white mother, but has no conception of the relationship between the tragedy of preventable disease and creek water or other environmental conditions. In this instance good water was available at a depth of 30 or 40 feet.

At some reservations in the Southwest the development of individual or even small community water supplies is economically impracticable due to the
necessity of drilling 900 feet or more for acceptable water. In these cases water from irrigation wells must be transported for many miles. Ways and means of safe handling and storage must be initiated among these Indians and the importance of such measures impressed upon them.

A recent bit of encouragement is the action of the 82nd Congress in appropriating $154,000 for the provision of "sanitary water supplies for the Pueblos of New Mexico." Surveys are now in progress preliminary to carrying out this project.

**EXCRETA DISPOSAL**

Perhaps the less said the better on the subject of excreta disposal. With the exception of the recent Navajo-Hopi colonization project at the Colorado River Reservation in Arizona and a development at Needles, Calif., very few Indian homes have water supply under pressure. Probably 25 per cent have some sort of privy structure with modesty rather than sanitation aforesaid, while at others the "wide open spaces" suffice. The latter system, while not "according to Hoyle," is probably the lesser evil since, particularly in the arid Southwest, dissipation of the material with the aid of sunlight and evaporation is safer than its concentration in open shallow pits. This is not applicable, however, at such a location as the Seminole Reservation in Florida where hookworm is the greatest problem. Here shoes are seldom seen and excreta disposal is accomplished in this warm, moist climate without the refinement suggested by "Mosaic Law."

**FOOD SANITATION**

Very few Indian homes have either screening against insects or refrigeration facilities. Therefore, the handling and storage of foodstuffs present a problem. Sterilization of utensils or containers is a refinement not to be expected for many years under the present rate of progress in public health education among these people. Very little fresh milk is available to them which, under the circumstances, probably helps the sanitarian but worries the nutritionist.

In addition to the home situation is the lack of any protection against infection of foods as handled, stored, and displayed at most of the reservation trading posts.

**INSECTS AND RODENTS**

With disposal of garbage and refuse in the immediate vicinity of many of the homes, and with corrals nearby, insect control measures are difficult if not impossible. The numerous dogs maintained by Indians further complicate the problem by digging up garbage at homes where burial is attempted. The application of insecticidal sprays as partial control is being started at several locations.

Probably due to lack of sufficient food to support them, there appears to be very little rodent infestation at reservation homes.

**HOUSING**

Indian homes vary in general as to structure from the frame one-story residence of the northern reservations to the bear grass wickiups of the Apaches, and adobe houses and hogans of the Papagos and Navajos in the Southwest. At reservations in Minnesota, Wisconsin, Montana, and the Dakotas it is not unusual to find a family of six or eight in a 12' x 12' or 12' x 20' one-room shack. With more than 1,000 known tuberculous Indians in the infectious stages for whom there are at present no hospital beds the tragedy of such overcrowding can be readily understood.

From the above brief description it is evident that the environmental sanitation picture as it relates to the American Indian is not a pretty one. Perhaps it might be summarized by the statement of one of the reservation medical officers.
to the effect that, due to conditions in
the home, an Indian baby taken off
breast feeding is frequently doomed to
serious illness or death.

In this connection it is interesting to
read of the executive policy of the
United States in regard to tribal Indians
as expressed by President Washington
in 1790 to the Six Nations (Iroquois
Tribes) when he said "The General Gov-
ernment will never consent to your being
defrauded, but will protect you in all
your just rights." In 1930, 140 years
or about five Indian generations later,
President Hoover's White House Con-
ference on Child Health evolved a
philosophy to the effect that "The right
to be well born and well nurtured is
commonly accepted as a part of the
Child's Bill of Rights." It appears that
until very recently the rights endorsed
by our first and thirty-first Presidents
were not given too much attention.

PRESENT PROGRAM
Through the persistence of Dr. Foard,
chief of the Branch of Health, and with
the cooperation of Commissioner Dillon
S. Myer of the Bureau of Indian Affairs,
it is encouraging to report that a start
has been made in providing sanitation
services for the Indians. Last January
12 young Indians from reservations in
greatest need of such service were se-
lected, in collaboration with the Tribal
Councils, for duty as sanitarians among
their own people. Eight weeks of inten-
sive orientation in the elements of sa-
tary science were provided at Phoenix,
Ariz., by the Training Division of the
Public Health Service Communicable
Disease Center under the very capable
and sympathetic direction of Hugh
Eagan. Ten of these sanitarians are now
engaged in "preaching the gospel" of
sanitation and demonstrating practicable
methods of improving environmental
conditions at Indian homes and com-

munities. This is an extension of the
field work started at the Navajo-Hopi
Reservation in 1949 when one sanitary
engineer and two sanitarians were as-
signed to that area. It is desired at this
time to pay tribute to the excellent co-
operation and support given these young
Indians by state sanitary engineers and
laboratory staffs in Arizona, New Mex-
ico, South Dakota, North Dakota, Mont-
ana, and Minnesota.

Further evidence that preventive
medicine among the Indians is now com-
ing to life is the recent employment by
the Branch of Education of two public
health education specialists for duty in
the Southwest and one to cover the
Dakotas and Nebraska. These young
women have accomplished much in a
relatively short time and are teaming up
with the reservation public health nurses
and sanitarians in an effort to impress
upon the Indian his own responsibility
for much of his poor health.

It is the policy of the Indian Service
to work with the Indian people toward
the time when they will be able to as-
sume full control over their own affairs
and take their proper place along with
other American citizens. Future public
health planning must envision that time.
The 82nd Congress honored Dr. Foard's
and Commissioner Myer's budget re-
quest by granting a 30 per cent increase
in health funds for the present fiscal
year. This will permit the establishment
of several complete reservation public
health units, each of which will include
one sanitary engineer and several sa-
titarians. It is expected that such units
will be integrated with the state and
local public health programs just as soon
as these authorities feel able to assume
this responsibility.

In conclusion, it may be said that a
long delayed start has been made in
meeting the sanitation problems of the
American Indians. However, it is merely
a start and, in line with the philosophy
of the famous Baptist clergyman, Rus-
sell Conwell, founder of Temple Uni-
versity in Philadelphia, in his famous
"Acres of Diamonds" lecture, there are acres of diamonds of opportunity for pioneer grass-roots sanitation right here in our own household.

REFERENCES

Public Health Physicians Entering Army Service

Thomas B. Turner, M.D., head of the Department of Microbiology, Johns Hopkins School of Hygiene and Public Health, Baltimore, who is chairman of the Preventive Medicine Committee of the Society of United States Medical Consultants which acts in an advisory capacity to the Surgeon General of the Army, has called to the attention of the Journal vacancies in a number of posts in the Army calling for the assignment of officers competent in the field of public health and preventive medicine. In view of the fact that certain physicians qualified in this field may be brought on active duty in the Armed Forces, Dr. Turner has indicated that General George E. Armstrong, Surgeon General of the Army, and Col. Tom F. Whayne, chief of the Preventive Medicine Division, would appreciate knowing about the impending call to active duty of any physician who is qualified in public health and preventive medicine in order that the Army may utilize his services to the best advantage of the Service and the individual himself.

It is suggested that persons interested communicate with Col. Whayne, chief of the Preventive Medicine Division, Department of the Army, Washington, D. C.