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9. ABSTRACT

The specific purposes of this report are: (1) the assessment of the current status of health planning for the Recovery and Rehabilitation (R and R) Program in Mali; (2) the recommendation of specific health and nutrition activities and levels of USAID support of elements listed within the Rural Health Sectors of the Sahel R and R Program Assistance Approval Document (PAAD); and (3) the examination of assistance in the areas by other non-USAID donors and the recommendation of in-country coordination and a plan of action for health and medical activities. The general background of the Sahel region is discussed in terms of its ecology, economy, and population densities. The nomads of the Sahel comprise two large groups, the Bedouin Arabs (Maures) and the Tuaregs. The former are found in those portions of the Sahel which lie in Mali, Mauritania, and Senegal and the latter in the Sahelian zones of Mali, Niger and Upper Volta. The social organization, economic activities and nomadic movements of these groups are discussed in detail. With inadequate rains in 1972, pastureland became scarce and many nomads were stranded around wells. Donkeys, camels, and cattle died in large numbers in early 1973. The Government of Mali organized a program to bring the stranded nomads into what are now called Camps des Sinistres. Four such camps were visited by the author. They were located in Gao, Goundam, Dire and Timbuctoo. Each camp is evaluated under the following categories: general description; population composition; administrative organization; food storage and distribution; nutritional status; health status; health services; environmental hygiene; and general impression. Most nomads have expressed the desire to resume their nomadic pastoral existence after the drought ends.

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HEALTH AND NUTRITION SERVICES
OF THE SAHEL R AND R PROGRAM
IN MALI

A Report Prepared By
PASCAL J. IMPERATO, M.D., M.P.H.

During The Period
APRIL 15 THROUGH MAY 6, 1974

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HEALTH AND NUTRITION SERVICES
OF THE SAHEL R AND R PROGRAM
IN MALI

INTRODUCTION

The purpose of this report is to furnish the field representatives of USAID in Mali and the appropriate USAID staff in Washington, D.C., with advice and assistance in developing proposals for the delivery of health and nutrition services during the medium term Sahel Recovery and Rehabilitation (R and R) Program. This assignment specifically involved:

- a) The assessment of the current status of health planning for the R and R Program in Mali.
- b) The recommending of specific health and nutrition activities and levels of USAID support of elements listed within the Rural Health Sectors of the Sahel Recovery and Rehabilitation Program Assistance Approval Document (PAAD).
- c) The examination of assistance in the area by other non-USAID donors and the recommending of in-country coordination and a plan of action for health and medical and nutritional R and R activities.

Acknowledgements

I would like to extend my sincere thanks to Ambassador Ralph McGuire, U.S. Ambassador to Mali, to Mr. James Kelly, USAID-Bamako and to the staff of the American Embassy for their assistance during my mission. I would like to thank the Minister of Defense, Security and the Interior, Chef de Bataillon Kissima Doukara and his staff and Mons. Ali Cise, Minister of Public Health and Social Affairs and his staff for their assistance and cooperation. I wish to acknowledge the invaluable help of the Regional Director of Health of Gao, Dr. Niankoro Fomba and his staff and the cooperation and assistance of the Commandant du cercle of Goundam, Captain Demba Diallo, and the Medecin Chef of the Cercle of Timbuctoo, Dr. Kaba. I would like to thank Dr. Malcom H. Merrill, Director, Division of International Health Programs, American Public Health Association, and his staff for their assistance in planning my trip to Mali. And, I would also like to thank Mrs. Sally Koch for preparing the draft manuscript for this report.

CONSULTANTS ITINERARY

Wednesday, April 10: Briefing at AID and at the APHA, Washington, D.C.

Monday, April 15: Departure from New York for Dakar.
Tuesday, April 16: Arrival in Dakar. Meetings with U.S. Ambassador Aggree and Regional Office, USAID officials.

Wednesday, April 17: Meeting with Mr. George G. Wood, Food for Peace Officer, USAID/Dakar. Departure from Dakar and arrival in Bamako.

Thursday, April 18- Meetings with officials of the Government
Thursday, April 25: of Mali, USAID R and R officer, Mr. James Kelly, U.S. Ambassador McGuire, U.S. Embassy officers, WHO representatives, UNICEF representatives, FAC representatives. Field visits to savanna villages within a fifty mile radius of Bamako to assess health and nutrition status.

Friday, April 26- Field visit, via Piper Aztec and land
Tuesday, April 30: rover, to the Region of Gao and the Region of Mopti with Mr. James Kelly, Mr. George Wood and Dr. Nianankoro Fomba, Regional Director of Health, Gao.

Wednesday, April 27- Meetings with Government of Mali officials, USAID officials, UNICEF representatives, FAC representatives and WHO representatives.

Monday, May 6: Departure from Bamako and arrival in Dakar. Meetings with U.S. Embassy officers and staff of Orana.

Tuesday, May 7: Departure from Dakar and arrival in New York. (Treated passenger on plane for acute attack of malaria, necessitating delay in take off of one and a half hours).

Friday, May 10: Debriefing, AID, Washington, D.C.

PERSONS CONTACTED IN MALI AND SENEGAL

<u>Name and Position</u>	<u>Had Visited Refugee Camps In the Region of Gao</u>
1. Mons. Ali Cisse, Minister of Public Health and Social Affairs.	Yes
2. Chef du Battailon, Kissima Donkara, Member of the Military Committee of National Liberation, Minister of Defense, Interior and Security, President of the National Committee for the Relief of Victims of the Drought.	Yes
3. Dr. Abdul Karim Sangare, Director of Cabinet, Ministry of Public Health and Social Affairs.	Yes
4. Mons. Mamadon Sylla, Chief of Cabinet, Ministry of Public Health and Social Affairs.	Yes
5. Mons. Seydon Doucoure, Technical Advisor, Ministry of Public Health and Social Affairs.	No
6. Mons. Damas Damas Djaka, Technical Assistant, Ministry of Public Health and Social Affairs.	No
7. Mons, Seydon Tounkara, Assistant, National Direction of Public Health	No
8. Dr. Daouda Keita Director General of Public Health	Yes
9. Mons. Abdoulaye Tounkara,N Chief of Personnel, Ministry of Public Health and Social Affairs.	No

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|--|-----|
| 10. Dr. Jean-Jacques LeVeuf,
Technical Advisor (FAC),
Ministry of Public Health and
Social Affairs; Professor of
Public Health, Medical School,
Koulouba (Bamako). | No |
| 11. Dr. Ousmane Sow,
Director, Division of Socio-
Preventive Medicine. (left office
May 4. Now WHO representative,
Lome). | Yes |
| 12. Dr. Suleyman Sow,
Director, Division of Socio-
Preventive Medicine (Assumed
office, April 22); Formerly,
Medical Director, Gabriel-Toure
Hospital; Formerly. Chief Medical
Officer, Malian Army. | No |
| 13. Mons. Sira Bamba Sissoko,
Infirmier d'Etat and Secretary
of the Division of Socio-Preventive
Medicine. | No |
| 14. Mons. Kola Gogdjaga,
Comptroller, Division of
Socio-Preventive Medicine. | No |
| 15. Mons. Lamine Sidibe,
Infirmier and Chief,
Statistics Section, Ministry of
Public Health and Social Affairs. | No |
| 16. Mons. Tibou Keita,
Infirmier and Former Chief
Physician, Sector Number 3
(Region of Bamako), Service des
Grandes Endemies (Endemic Disease
Service). | No |
| 17. Mons. Djigui Diakite,
Vaccinator, Division of Socio-
Preventive Medicine. | No |
| 18. Mons. Tenenkou Togola,
Infirmier and Coordinator of
Smallpox-Measles Programs,
Division of Socio-Preventive
Medicine. | Yes |

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| 19. Mons. Yacouba Rouamba,
Infirmier d'Etat and Director,
Health Education Service, Ministry
of Public Health and Social
Affairs. | Yes |
| 20. Mons. M. Tamboura,
Infirmier and Assistant to
Director of the Health Education
Service, Ministry of Public Health
and Social Affairs. | Yes |
| 21. Mons. M. Negesama,
Assistant, Health Education
Service, Ministry of Public Health
and Social Affairs. | Yes |
| 22. Mons. Francois Zerbo,
Infirmier, Health Education
Service, Ministry of Public Health
and Social Affairs. | Yes |
| 23. Dr. Seydou Diakite,
Director, Hygiene Service,
Ministry of Public Health and
Social Affairs. | Yes |
| 24. Mons. Talan Keita,
Infirmier, Bozola Dispensary,
Bamako. | No |
| 25. Dr. Souleyman Sangare,
Chief, Pulmonary Disease Service,
Point-G Hospital, Bamako. | No |
| 26. Mlle. Hwa Diallo,
Technical Advisor, National
Director of Social Affairs. | No |
| 27. Mons. Karamoko Diabate,
Superintendent, Secondary School
of Health, Bamako. | No |
| 28. Dr. Abdoulaye Kante,
Director, School Health Service,
Ministry of Public Health and
Social Affairs;
Former Regional Director of Health,
Kayes Region (1971-1973); Former
Regional Director of Health, Segou
Region (1966-1971). | No |

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|---|-----|
| 29. Dr. Malet Keita,
Chief Physician. Lazaret
(Quarantine Dispensary);
Former Director of the Hygiene
Service (1963-1969). | No |
| 30. Mme. Boubacar Syfe,
Director, Secondary School of
Health, Bamako. | No |
| 31. Mons. Amadou Balobo Maiga,
Director General of Social
Affairs, Ministry of Public Health
and Social Affairs. | Yes |
| 32. Dr. Mamadou Koumare,
Director General of the National
Institute of Research on the
Traditional Pharmacopeia and
Traditional Medicine, Ministry
of Public Health and Social
Affairs. | No |
| 33. Dr. M. Kilisi,
Chief Physician, Cercle of
Niafunke | Yes |
| 34. Dr. Seydou Diallo,
Regional Director of Health,
Region of Mopti. | Yes |
| 35. Dr. Nianankoro Fomba,
Regional Director of Health,
Region of Gao. | Yes |
| 36. Mons. Dramane Samake,
Infirmier d'Etat,
Infirmier in Charge,
Ansongo Refugee Camp, Cercle of
Ansongo, Gao. | Yes |
| 37. Mons. S. Quattara,
Chief of Cabient,
Governor's Office, Region of
Mopti; Former Commandant, Cercle
of San, Region of Segou. | Yes |
| 38. Captain Demba Diallo,
Commandant, Cercle of Goundam,
Region of Gao. | Yes |

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| 39. Major Mamadou Marko,
Chief of the Bataillon of the
Eastern Sahel;
Former Commandant of the Cercle
of Niore. | Yes |
| 40. Dr. A. Kaba,
Chief Physician,
Cercle of Timbuctoo, Region of
Gao. | Yes |
| 41. Dr. Depinay,
Chief Physician, Cercle of
Dire, Region of Gao. | Yes |
| 42. Mons. Seydou Dembele,
Infirmier d'Etat and Field
Supervisor, National BCG
Vaccination Campaign, Region of
Gao. | Yes |
| 43. Mons. Mamadou Traore,
Assistant to the Commissar of
the Gendarmerie, President of
Refugee Camp, Dire. | Yes |
| 44. Mons. Ujootha,
Who Advisor, BCG Campaign, Mali. | Yes |
| 45. Mlle, Matt,
WHO Advisor, Maternal and Child
Health Program, Mali. | Yes |
| 46. Dr. A. Geller,
Assistant Director, Health
Services, WHO Regional Office -
Brozzavile. | No |
| 47. Dr. M. Blanc,
WHO Representatives, Abidjan. | No |
| 48. Mons. Abdouoamane Maiga,
Infirmier and Chief Physician,
Cercle of Goundan, Gao. | Yes |
| 49. Mons. Modibo N'Faly Keita,
Driver,
Division of Socio-Preventive
Medicine, Ministry of Public
Health and Social Affairs. | Yes |

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| 50. Mons. n'Golo Diarra,
Driver,
Division of Socio-Preventive
Medicine, Ministry of Public
Health and Social Affairs. | Yes |
| 51. Dr. Benitieni Fofana,
Chief, Gynecology Service,
Gabriel Toure Hospital;
Former, Chief Physician, Maternal
and Child Health Services; Former,
Chief, Nutrition Section; Former
Minister of Public Health and
Soical Affairs (1968-1973). | Yes |
| 52. Ambassador Ralph J. McGuire,
U.S. Ambassador to Mali. | No |
| 53. Ambassador Rudolph Agree,
U.S. Ambassador to Senegal. | No |
| 54. Mr. James Kelly,
USAID Drought Relief and
Rehabilitation Officer, Bamako. | Yes |
| 55. Dr. David Peashock,
Consular Officer, U.S. Embassy,
Bamako. | Yes |
| 56. Mr. John Garner,
Public Affairs Officer,
USIS, U.S. Embassy, Bamako. | No |
| 57. Mr. Rufus Stevenson,
Economic Officer, U.S.
Embassy, Bamako | ? |
| 58. Mr. Richard Masters,
Administrative Officer,
U.S. Embassy, Bamako. | ? |
| 59. Miss Maxine Bradrick,
Nurse, Health Unit,
U.S. Embassy, Bamako. | No |
| 60. Mr. Alex Mayo,
UNICEF Representatives, Bamako | Yes |
| 61. Mrs. Zofia Sierpinska,
Administrator. UNICEF Programs,
Dakar. | Yes |

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| 62. Rev. Franz Vander Weijst,
Rector, R.C. Cathedral, Bamako. | No |
| 63. Miss Carol Proebe,
Protestant Mission, Tyefala,
Sekasso Region. | No |
| 64. Mr. George Wood,
Food for Peace Officer,
USAID Regional Office, Dakar. | Yes |
| 65. Mr. Pat Patty,
Economic Officer, U.S. Embassy,
Dakar. | No |
| 66. Miss Claudette Dietz,
Nurse, Health Unit, U.S. Embassy,
Dakar. | No |
| 67. Dr. Weber,
Physician, U.S. Embassy, Dakar. | No |
| 68. Mons. Moussa Leo Keita,
Chief of Protocol, Republic of Mali. | No |
| 69. Mr. J. Patterson,
Africa Bureau, USAID (while on
field visit to Senegal, Mauritania
and Mali). | Yes |
| 70. Mr. Howard Hellman,
USAID/Paris (while on field visit
to Mali). | No |
| 71. Captain Neil Ensign,
World Airways/Air Mali. | No |
| 72. Lt. Colonel David Anderson,
Military Attache, Dakar (while on
field visit to Mali). | No |
| 73. Dr. Hubert F. Carver,
USAID Veterinarian, Central
Veterinary Laboratory, Bamako. | No |
| 74. Master Sergeant John Greshle,
U.S. Marine Corps, U.S. Embassy,
Bamako. | No |
| 75. Mr. Augusto Bottari,
General Services Section,
U.S. Embassy, Bamako. | No |

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| 76 | Mons. Sory Coulibaly,
Minister of Labor and the Civil
Service. | Yes |
| 77. | Mons. Cheick Cumar Mara,
Assistant Director,
National Museum, Bamako. | No |
| 78. | Mons. M. Gabrielle,
Director, UNICEF Garage, Mali. | Yes |
| 79. | Dr. Fall,
Surgeon; Point-G Hospital,
Bamako. | No |
| 80. | Dr. Malhamane Diarra,
Former Regional Director of Health,
Gao (1963-1971); Former Technical
Advisor to President Diouri Hamani of
Niger (1960-1963); Former Chief
Physician, Cercles of Kita and
Bougouni (Mali) and Tahoua and Agades
(Niger). | No |
| 81. | Dr. J. Pele,
Director, ORANA, Dakar. | Yes |

THE SAHEL REGION

Ecology

The Sahel is both a climatic region and a vegetation zone which lies immediately south of the Sahara, stretching across the width of Africa from the Atlantic Ocean on the west to the Red Sea on the east. Its name comes from the Arabic, *sahil*, meaning shore or borderland. The Sahel begins at approximately 15 degrees north latitude on the average and extends northwards in most areas for about three hundred miles to 20 degrees north latitude. The southern portions of the region receive from 10 to 20 inches of rainfall per year, whereas the northern portions receive less than 10 inches per year. Rainfall is seasonal, occurring during the months of July through September after which ensues a long dry season, characterized by relatively cool temperatures from October through January and extremely high temperatures from February through June. In contrast to this sparse rainfall the rainfall in the savanna to the south is abundant, ranging from 20 to 60 inches and that in the rain forest of the coast above 80 inches per year. There is considerable variation in annual rainfall in the Sahel and much variation in different parts of it in any given year. It is a region which has been subject to periodic droughts of varying duration, the most intense during this century having been the 1916-1917 drought and the recent drought in 1972-1974. From contemporary records, it appears that the drought of 1916-1917 was as equally catastrophic as the one now in progress. It also severely affected the cereal producing areas of the savanna(1).

The *harmattan*, a dry wind which blows southwards out of the Sahara, increases the aridity of the Sahel during the months of December through June. On the other hand, the southern Sahel is favored by the presence of the Senegal River in the west and the Niger River in the east. The great Inland Delta of the Niger with its flood plains and seasonal lakes and ponds represents an important topographic variation in the central portion of the southern Sahel. Subsistence agriculture is practiced in the Sahel along the banks of the Niger and Senegal Rivers and around a few scattered oases by sedentary agriculturists, the most important of whom are the Songhoi who live along the banks of the Niger. For the most part, various types of sorghum are grown and in a few areas rice. Wheat is cultivated on small scale by the sedentary population in the Dire Cercle of Mali.

The vegetation of the Sahel consists primarily of dolo palms (*Hyphaene thebaica*) found along the river banks and around oases, several species of thorn trees and seasonal grasses. The density of vegetation and its average height

decrease gradually towards the northern Sahel. During the rainy season, much of the Sahel supports an abundant growth of grasses, but during the dry season grass becomes scarce, except along the river banks and around permanent water sources such as wells, lakes and ponds.

Economy

The economy of the Sahel is primarily pastoral, but farming and fishing also comprise significant economic activities. The Tuareg and the Maures have traditionally been pure pastoralists with certain classes among them, namely serfs and captives, practicing subsistence farming. Subsistence farming is also practiced by large groups of sedentary cultivators; such as the Djerma and Hausa in the Niger Republic, the Sonhoi and Sarakole of Mali and the Tukulor of Senegal and Mauritania. Sedentary populations do not practice farming to the exclusion of livestock raising. Most keep herds of camels, cattle, goats and sheep of varying sizes which are herded by either the young men and boys of their societies or by herdsmen hired on a seasonal basis from among the Maures, Tuareg or Peul. The latter, are primarily pastoralists of the savanna to the south of the Sahel. But certain groups of them migrate north into the Sahel with their herds during the rainy season (2). The former captives of the Peul, known as the Rimaibes, are now primarily sedentary cultivators in the northern savanna and southern Sahel. Some of them own sizeable herds of cattle, goats and sheep which are moved seasonally by the young men of the villages along fixed migration trails between established watering points and pastureland (3). This form of nomadism, in which certain segments of a society move seasonally with their herds out of fixed villages, is known as *transhumance* (4).

Fishing in the Sahel is a significant activity on the Senegal and Niger Rivers and their tributaries. The Bozo fisherman are the predominant group along these stretches of the Niger which flow through the savanna and the Inland Delta of the Niger. Within the Niger Bend, fishing is primarily practiced by the Sorko, a special caste of the Songhoi (5). During the past decade, the traditional fishing industry on the middle Niger in Mali has adopted modern techniques and equipment and organized successful cooperatives for the pooling of equipment and financial resources and the marketing of dried and smoked fish. At the present time approximately twelve thousand tons of dried and smoked fish are exported annually from the market at Mopti and Mali to surrounding African states (6).

The traditional Sahelian economy is essentially one characterized by interdependencies between farmers, herdsmen and fishermen. This traditional profile has changed in varying degrees in different parts of the Sahel over the past several decades. Farmers now own livestock and herdsmen cultivate fields, and beyond this central part of the spectrum is pure pastoralism on the one hand and pure crop production on the other. The economic diversification of individual ethnic groups has carried with the obvious political and economic advantages of lessened dependency on other politics. But it has also placed stress upon fine ecologic balances which the traditional interdependency system helped maintain. The massive population explosion of cattle, sheep and especially goats in the Sahel in recent years has been due to both the intense application of modern veterinary health techniques and veterinary vaccination campaigns, and the increase in the number of farmer herd owners and the size of their herds. Overall, it has led to a steady deterioration of the environment through overgrazing.

Of all the activities in the Sahel, husbandry stands out as the one which is the most peripheral to the modern economic life of present day African states. Although milk and the products made from it are bartered or sold at weekly fairs by pastoralists in the villages of sedentary farmers, few animals are ever slaughtered for meat. These animals comprise the pastoralist's capital investment whose dividends provide him and his family with their daily nutritional needs. These dividends are principally milk and milk products and occasionally the meat of dying animals. But, in addition, livestock is a symbol of a man's social station through which he accrues prestige in the community. The pastoralist is willing to barter and sell a portion of his dividends, but is unwilling to tamper with his capital investment. The unused modern abattoir in Gao in Mali is a testimony to this attitude. Were the fruits of modernized agriculture, fishing and husbandry properly exchanged in the Sahel, the end result would be a greatly improved nutritional state for all the peoples of the area.

Population Densities

The population density of the Sahel varies greatly from one part to another. There is also a considerable difference in the population densities for sedentary agriculturists and pastoralists in the same area. Taking 15 degrees north latitude as the southern limit of the Sahel, most of the sedentary population is found along the Niger River, just south of the Niger Bend around the town of Gao. Here the population reaches 125 per square kilometer. Along the

remainder of the Niger River, between Mopti and the Niger Bend, the sedentary population density averages 20 per square kilometer. In the western Sahel sedentary population densities range from 35 per square kilometer around certain permanent water sources to 5 per square kilometer in less arid areas(7).

The density of the nomadic population is also variable. In the western Sahel the density of Maures varies between 0.5 and 2 per square kilometer. In most sections of the central and eastern Sahel, the density of Tuaregs varies from 0.5 to 1 per square kilometer. Among the nomads, population densities at dry season pastures often reach 50 per square kilometer during the months of May and June.

The nomads of the Sahel comprise two large groups, the Bedouin Arabs (Maures) and the Tuaregs. The former are found in those portions of the Sahel which lie in the modern African states of Mali, Mauritania and Senegal and the latter in the Sahelian zones of Mali, Niger and Upper Volta. At the outset it should be noted that not all Bedouin Arabs and Tuaregs live in the Sahel. Some thirty-four Bedouin Arab groups live to the north of the Sahel in Morocco, Algeria, Spanish Sahara and Libya. Likewise, there are two Tuareg groups which live in the Sahara, in Algeria and Libya.

The Tuareg Nomads

Social organization. The Tuareg of the Sahel are Berber nomads. Since the seventh century Arab invasion of North Africa, their culture has been arabized to varying degrees. They speak a Berber dialect, known as *tamachek* and employ a Libyan alphabet known as *tifinar*. Tuareg society is composed of three principal classes, the *Imaggaren* (nobles), the *Imrad* (vassals), and the *Iraouellen*, also known as the *Bella*, (captives) (8). The long established traditional relationships between these three groups have undergone considerable modifications over the past several decades, and especially during the past dozen years. Many former captives are now completely free and independent and many former vassals no longer pay an annual tribute to nobles. The breakdown in traditional relationships is by no means uniform in terms of degree and rate, even within a given tribal grouping.

Although the *Imaggaren* were once probably pure Berbers, they now exhibit a considerable degree of racial mixing, especially those who live in the Sahel in close contact with black Africans. Traditionally they were at the apex of

the social pyramid, a class of noble warriors who ruled over their vassals and captives and who supported themselves from the tribute of their vassals and the work of their captives. They also lived off of tribute demanded of trans-Saharan caravans and, in return, gave guarantees of freedom from attack and pillage. In addition, they often raided and pillaged the sedentary black populations of the Sahel and northern savanna, carrying many off into captivity, killing many other and looting their villages of grain supplies, livestock and other material possessions. The long established roles of pillager and victim did not come to an end until the beginning of the colonial period in the late nineteenth century. But the indignation, spawned from hindsight on the part of the present by sedentary black farmers of the area, keeps alive a strong antipathy toward the Tureg in general. It is this antipathy which has long prevented the association of the two in any health delivery system.

The Imrad once paid an annual tribute to the Imaggaren, known as *tiousse*. They were also expected to take up arms for their *suzerains* in time of war and owed them complete allegiance. However, they were free men and not serfs.

The Irauellen belonged to either nobles or vassals and are, for the most part, the descendants of black populations enslaved during wars or pillaging operations(9). Within the Sahel they are known to most sedentary black populations by the name of Bella. Ordered, as they were by their masters, to commit a number of acts against the social order of the Sahelian sedentary populations, they gained a reputation for being thieves, murderers and criminals. As harsh as this view is, it is the one which prevails in the Sahel and which will change only with the passage of time. The Iraouellen are viewed with great distrust by the sedentary populations, with even greater distrust than the Imaggaren and Imrad.

The Tuareg are divided into a number of tribal groups or fractions (Table 1) which, in turn, joined together in the past, as necessity dictated, into confederations. These confederations are headed by chiefs known as *amenokal* who are either hereditary or elected by an assembly of the Imaggaren and Imrad of the fractions concerned. Where hereditary succession occurs, it is matrilineal. The *amenokal* is advised by a council of elders of Imaggaren and Imrad. Individual fractions are headed by chiefs known as *Amr'ar*. But these chiefs like the *amenokal* can be deposed at any time by a democratic vote of nobles and vassals(10).

A Tuareg family consists of a man, his wife, their children, and their captives. As a rule the Tuareg are monogamous, but as Moslems they also keep a number of Iraouellen concubines. Because succession is matrilineal, the offspring of such unions become captives unless liberated by their fathers. The family, with the exception of their captives, lives in one tent. The captives of several different families which move in a body usually pitch their tents together at a slight distance from those of their masters.

Economic Activities. The Tuareg are primarily postoral, moving on a seasonal basis with their herds of camels, goats, sheep and cattle. Herds are moved along paths established through convention and according to the empirical judgments made necessary by the condition of the environment any given year. While the nobles, vassals and some of the captives participate in these nomadic movements, many of the captives do not. They live in small farming settlements of two varieties. The *ksour* are settlements found in the northern Sahel and in the Sahara in depressions where subterranean water is not far from the surface. The *arrens* are settlements found in valleys along dried river beds and along the Niger River. In the *ksour* and in *arrens*, wells are dug in order to obtain water and the gardens irrigated. In both types of settlements large and small millet are cultivated as well as wheat. Historically, the Imrad supervised the labors of captives working in the *arrens* and *ksour*. But at the time of harvest, the nobles arrived and took most of what was grown, leaving little behind for the vassals and captives(11). At both type of agricultural settlements date palms are also grown.

Tuareg Pastoralism. The Tuareg are essentially camel nomads, but they also keep large herds of goats, sheep and, to a lesser extent, cattle. Animals are the property of individuals, but pasture land and water resources are public property. During the months of July through January, when water and pasture are abundant, milk is abundant and the Tuareg's diet consists of almost nothing but milk and some meat. When the hot, dry season begins in February milk production decreases sharply until by June very little to none is available. The nomads are then obliged to eat cereals, either those produced by their captives or those which they must obtain by bartering some of their animals. Animal mortality is often high during the hot dry season and animals which die are consumed. Even today, the Tuareg's need for cash are few. Such needs include the paying of annual taxes on the declared number of animals owned, on adult members of a family, and for the buying of tobacco, cloth, tea, salt and sugar. In order to meet these needs a few animals are sold.

Table 1.
 PRINCIPAL TUAREG GROUPS OF THE WEST
 AFRICAN SAHEL *

Group	Population	Geographic Distribution
Antessar	50,000	Mali (Timbuctoo region)
Asben	40,000	Niger (Air region)
Aulliminden	120,000	Niger and Mali (Agades and Menaka Legions)
Gossi	8,000	Mali (Gossi region)
Ifora	10,000	Mali (Kidal region)
Udalan	100,000	Upper Volta and Mali (Aribinda and Dori regions)
TOTAL	328,000	

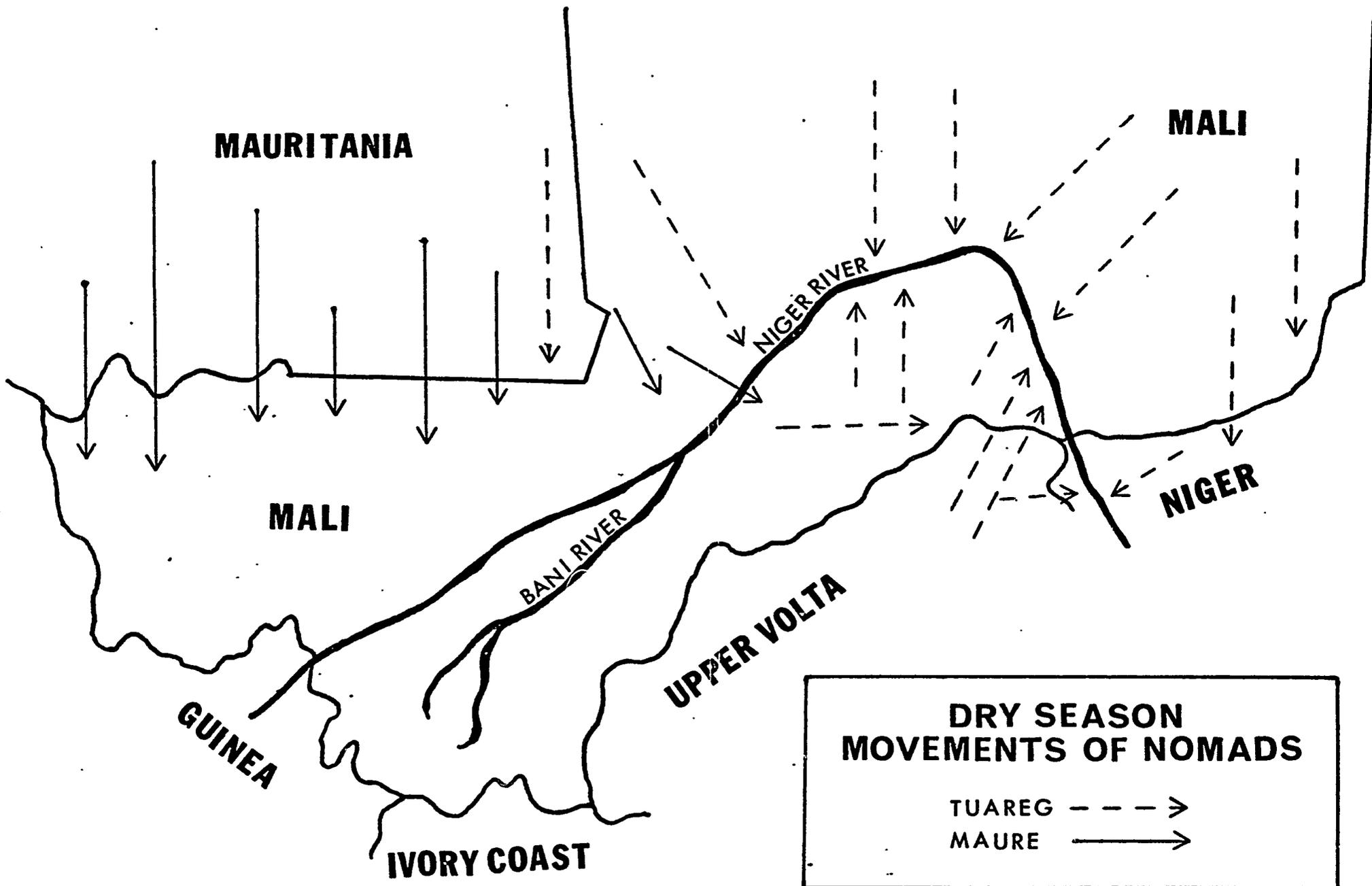
*Two groups of Tuareg, the Ahaggaren and the Azjae live to the north of the Sahel in the Sahara. The Ahaggaren are concentrated in the Hoggar mountains of Algeria and the Azjer around Gat in Libya. Together they number about 12,000. Population data are based on estimates and census samples, G. Brasseur and G. Le Moal, Carte Ethno-Demographique, IFAN, Dakar, 1963.

It is quite obvious that a Tuareg's herds constitute his principal source of food as well as his capital investment. The natural tendency for a herdsman is to increase the size of his herds, for this assures him of an increased quantity of milk which can be consumed and bartered. Herd sizes are not increased with the view in mind of selling animals. The Tuareg's needs for cash are few and so he sells the minimum number of animals possible. Each herdsman then strives to increase his number of animals. Because water supplies and pastureland are held in common by all, it is not in an

individual's interests to limit his herd size in an attempt to prevent overgrazing and destruction of the environment. Even if he were aware of the consequences of overgrazing, and few are, he would not limit the size of his herds. For to do so would jeopardize his personal survival for the benefit of a collectivity which might not concurrently follow his example.

In the past, periodic epidemics of rinderpest and droughts have served as natural controls on herd size. Survival under such adverse conditions was assured by the social structure in which captives produced a supplementary food source in the form of cereals. And if these crops failed, then pillaging the villages of the sedentary black farmers for cereals provided the Tuareg with a food supply. The contemporary period has witnessed the breakdown of this traditional social structure. Former captives are often either herdsmen like their former masters or sedentary farmers, and will provide them with nothing without payment of some kind. Likewise, pillaging has been effectively stopped. The abolition of these two additional sources of food supply was more than compensated for by the increase in herd sizes brought about by modern veterinary campaigns, especially the vaccination campaign against rinderpest, and the creation of new wells. Unfortunately, the land was greatly overgrazed as a result.

Nomadic Movements. The Tuareg of the Sahel are found to the east of 4 degrees west longitude and north of 14 degrees north latitude. Their movement during the rainy season (July through September) is one of dispersal since surface water is abundant as is pastureland. Their dry season movement is one of concentration towards the available water supplies and pastureland. Those Tuareg living within the Niger Bend and to the north of the Niger River migrate towards the river in a gradual fashion beginning in October and arrive on its banks or on the shores of the lakes of the Inland Delta in April. Those from the north descend southwards towards the river while those south of the river move northwards. As they move, they gradually use up all of the available pasture. Some fractions north of the river cross the river in March and April and migrate towards the shores of the lakes of the Inland Delta of the Niger. Tuareg fractions living to the north-east and to the east of the Niger Bend migrate between wells on a seasonal basis. Camps are set up within a twenty-five kilometer radius of the wells and the animals taken to drink at a given well every three days. If there are too many animals within the twenty-five kilometer radius, the available pasture will be quickly used up. Also, if the rains are late, there will



be insufficient pasture for the herds. In both of these situations a considerable number of animals die. But, curiously, this mortality reduces the herd sizes to a point where overgrazing ceases, permitting new grass to grow and the surviving animals thrive and eventually reproduce to the point where the former herd size is re-established(12).

The distance from the final dry season camp to the last rainy season camp varies from a hundred to four hundred kilometers. During severe droughts, this distance may be increased two or three fold, in an attempt to find water and pasture. Under these conditions, the direction of the dry season movement for some is also altered; those fractions in and around the Niger Bend moving southward into the savanna country of Upper Volta instead of northward towards the river. This occurred in 1972 and 1973, during the severe drought which affected the Sahel.

The Bedouin Arabs

Social Organization. The social organization of these people closely parallels that of the Tuareg as do the contemporary changes which are taking place in their society. The nobles are composed of three groups, the *Hassane* who are warriors, the *Tolba* who are Koranic teachers, and the *Ahrar* who are herdsmen. The vassals are known as the *Lahmat*. Beneath them in the social hierarchy are the *Harratin*, the liberated slaves who live as sedentaries in fixed villages. Each year they are required to give a tenth of their crops and herds to their former masters. The *Abids* are the captives and are divided into two groups. The first group consists of individuals who were born as slaves within a given family and who have the right to buy their freedom. The second group consists of individuals who were captured in war and during raids. Unlike the first group who generally live with their masters, these slaves live apart and perform all of the hard labor such as farming, raising dates, and grooming animals. In general terms, the traditional relationships between nobles, vassals and serfs are the same among the Maures as those already described for the Tuareg.

Like the Tuareg, the basic functioning social unit is the nuclear family, representing a sharp departure from the usual norm of the extended family for sedentary peoples of this part of Africa. Because the Maures are Moslems, polygamy is permitted. But in practice most men are

monogamous. Many of them have black concubines upon whom the status of wife is conferred once children are born. Although the extended family (*raime*) does not play a significant role in an economic sense, it does comprise an important social and political unit. Several extended families group together to form a *lefrick* or clan, and a grouping of these comprises a *helle* or sub-tribe. These in turn group to form the *massa* or tribe. Each *massa* is headed by a chief known as *cheickh-el massa*, who is advised by a council of elders. Chieftancy is inherited, the succession passing from a father to his eldest legitimate son.

The majority of Maures are distributed between 15 and 18 degrees north latitude and 4 and 12 degrees west longitude. (Table 2.) Those who live up in the Sahara are primarily camel nomads. But in the Sahel, the majority keep large herds of sheep, goats and, to a lesser extent, cattle. Certain groups are semi-sedentary and other sedentary, living a life style similar to that of their agricultural neighbors. The majority of these Maures live in the north-western part of Mali and in the south of Mauritania. They live in semi-permanent settlements known as *soukala* around which they grow a variety of food crops. The nomads live in tents known as *khaima*. Each nuclear family pitches its tent close to that of the extended family head. Thus the families of brothers and uncles are geographically close, but each nuclear family operates as a separate economic entity. In the north and west, tents are made of cotton cloth or camel hide, but in the north-east tents are made of cattle hide, like those of the Tuareg. The sedentary and semi-sedentary Maures often live in straw shelters.

Historically, the social relationships of the Maures with the black sedentary farmers of the Sahel and savanna have been characterized by pillaging, livestock rustling and robbery. This is understandable given the Maure value system in which the goal of most nobles is to possess enormous herds and numerous captives. Because these practices existed until fairly recently, most sedentary populations view the Maures with strong feelings of distrust and dislike.

Maure Pastoralism. Pastoral practices among the Maure closely parallel those of the Tuareg. Those Maure who live up in the Sahara are primarily camel nomads whereas those to the south of them in the Sahel primarily herd sheep. The Sahelian Maures also herd goats and hump-backed zebu cattle, but these are kept in numbers far fewer to the numbers of sheep. Those Maures who are sedentary and semi-sedentary grow a variety of crops around their settlements during the rainy season. These include millet,

Table 2.
 PRINCIPAL BEDOUIN ARAB GROUPS (MAURES)
 OF THE WEST AFRICAN SAHEL *

Group	Population	Geographic Distribution
Berabish	40,000	Mali and Mauritania (Timbuctoo and Nema regions)
Delim	100,000	Mauritania (Nouadibu region) and Spanish Sahara
Duaish **	10,000	Mauritania (Tichit and Tidjikda regions)
Kunta	70,000	Mali (Timbuctoo and Bourem regions)
Regeibat	40,000	Mauritania and Spanish Sahara
Trarza	100,000	Mauritania (Akjoujt region)
Zenaga **	150,000	Mauritania (Hodh region)
TOTAL	500,000	

* There are approximately thirty-four other groups living to the north of the Sahel in the Sahara and along the North African coast. Population data are based on estimates and census samples, G. Brasseur and G. Savonnet, Carte Ethno-Demographique, IFAN, Dakar, 1960.

**The Duaish and the Zenaga are Arabized Berbers.

peanuts, beans, rice and, in certain areas, wheat. Pastoral Maures do not farm, but relegate farming to their captives. Traditionally, captives cultivated crops on land rented or allocated to their masters on an annual basis by the sedentary farmers of the area. Once the rains began, the nobles moved north with their livestock, leaving the captives behind in the south to farm. At harvest time, the captives returned with their crops to their masters. To a large extent this traditional system has now broken down, since most captives have been liberated.

Semi-sedentary Maures, especially those living around 15 degrees north latitude practice transhumance. They move northward with their herds at the beginning of the rainy season and return south in the month of January. Only the young men and adolescent males move with the herds, the remainder of the families remaining behind in the south.

Economic Activities. In contrast to the Tuareg, the economic activities of the Maure are more diversified. Certainly, pastoralism is the essence of their economic life. But the Maures also practice more extensive and diversified agriculture and engage in other activities which provide them with an income of either cash or goods. Except for the camel herdsman, the Maure rent their cattle and donkeys out as pack animals to merchants and farmers during the dry season. In a sense they have a better opportunity of doing this than the Tuareg, since they are in intimate contact with the Sarakole, the foremost merchant group of this part of Africa who live in the Sahel around 15 degrees of north latitude and between 9 and 12 degrees west longitude. The Maure also gather gum arabic which is a cash generating product used for a wide variety of purposes. It is eaten, both fresh and dried. After drying it is pulverized and mixed with butter or milk. It is also used by most population groups in the Western Sudan for starching clothing and was once an important ingredient used by the textile industries of Europe. Dates are cultivated on a large scale around most oases and comprise an important diet staple as well as a cash crop.

Nomadic Movements. Like the movements of the Tuareg, those of the Maure are primarily along a north-south axis. In the western Sahel, the Maure descend as far south as 14.5 degrees north latitude, but in the eastern Sahel, in the area of the Niger Bend they are not found below 16 degrees north latitude. At the beginning of the rainy season in July, the herdsman start their northward trek which, in most instances, covers three to four hundred kilometers. They move along fixed paths up into the northern reaches of the Sahel. The camel herdsman to the north of them move ahead

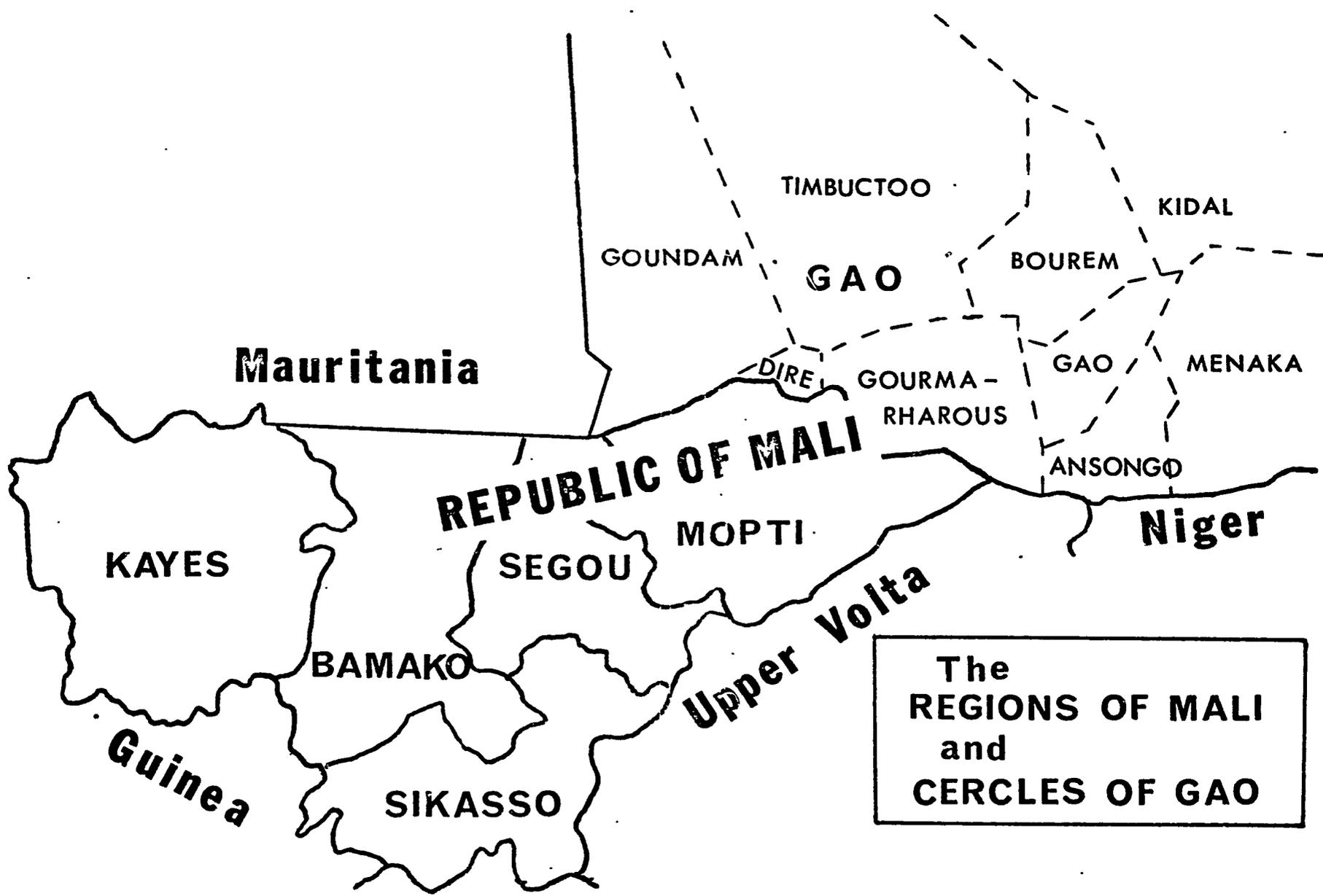
of them up into the Sahara at the same time. At the end of the rainy season they descend again into the southern Sahel, following the same paths and utilizing the pasture and water resources as they move. This dry season descent is slow compared to the rainy season trek which is rapid(13).

The principal groups in the eastern Sahel, in the region of the Niger Bend, are the Kunta and the Berabish. There are, in addition, several small sub-fractions in this area, the Ahel Araouane, Kel Haoussa, Tenguererif, Oulad Daoud, Joumane and Hamounat(14). In the western Sahel the Zenaga, Trarza and Duaish are divided into numerous fractions, the most important of which are the Ahel Sidi Mahmoud, Laghala, Mechdouf, Oulad Naser, Oulad Mbarek and Ladem. In the western Sahel, the chief paths of movement of the Maures follow the longitudes connecting the following centers, Kiffa (Mauritania) and Laues (Mali), Aioun el Atrouss (Mauritania) and Nioro du Sahel (Mali), Nema (Mauritania) and Nara (Mali). In most instances, the seasonal nomadic drift is bisected in its center by 16 degrees north latitude.

The Population of the Region of Gao.

The Gao Region of Mali, situated in the north-eastern part of the country, covers 808,438 square kilometers, almost three quarters of Mali's total surface of 1,240,150 square kilometers. Most of this region lies within the Sahara Desert, the remaining portion lying in the Sahel around the Niger River.

Population estimates for this region have over the years varied widely, depending on the source. These estimates have varied from a low of 400,000 to a high of 700,000. In 1968 and 1969, during the attack phase of the smallpox eradication/measles control program, the estimate given by the local administration was 525,000. Of this number, 425,000 were estimated to be sedentary farmers and fishermen and 100,000 Tuareg and Maure nomads. The sedentary population consists primarily of Songhoi farmers and Soroko fishermen. In the cercle of Dire, in the western portion of the region, there is a sizeable population of semi-sedentary Peul. During a well executed mass immunization program which covered the period from October 1968 to August 1969, a total of 400,050 sedentaries were immunized along with 33,068 Tuareg and Maure nomads. Assessment teams recorded better than 90 percent coverage of the sedentary population and from 62 to 90 percent coverage of the nomadic population. In view of this experience, and the then stated estimates of administrators in the region, a plausible population figure for the region at the onset of calendar year 1972 would be 525,000, of which 425,000 were sedentaries and 100,000 nomads.



Mauritania

KAYES

BAMAKO

Guinea

SIKASSO

SEGOU

MOPTI

Upper Volta

TIMBUCTOO

GOUNDAM

GAO

BOUREM

KIDAL

DIRE

GOURMA-RHAROUS

GAO

MENAKA

ANSONGØ

Niger

**The
REGIONS OF MALI
and
CERCLES OF GAO**

Prior to the onset of the present drought, there had been a sizeable exodus from the region into neighboring regions of Mali and into the adjacent states of Algeria, Niger and Upper Volta. Chronic crop failures prompted sizeable numbers of sedentary families to leave. In 1966 the official population of Bourem was stated to be 95,000. However, during the planning phase of the smallpox-measles program in that cercle, in 1968, local administrators informed me that the population was actually more on the order of 65,000. They stated that a third of the cercle's sedentary population had migrated south into Niger and Upper Volta and to a lesser extent into the cercles of Gao and Ansongo because of consistently poor harvests. The abandoned villages present along the Niger in the cercle of Bourem are a result of this exodus and not the drought. There has been a constant drift of young adult males into the job markets of the coastal countries, particularly Ghana, the Ivory Coast and Nigeria. It is, of course, difficult to say that proportion of the region's sedentary population left during the decade prior to the present drought, but the general impression of local administrators is that it was sizeable.

The nomadic population also left the region for several reasons. In the early 1960's, the Ifora Tuareg in the cercle of Kidal began an armed revolt against the newly independent Malian government. This revolt was finally put down by the Malian army in 1963. During it and afterwards, large numbers of Tuareg, especially those of the Ifora and Aulliminden, left Mali for Niger and Algeria and did not return. Many Tuareg as well as sedentary peoples of the region viewed the regime of Modibo Keita (1960-1968) as excessively oppressive and because of it left the country. Thus, because of political, economic and environmental reasons, a sizeable exodus from the region began long before the current drought. This is an important point to keep in mind because the large groups of Malians now in refugee camps in adjacent areas of Niger and Upper Volta are not composed only of drought refugees who recently left Mali. Many of these refugees had been living outside of Mali for many years.

The Other Areas of The Malian Sahel

In addition to Gao, the northern parts of the Regions of Mopti, Segou, Bamako and Kayes lie within the Sahel. Although environmental conditions in recent years in these areas have been about the same as in the Gao region, their effects on the population have been generally less

severe for several reasons. By and large, the semi-nomadic Peul herdsmen of the Inland Delta of the Niger (Regions of Mopti and Segou) have not suffered many ill effects from the drought, nor have their herds. Last year the central part of the Delta received heavier rainfall than usual and pasture and water have been adequate for the Peul herds. The Peul also grow cereals and, in the event of livestock loss, have an alternative source of food to fall back on.

The northern areas of the Region of Bamako (cercles of Nara, Kolokani and Banamba) are populated by sedentary Bambara and Sarakole people and to a lesser extent by Maure and Peul nomads. A pre-drought exodus, especially of young males, has existed in this area for the past two decades. Many leave on a seasonal basis (January-May) for jobs in Bamako, and others for extended periods for the job markets of Ivory Coast and Ghana. The Sarakole of Nara and those of the cercles of Nioro and Yelimane (Kayes Region) have been leaving Mali for many years. There are an estimated 15,000 Sarakole males working at present in France (15). An even larger number are to be found in the Ivory Coast, Ghana and Sierra Leone. A sizeable colony existed until expulsion in 1971 in Zaire. The Sarakole are primarily merchants and have over the years gradually abandoned agriculture. Those Sarakole still living in Nara, Nioro and Yelimane who have been severely hit by the drought have had family resources to fall back upon. These consist primarily of relations and extended family members residing in cities like Bamako and in coastal areas like the Ivory Coast. Many of them who have been adversely affected by the drought are now living with merchant relatives in towns and cities.

Those Maures in Nara and Nioro who have been similarly adversely affected by the drought have also integrated themselves into those family segments along established in places like Bamako. Large numbers of Maures who left Nara because of the adverse effects of the drought are now living in the Bankoni and Bagadedji quarters of Bamako where they are, by and large, supported by relatives and their own efforts.

In brief then, the pastoral and agricultural populations of the western Malian Sahel, with their diversified economic profile, had resources to fall back upon when adversely affected by the drought. The Tuareg and Maure nomads of the eastern Malian Sahel, wholly dependent upon their herds and without relatives in any other sector of the national economy had no resources to fall back upon. It is they who have thus far comprised the largest proportion of refugees in government administered camps.

EFFECTS OF THE DROUGHT
ON THE POPULATIONS OF THE
EASTERN MALIAN SAHEL
(REGION OF GAO)

As is well known now that the effects of the drought were first felt by the pastoral nomads, the Tuareg and the Maure. With inadequate rains in 1972, pastureland became scarce. Although there was adequate water in most wells in late 1972, there was little or no pastureland around the wells. That which was present was rapidly consumed by livestock herds leading to a situation wherein there was adequate water but no fodder. The situation grew progressively worse in the early months of 1973, a time when many animals died of starvation. Some herdsmen drove their herds southwards into the savanna of Upper Volta and as a consequence saved a considerable proportion of their livestock. Others, however, waited around the wells or along the Niger, hoping for the rain which would generate pasture. Those rains never came and as a consequence most herds were decimated. Many nomads were stranded around wells and unable to leave because their donkeys had died. It was reported by many officials that the donkeys were among the first animals to die. Because they are the primary means used by the nomads for transporting tents, possessions and water, the nomads were unable to move into administrative centers, even though they wanted to. Camels and cattle also died in large numbers in early 1973, followed by sheep. Of all the livestock species, goats proved to be the most resistant and for the most part managed to survive where there was minimal fodder.

Those Tuareg males who drove their livestock south beyond the traditional migration orbits left their wives and children behind. Other males, who lost all of their livestock, sent their wife and children into administrative centers and migrated south into Nigeria where there are now large numbers of them. Malian officials claim that these men migrated with the hope of finding food to bring back to their families, or else cash employment which would enable them to buy food. Among many stranded families the situation progressively grew desperate. There are many documented instances where nomads ate the leather of their own tents and saddles. Under these extreme circumstances many children were abandoned by their parents.

Once the gravity of the situation was fully known, the Malian Government organized a program to bring the stranded nomads into what are now called *Camps des Sinistres*. The

physical transport of nomads from isolated Sahelian wells was undertaken by the Malian army. These camps were established at either administrative centers or else at important wells where nomads habitually congregate. The population size of these camps gradually grew as more and more nomads lost their herds. Segments of the sedentary population also entered them after their grain reserves had been exhausted. There was no existing administrative infrastructure in Mali to deal with the influx of tens of thousands of starving refugees into camps. Nor were there the necessary food resources to feed them.

It is remarkable, in my opinion, that the administrative infrastructure was developed so quickly and that food was gotten into this very inaccessible region so fast. The present situation in those camps which I visited is vastly different from what it was six months ago.

Description of Camps Visited

During my field visit to the Region of Gao I visited four camps, those at Gao, Goundam, Dire and Timbuctoo. Mr Kelly and Mr. Wood visited Ber and Ansongo and Mr. Wood visited Bourem. Thus our group visited seven of the thirty camps located in the region. The four camps I visited contained 50 percent of the refugee population of the region. (See Table 3.)

The Camp at Gao

General Description. The camp is situated at the southern edge of the town of Gao, along the banks of the Niger River, in a tree shaded area of several acres surrounding the unused abattoir. The refugees are, by large, housed in the traditional shelters which include the following: leather tents (Tuareg), cloth tents (Maure), straw mat shelters (Bela and Songhoi). There were about two dozen white cloth tents provided by the West Germans. But these are wigwam in shape, unlike the traditional Tuareg tent, and lack the large open spaces present beneath the flaps of traditional tents. In addition, there were a few orange colored plastic tarpaulins being used as shelters.

We visited three quarters of the camp over a period of two hours during which time I had ample opportunity to inspect the refugee population.

Population Composition. As shown in Table 3, half of the population of the Gao camp is composed of children below 14 years of age. The ratio of adult females to adult males

Table 3

SELECTED POPULATION DATA FOR
THIRTY CAMPS FOR DROUGHT VICTIMS
IN THE REGION OF GAO, REPUBLIC OF MALI
BY CERCLE, MAY 1, 1974*

Cercle	No. of Camps **	Total Population	No. of Families	Adult Males	Adult Females	Adult Female - Male Ratio	Children 0-14 yrs of age
GAO	1	10,866	2,497	1,780	3,600	2.0	5,486
MENAKA	2	1,705	383	197	458	2.3	1,050
KIDAL	6	6,988	1,496	1,559	2,130	1.4	3,299
GOURMA-RHAROUS	3	4,126	944	1,183	1,423	1.2	1,520
BOUREM	6	8,844	1,939	1,452	2,897	2.0	4,495
TIMBUCTOO	3	6,586	1,502	673	2,079	3.1	3,834
GOUNDAM	2	7,562	1,204	1,831	2,347	1.3	3,384
DIRE	5	3,135	686	518	1,024	2.0	1,593
TOTAL	30	53,901	11,373	9,905	17,551	1.8	26,285

*Census data taken between April 7th and 13th, 1974, except for cercles of Ansongo, Menaka and Dire. Census for these three cercles taken week January 6, 1974.

**Identification of camps by cercle:

Gao Angonto	Gao Ansongo Tellatye	Bourem	Bamba Bourem Tarkint Temera
Menaka	Menaka Anderambonkane	Timbuctoo	Timbuctoo Ber Inakouder
Kidal	Anefis Aquel-hoc Bouressa Kidal Tessalit Tin-Esako	Goudam	Dourekele Goundar
Gourma- Rharous	Gossi Gourma-Rharous Inouarden Agamor Almoustarat	Dire	Danga Dire Haribonqo Kirchamba Sareyamou

is approximately 2:1. This ratio is accounted for in large part by the migration of adult Tuareg and Maure males southward into Niger, Nigeria and Upper Volta. There were large sectors in the camp composed of sedentary Songhoi people and Bella agriculturists.

Administrative Organization. The camp, which had a population of 10,866 at the time of our visit, is divided into twelve distinct sectors along ethnic lines and within ethnic groups according to clan grouping. Each sector is administered by a sector chief who is a prominent member of the refugee group in the sector. Each family head is given a *Carte de Famille* on which are recorded the names of all members of his family in the camp. Food distributions are recorded on this card.

Individuals entering the camp for the first time are registered at an office set up in the gatekeeper's building on the abattoir grounds. They are then assigned to the appropriate sector of the camp and are kept under close medical surveillance since most are in a poor state, nutritionally speaking. A weekly census is taken in the camp.

Food Storage and Distribution. Food supplies are stored in the main building of the abattoir. Food is distributed in front of this building by the military. Children under fourteen years of age are given a daily ration of milk which they are made to drink at the food distribution center under the supervision of the military. This procedure was instituted when it was found that parents drank the milk when children brought it back to the tents.

Nutritional Status. Overall, adults and children over six years of age were in a rather good state of nutrition. Children below six years of age seemed less well nourished, but were, in general, in satisfactory condition. Three cases of marasmus were seen among children less than four years of age who had arrived in the camp that day. No cases of either marasmus or kwashiorkor were seen among children who had been in the camp for any length of time. Clinically, I saw no overt signs of avitaminosis.

Health Status. There were no epidemics in progress at the time of my visit. A measles epidemic had terminated several weeks before, but there were no measles cases occurring at the time of my visit. During that measles outbreak many adults became ill with measles, a not unusual occurrence among the Tuareg and Maure nomads. The general health status of the refugees was very good. The major disease problems were those usually present in this part of Africa (Table 4). There were no disease problems present, attributable to the clustering of large numbers of people in refugee camp.

Table 4
DISEASE PROBLEMS OBSERVED AT DISPENSARY
IN GAO CAMP DURING THE MONTH OF MARCH, 1974*

Disease	Number of Cases
Malaria	707
Measles	54
Chickenpox	80
Mumps	5
Gonorrhea	3
Dysentery	3
Icterus	1
Whooping Cough	1
Pharyngitis	9
Influenza	1
Respiratory Tract and Other Complaints	2,453
TOTAL	3,317

*A total of 3,317 patients were seen,
representing 21,703 patient visits.

There had been an outbreak of severe diarrhea in which approximately 50 persons died in the Gao camp. Similar outbreaks occurred about the same time in the camps at Dire, Goundam, and Timbuctoo. These outbreaks occurred several weeks ago and were traced to ingestion of powdered milk supplied by the European Economic Community.

Health Services: There are three infirmiers working in the camp, one infirmier d'etat and two infirmier major. A dispensary is operative in one of the abattoir buildings where an average of seven hundred patient visits are handled each day. The dispensary was physically composed of two extremely large rooms. Records of visits are kept and a monthly report sent to the Regional Director of Health. The dispensary was stocked only with chloroquine, aspirin, antiseptics, intravenous solutions and some surgical supplies. While there was a paucity of medical supplies in the camp dispensary, it must be realized that what supplies were present were considerably greater than those usually found in a rural dispensary in Mali.

Serious medical problems are referred to the hospital in town which is staffed by a Malian physician who acts as the hospital's medical director, a Russian surgeon, a Russian dentist, a Russian obstetrician and a staff of Malian infirmiers and medical assistants.

With three infirmiers in the Gao camp, the ratio of infirmiers to refugee population is 1/3,350. There are thirty infirmiers in the rest of the cercle of Gao, including those assigned to the hospital in the town of Gao. With a population of 80,000 non-refugees, in the cercle, the ratio of infirmiers to non-refugee population is 1/2,600 (16). It must be remembered, however, that the refugee population is within yards of dispensary and medical personnel whereas large segments of the general rural population are often many miles from a medical post.

Environmental Hygiene: Malian officials in both Bamako and Gao expressed much concern about the levels of environmental and personal hygiene present in refugee camps. The Tuareg and Maure habitually defecate on the open ground near their tents and then cover over the feces with a thin layer of sand. Because flies are extremely abundant in this part of Africa, there was much concern about the disease potential of this practice. The personnel of the Hygiene Service from the town of Gao visit the camp each day and supervise the sweeping up of feces. Refugees are required to sweep the areas around their shelters once a day, a practice which was going on during our visit. Because residual insecticide is sprayed around the camp, there were no flies present, a remarkable finding since they are abundant elsewhere around the town of Gao.

An attempt is being made to induce the refugees to use an area outside of the camp as a place to defecate or latrines. However, such attempts have not been successful thus far. Disfavoring the spread of certain infectious disease via the fecal-oral route is the extreme aridity of the region which dries feces rapidly and destroys certain pathogens.

In general, the level of environmental hygiene in the camps is considerably higher than that which I was accustomed to seeing in nomad camps in the pre-drought era. Water is obtained from the river, a situation which is cause for concern (See following recommendations).

Schooling and Occupational Programs. There is a school in the Gao camp with two young Tuareg teachers. We were told that there were some 130 children now attending the school. The school building is constructed of woven straw mats fitted and sewn over a frame of wooden poles. It is identical to schools present in other rural areas of Mali and even in Bamako. The woven straw mats of which the school building is made were woven by women in the camp who were remunerated for their work.

Male and female artisans are being encouraged to make leather goods, baskets and metal objects for the commercial market. This program is being directed in the camp by the social workers from Gao. Artisans are paid for the items they produce. Adult males in the camp have been organized into work crews in order to gather wild sorghum and *cram cram* in the bush.

General Impression. The Gao camp is well organized and carefully supervised. Basic health services are being provided equal to those provided in other parts of rural Mali. The Hygiene Service and social aides, as well as the Women's Association of Gao, have made an impressive visible impact on the level of health and well being of the refugees. Overall levels of nutrition are good. Special care is being given to recently arrived malnourished refugees. With adequate and well balanced food supplies, this situation will improve even more. The officials responsible for the administration of the camp are conscientious and hard working. A number of officials and private citizens in the town of Gao have been working in the camp as volunteers. The Gao Women's Association has taught refugee women to prepare meals from imported cereals and other foodstuffs.

The Camp at Dire

General Description. The camp is situated on the outskirts of the town on several acres adjacent to the flood plain of the Niger River. The original acreage of the camp is demarcated around the periphery by metal posts four feet

high. However, the influx of refugees over the past several months has resulted in sectors of the camp being set up outside of this area. The area on which the camp is situated is composed of flat, hard white soil characteristic of this part of the Inland Delta of the Niger. There were virtually no shade trees in the area, but then trees of this variety are few in the region. Refugees are housed in their traditional shelters for the most part, which at Dire include straw mat shelters (Peul, Songhoi and Bela) and leather tents (Tuareg). The entire camp was visited during a period of two hours at mid-day on April 27th.

Population Composition. The camp at Dire was reported to be the largest of five camps situated in the cercle of Dire (Table 3). Precise updated demographic data were not available at the time of our visit, however, the local administrative authorities said that there were approximately two thousand refugees in the camp. The ratio of adult females to males for all of the camps in the cercle of Dire is 2.0. The reasons given for this are the same as those given above in the description of the Gao camp. Additionally, however, the camp at Dire has a large population of Songhoi and Peul who are polygamous, while most of the Tuareg and Bela are monogamous. The camp was composed principally of Bela and Songhoi people and to a lesser extent of Tuareg and Peul. It was reported that there was a steady but small daily influx of new refugees into the camp. There were approximately two hundred shelters in the camp, consisting of about fifty Tuareg tents, fifty Peul straw mat shelters and fifty Songhoi and Bela straw shelters. There were several white tents supplied by the Federal Republic of Germany.

Administrative Organization. The camp is divided into three distinct sectors along ethnic lines. The Tuareg form one section, the Peul another, and the Bela and Songhoi together a third. Each sector is administered by a sector chief chosen from among the refugee chiefs in the sector. The entire camp is administered by a president who at the time of our visit was the assistant to the chief of the Dire gendarmerie. He is assisted by a female co-president who is also president of the local Association of Women of Dire. The president is responsible for the day to day administration of the camp and reports directly to the Commandant of the Cercle.

As in all the other camps visited, each family head is given a *Carte de Famille* upon which are listed all of the family members in the camp for whom they are responsible.

Individuals entering the camp for the first time were registered in an office set up in a large straw mat hanger. Depending on their ethnic background, they are assigned to the appropriate sector of the camp where they set up a shelter. A weekly census is taken in the camp.

One group of Tuaregs had recently moved out of the camp, but set up their tents several hundred yards away from its periphery. They claimed that their misfortune was due to sorcery which would continue as long as they physically remained in the camp. Although, physically outside of the refugee camp, these Tuareg still form part of the camp and are treated as such.

Food Storage and Distribution. Food supplies are stored in warehouses in the town of Dire and are distributed to family heads twice a week. In addition, children below the age of fourteen were being given a daily ration of powdered milk. The average weekly allowance of cereal for each refugee was two kilograms, the type of cereal varying from time to time.

Nutritional Status. There were no marasmic children in the camp at the time of our visit. In general, adults appeared to be in a rather good state of nutrition as did children from six upwards. Younger children, while in a satisfactory nutritional state, did not appear as well nourished as the older children. Clinically, I saw no cases of kwashiorkor or vitamin deficiency syndromes.

Health Status. The *medecin chef* of the Cercle of Dire, Dr. Depinay, a French physician working for the Government of Mali under contract, accompanied us on the tour of the camp. Dr. Depinay has been the chief physician of Dire for twelve years and prior to that time served in a similar capacity in the cercle of Bandiagara. There were no serious disease problems in the camp and Dr. Depinay related that there had not been any since the opening of the camp. There were several cases of chickenpox and it was reported by Dr. Depinay that there had been an outbreak of the disease over a period of the several preceding weeks. There had been no deaths. Prior to our visit, several cases of measles had occurred, but no epidemic.

There are two infirmiers in the Dire camp, one infirmier d'etat and one infirmier major. A dispensary is operative in a large rectangular shaped field tent and a large straw mat hanger. As in Gao, a record is kept of dispensary visits and a monthly tabulation of cases

seen, classified by disease, sent to the Regional Director of Health of Gao. The dispensary was extremely well stocked with a wide variety of medications, many of them samples from French pharmaceutical houses. These medications, for the most part, are sent to Dr. Depinay on a regular basis by many European charitable and religious organizations. On the average he received a hundred kilograms of donated medicines per month which are used in the dispensaries of the cercle of Dire and now in the refugee camp dispensaries as well. The refugee camp was equipped with a large glass medicine cabinet, all the shelves of which were fully stocked with medicines. In addition, large quantities of drugs were laid out on a table in the examining section. In contrast to most dispensaries in Mali, including those in the capital of Bamako, the quantity and variety of drugs in the refugee camp at Dire are enormous.

Serious medical problems encountered in the camp are sent to the hospital nearby to which an operating room wing and obstetrical wing have just been added.

With two infirmiers in the Dire camp, the ratio of infirmiers to refugee population is 1/1,000. There are thirteen infirmiers working in the rest of the cercle among the non-refugee population. The ratio of infirmiers to the non-refugee population is 1/5,000.

Environmental Hygiene. The camp is well laid out, dwellings being built in fairly orderly rows with large amounts of space around them. Because of the proximity of the grassy floodplain nearby, the problem of fecal disposal is less severe than in Gao. Many of the Peul, Songhoi and Bela defecate down on the floodplain away from the camp. This plain is dry at this time of year but if rains are normal it will be inundated in July. The Tuareg, however, defecate near their tents. Attempts are being made to induce them and the remainder of the population to defecate far from the camp in a specified area which would be periodically disinfected. Residual insecticide spray is being used at frequent intervals in the camp. We encountered virtually no flies during one tour.

Camp inhabitants are required to sweep up the ground around their dwellings once a day and the debris is then carried to a garbage pile outside the camp. Water is obtained from the river nearby, a cause for concern to camp authorities.

Schooling and Occupational Programs. There is a school in the camp with a registration of 74. At the time of our visit, 59 children were present. This registration represents about one quarter of the school eligible population in the camp.

As in Gao, people are being encouraged to be productive by making leather goods, straw mats, baskets and hats and metal objects, both for use in the camp and for sale.

General Impression. The camp appeared extremely well organized and the population well cared for. The president of the camp was extremely cautious in answering specific questions, which was somewhat surprising in view of the rather fine operation he is administering. His co-president deferred answering any questions, saying that they had to be directed to him. The reasons for this are unclear to me.

The level of health care being delivered in this camp is well above the average for rural Mali and Bamako. The presence of a very competent medecin-chef and enormous quantities of a variety of drugs has thus far assured well above the average medical care.

The Camp at Goundam

General Description. The camp is situated a short distance from the town on the high ground of several fixed sand dunes. A branch of the Niger River flows between the town and the camp. But the camp is within sight of the residence of the Commandant due Cercele and only a few hundred yards from it. The refugees in this camp were predominately Tuareg (87%) and thus the dominant shelters were tents, both the traditional and the white cloth tents provided by the Federal Republic of Germany. There were also straw mat shelters and orange colored plastic tarpaulins being used by the non-Tuareg population. The camp covers an area of several acres, being longer than it is wide. Shelters are laid out in fairly orderly rows, there being about eight rows running the width of the camp. We visited the camp for an hour and a half on the afternoon of April 27th and inspected virtually all of the camp inhabitants.

Population Composition. There are two camps in the cercle of Goundam, that in the town of Doundam itself and one at Dourekle, an arrondissement of the cercle. The commandant of the cercle stated that most of the refugees were in the camp at Goundam whose population during the last week of April he put at approximately 8,000. The adult female to adult male ratio for the Goundam camps is 1.3. This is certainly less striking than the ratio of 2.0 for both Dire and Gao and 3.1 for Timbuctoo. The proportions of adult males and females and children in the Goundam camps closely approximate the normal proportions. Thus, it would appear that in Goundam, adult males did not leave their families as has been well documented in other cercles.

Administrative Organization. The camp had an approximate population of 8,000 at the time of our visit. It did not strike me personally that there were so many people in the camp. My own estimate would be in the area of 5,000. The camp is directly administered by the Commandant du Cercle who is a captain in the Malian army. It is not divided into sectors as are some of the other camps and, in this regard, lacks somewhat in internal organization. Individuals are registered when they enter the camp and are issued a *Carte de Famille* upon which the names of all family members in the camp are recorded. This card is presented each time food is distributed to a family and the quality of food given recorded next to the appropriate date.

The commandant and the medecin-chef, both of whom accompanied us on the tour, stated that individuals were still coming into the camp at a steady rate. They described the dynamics of camp entry as follows: Tuareg families first camp at a distance from the refugee camp and progressively move their tents closer to it each day. During this time, they come into contact with those Tuareg already in the camp and ascertain what receptivity will be and obtain a detailed description of what life is like in the camp. Generally, this reconnaissance period covers several days, after which they directly approach the camp administrators and request entry. They are then registered, permitted to set up their tents and issued a food ration. Those in a poor nutritional state are placed under special medical surveillance and given extra food rations. In most instances this specifically involves children.

Food Storage and Distribution. For reasons which remain very unclear, the only food item being distributed in the Goundam camp is powdered milk. This situation has prevailed for many weeks after cereal supplies were finished. Local officials stated that chronic diarrhea was a major problem among camp refugees for diarrhea in the past several weeks. At the time of our visit there was a five month's supply of powdered milk in Goundam, but no cereal. It is urgently recommended that this situation be corrected as soon as possible.

Nutritional Status. In spite of the steady diet of powdered milk and the reports of chronic diarrhea, the population appeared relatively well nourished. Again, children below six years appeared to be satisfactorily nourished, but not as well as older children. Three marasmic children were found in the camp, all of them having arrived in the camp during the previous week. They receiving special attention from the camp infirmier.

Health Status. Chronic diarrhea has been a serious problem in this camp according to the local medical and administrative authorities. Because only fragmentary epidemiologic data are available, and because I had neither the time nor the authorization to conduct an investigation, the cause remains undetermined. The medecin chef thought it was due to the uniquely liquid intake of the refugees. This is not a plausible medical reason. Also, the usual Tuareg diet is heavily liquid and does not result in diarrhea. As mentioned above, severe outbreaks of diarrhea had occurred in many other camps in the Gao Region among refugees drinking powdered milk provided by the European Economic Community. The diarrhea in the Goundam camp cannot be simply attributed to the absence of solid food intake. This is not an acceptable reason from both the epidemiologic and medical points of view. Whether the milk is contaminated with a pathogenic organism, such as *Salmonella sp.*, has yet to be determined. Many people in the camp obtain their water from a well, recently dug in the center of the camp. Although lined by cement walls and quite deep (circa 100 feet), this well might also be a potential source of possible infection. In sum then, the cause of the chronic diarrhea in the Goundam camp remains to be determined, as do the characteristics of the reported disease itself.

The medecin chef of the cercle of Goundam, who is a highly qualified and dedicated infirmier with whom I have often worked in the past, stated that the principal disease problems, aside from diarrhea, were malaria and respiratory tract infections. Although there had been some measles cases during the previous weeks, there had been no epidemics. There were no measles cases present in the camp at the time of my visit. Many children were suffering from acute conjunctivitis, a common problem in the area.

Health Services. There are two infirmiers working in the camp at Goundam, representing 1 per 4,000 refugee population. There are seventeen infirmiers in the entire cercle, serving an estimated population of 100,000. The ratio of infirmiers to non-refugee population in the cercle of Goundam is 1 per 5,882. Thus, overall, medical coverage for the refugee population is slightly better than for the population-at-large.

The camp dispensary was housed in a rectangular, green field tent measuring twenty-five feet long and fifteen feet wide. A metal wheeled stretcher was being used as an examining table and was more than adequate for this purpose. The

dispensary had very few drugs and was a stark comparison to the dispensary in the Dire camp. The available drugs consisted of aspirin, anti-malarials, antiseptics, anti-diarrheal preparations and a few antibiotics. There were only small quantities of all of these products present. Although this situation would appear bleak, it must be pointed out that dispensary supplies in the town are roughly the same. In the pre-drought period, the dispensary in the town Goundam was generally stocked with about the same spectrum of drugs present in the camp dispensary. Per capita quantities were also similar.

Environmental Hygiene. The problems already described in other camps also exist in the Goundam camp. There appeared to be no special effort on the part of the local camp administrators to change the habits of the refugees in relation to defecation. The camp is swept by the inhabitants once a day and appeared to be very clean. No flies were present in the camp, although there were considerable numbers of them in the town.

The commandant had made considerable efforts to provide the refugees with a more potable water supply. Initially water was obtained from a nearby branch of the Niger River and many refugees still obtain their water there. However, one well is in use and another one is being dug. Both are open wells, but with three foot high rims at the surface preventing ground material from falling in. Rubber buckets, fashioned from old truck tire inner tubes (common practice in Mali) are lowered into the well by ropes. Because the buckets are placed on the ground and handled considerably, it can be assumed that there is a high risk of the water being contaminated. It must be pointed out, however, that most sedentary villages in Mali employ this method for obtaining water.

At the present time the level of water in the one functioning well is low and the quantity small. Once water is drawn, it takes a long time (about an hour) for an appreciable quantity of water to seep up into the well. The commandant has increased the quantity of water somewhat by deepening the well. If the rains are normal this year, the water table should rise and at that time the wells should be capable of providing adequate water for consumption by the entire camp population.

Schooling and Occupational Programs. There is a school in the camp with approximately 130 pupils. The commandant of the cercle had organized 300 adult males of the camp into about a dozen groups for the purpose of cultivating potatoes along the river bank. Several acres were cultivated and the crop sold for cash, each cultivator sharing in the receipts.

General Impression. The absence of cereal stocks in the Goundam camp and the abundance of powdered milk is very perplexing. The camp appears to be well administered by local officials who are quite conscientious. The medical personnel working in the camp are extremely conscientious. But their effectiveness is considerably curtailed by a lack of medicines.

The most pressing medical problem in the camp is diarrhea which I strongly suspect is due to a pathogen. The possibility of the powdered milk having been contaminated with a pathogen, such as *Salmonella sp.*, must be strongly considered. I cannot accept the conjecture that the diarrhea is due to the ingestion of a liquid milk diet. The camp dispensary would be more effective if it had adequate medical supplies.

The tents provided by the Federal Republic of Germany, while large, are poorly adapted for use in this area of Africa. They are enclosed, with virtually no ventilation space between the ground and their hems. Although some Tuareg had their possessions stored in the tents, I saw very few actually living in the tents. If tents are supplied, they should simply consist of large sturdy rectangular tarpaulins which can be mounted, by the Tuareg themselves, on their own frames.

The Camp At Timbuctoo

General Description. The camp is located on the south-eastern periphery of the town adjacent to the medical center of Timbuctoo. It covers several acres of undulating, tree shaded ground and is located in an area which is used in normal times as a dry season camp for some pastoral Bela. Of all the camps visited, this one is the most attractive visually, because of its location on undulating, spacious and tree shaded ground. The majority of the refugees are Tuareg and Bela, many of whom are housed in the white cloth tents provided by the Federal Republic of Germany or under the orange plastic tarpaulins provided by the U.S.A.

We visited the entire camp for a period of about two hours, accompanied by the medecin chef of the cercle of Timbuctoo, the infirmier in charge of the camp dispensary and the Regional Director of Health of Gao.

Population Composition. At the time of our visit, the population of the camps in the cercle of Timbuctoo was 6,586. As shown in Table 3, the adult female/adult male ratio is 3.0, the highest of any cercle. The population

of the camp at Timbuctoo is predominately Tuareg and Bela with a small proportion of Songhoi. Unlike the camps at Dire, Goundam, Gao, Ansongo and Bourem, the Timbuctoo camp was reported to have a fairly stable population level, with virtually no new refugees entering. Most of the refugees in the cercle of Timbuctoo are in the camp at Timbuctoo. There are some 450 refugees at Ber, 53 kilometers from Timbuctoo, and about 250 at Inakouder. Six months ago there were approximately 5,000 refugees at Ber. When asked where all these refugees had gone, local officials said that they had either gone back out into the bush or else had gone to other refugee camps. Pertinent to this point is the fact that there is movement in and out of refugee camps, refugees often moving out of one camp and into another.

Administrative Organization. The camp is divided into fifteen sectors according to ethnic group and clan. The administrative center of the camp is situated at the southern most extremity of the camp and is enclosed by thorn brush. It contains several rectangular green colored cloth field tents used for storing food, the kitchen run by the army for the refugees, and the dispensary. There are two infirmiers working in the camp, but because of the extremely close proximity of the camp to the medical center, other medical personnel often work in the camp.

Each sector of the camp is administered by a sector chief selected by the administration from among the refugees. Each family is issued a *Carte de Famille* and its use is the same as that previously described.

Registration procedures are the same as those already described for the other camps visited. A weekly census is taken in the camp.

Food Storage and Distribution:

Food supplies are stored in the town and also in the camp. Each family head is given a weekly ration of food which at the time of our visit consisted of wheat. Approximately two kilograms per person are distributed. Once a day children below fourteen years are given a ration of milk which they are required to drink at the distribution center.

Nutritional Status. The nutritional state of adults and children above six years seemed excellent. Again, the below six years group appeared less well nourished, but still satisfactory. Only one case of marasmus was seen and one child recuperating satisfactorily from kwashiorkor. The medecin chef was personally familiar with both cases.

Health Status. The general status of the camp population was slightly above the norm for this part of Mali. The medecin chef had immunized the camp population against both measles and smallpox two weeks prior to our visit. He had a large supply of measles, smallpox and cholera vaccines in a refrigerator in the medical center. There were no serious health problems in the camp at the time of our visit. The medecin chef stated that there had been large numbers of measles cases earlier in the year and that measles had occurred among many adults. Measles among adult nomads is not an unusual phenomenon. I observed it often in the pre-drought era.

A few weeks prior to our visit, a visiting journalist had interviewed the medecin chef and hearing of his vaccination campaign in the camp presumed smallpox and measles to be present. This was published in several European papers and was officially refuted.

The medecin chef said that there had been a very serious outbreak of diarrhea associated with the ingestion of the powdered milk furnished by the European Economic Community. Although he did not conduct an epidemiologic investigation, he did make some important observations. Cases occurred only among those who drank the milk. When issuance of the milk was stopped, on suspicion of its being the source of the outbreak, no further cases occurred. Powdered milk furnished by France was then substituted and no cases of diarrhea occurred. It was then decided to mix the suspected milk powder with milk powder provided by France. When this mixture was distributed, cases of diarrhea again occurred, but were reported to have been less severe than before. This measure reflects the dilemma of consuming a contaminated food product or eating nothing at all. The local administrators thought they had come up with the best solution, that of diluting the suspected product.

During the time that the outbreak of diarrhea was in progress, the WHO epidemiologist assigned to Abidjan visited Timbuctoo in order to obtain some information on cholera. At this time the diarrhea outbreak was explained to him. He took samples of the milk with him to Abidjan for laboratory testing, but no results have thus far been given to the Ministry of Health. Samples were also sent to the Laboratoire de Biologie in Bamako by the Regional Director of Health of Gao. However, they were unable to run the specimens because of technical difficulties.

Health Services. Because of the proximity of the camp to the medical center, health services are optimal and certainly more proximate than for the town population. Two infirmiers are assigned to the camp on a permanent basis making for a ratio of 1/2,500 refugees. There are ten infirmiers in the remainder of the cercle serving an estimated population of 50,000. The ratio of infirmiers to non-refugee population is 1:5,000. Medical supplies in the medical center and in the camp dispensary are adequate in terms of quantity and variety.

Environmental Hygiene. Timbuctoo is noted for its dry season fly population and in the town and in the bush surrounding it flies were numerous. However, I did not see any flies in the camp. Residual insecticides are being applied on a regular basis and the results are obvious. A good start has been made toward changing defecatory habits. Many families have dug shallow narrow holes a foot deep, screened in by a straw mat palisade. These are used for a day or so and then covered over. A new hole is then dug near the tent. Attempts have been made to get people to dig such holes in an assigned area on the camp periphery, but thus far not much success has been made.

The camp is swept once a day and overall has a neat clean appearance. Shelters and tents are widely spaced. Water is supplied to the camp by army tank trucks which obtain water from town wells, most of which have functioning electric pumps.

Schooling and Occupational Programs:

There is a camp school with an enrollment of approximately 200. Handicraft programs are very evident in the camps, there being special rectangular army field tents set aside for groups of artisans. Straw mats, baskets, hats, fans and jewelry are made, as well as leather goods and metal objects. Most of the straw products and leather goods are made by women. Artisans are paid for the items they make.

General Impression. The camp at Timbuctoo is in many ways a showplace, a fact which is striking to anyone having visited other camps. The physical location is pleasant, but this is not responsible for the high levels of administrative organization and the generally excellent state of health of the refugees. A considerable effort has been made by the Government of Mali in the Timbuctoo camp, to the point where it probably represents the best place where the refugees have ever lived. There is no reason why this effort cannot be duplicated in the other camps.

The Camp at Ansongo

I did not visit the camp at Ansongo, but Mr. Kelly and Mr. Wood did. The infirmier in charge of the camp spent two days in Gao, during which time he gave me a detailed report on conditions in the camp. (I should add that this infirmier served as my field supervisor in 1967 and 1968 during the attack phase of the USAID smallpox-measles program.)

He reported that there were about 3,000 refugees in the Ansongo camp and about 1,400 in the camp at Tellataye. The adult female/adult male ratio is 2.2. It was explained that many adult male Tuareg had left their families in the camp and had gone south into Niger. A small group of the female Tuareg refugees were said to have come from Niger. Their husbands were reported to be working in the oil fields in Libya. Segments of many families are still subsisting out in the bush and come to visit their relatives in the camp every few days. Thus certain families still possess some livestock resources, but not enough to support all of the family members. There is a small but steady influx of new refugees into the camp and a smaller outflow of refugees.

The camp is physically situated to the east of the village of Ansongo on sloping dunes near the track to Menaka. The health status and nutritional status of the population were described as being good, approximately that which I observed in the Gao camp. There were no epidemic problems in the camp, but medical supplies were described as being very meager, consisting of a few antibiotics, chloroquine and aspirin.

There is a school operating in the camp and a dispensary staffed with three infirmiers. A potato growing scheme similar to the one launched in Goundam is being tried, but with less success. The camp is organized administratively in a fashion similar to that already described in this report, with indirect rule being a key element. The commandant of the cercle of Ansongo had recently met at Ansongo with his counterpart from Gorom-Gorom in Upper Volta to discuss the refugee situation. The Voltaic delegation after touring the Ansongo camp found conditions similar to their own camps, but stated that their dispensaries were much better supplied.

An amusing anecdote related about the Ansongo camp concerned some literate Tuareg who had obtained some French newspapers. They read articles describing all of the international assistance being supplied to Mali and during a session with the commandant of the cercle demanded their fair share of the money. Their intent was to buy livestock.

The Hospital At Gao

I was familiar with the hospital in the town of Gao from my previous years of working in the region. However, I went on a three hour inspection tour of all of the buildings and facilities. The hospital is situated on an enclosed area of several acres on the south-eastern edge of the town on the road to the air field. It has the following services: medicine, surgery, radiology, dentistry, a small chemistry and biological laboratory, and a tuberculosis unit. The hospital is directed by a full time Malian medical doctor trained in the Soviet Union and is staffed by the following Malian personnel: 7 Infirmiers d'Etat, 9 Infirmiers First Cycle, 3 Treatment Aids, 1 Nurse's Aide, 4 Driver, and 14 Laborers.

The actual inpatient capacity is about 102 beds, but the space is totally inadequate and, as a consequence, inpatients are hospitalized on verandas and in corridors on straw mats.

There is a Russian medical staff serving in the hospital. Such staff have been working in the hospital for many years. They provide surgical, obstetrical and dental services. The operating room is large and air conditioned and equipped primarily with Soviet equipment, most of which was functioning.

While adequately staffed, the Gao Hospital has an urgent need for a pediatric inpatient pavilion. There is no pediatric ward in the hospital and consequently children must be hospitalized in the same wards as adults, making for a very unsatisfactory situation. The present inpatient wards are poorly designed and poorly ventilated, but are being used to their maximum. A great strain has been put upon the inpatient service by the drought refugees, necessitating the hospitalization of many individuals on the floor between existing beds, corridors and on verandas.

Evaluation

Based on the assumption that each vehicle will cover 20,000 kilometers per year and a consumption of 20 liters per 100 kilometers, each vehicle will require 4,000 liters of gasoline. Six vehicles will require 24,000 liters of gasoline which at a cost of 140 Malian Francs per liter will amount to 3,360,000 Malian Francs, or \$6,720 per year.

During the mass mobil medical program conducted in Gao in 1969, six mobile teams using Dodge W200 trucks reached 400,050 of the sedentary population, or close to 85 percent of this population. The total consumption in gasoline was 41,000 liters (17). In contrast to Land Rovers, the Dodge trucks consumed an average of 30 liters per 100 kilometers and slightly more in difficult terrain. In order to reach most of the sedentary population, each vehicle traveled an average of 22,000 kilometers.

In order to reach 33,068 Tuareg and Maure nomads, three separate Dodge W200's were used. They consumed 15,000 liters or 5,000 liters each and traveled an average of 16,000 kilometers.

Mr. Kelly's estimates of gasoline requirements per vehicle are extremely accurate. These vehicles, provided this quantity of gasoline, should be able to reach the non-refugee populations in the target areas. His estimates of oil requirements, repair costs and tires are also very accurate and I fully endorse them.

Chapter 3 - Insecticide Spraying
Equipment - \$13,875

The equipment consists of 15 swing Fog sprayers and 30 dusters.

Evaluation

The equipment proposed has been in common use by Malian health personnel for many years and thus there are many who are thoroughly familiar with its use. The quantities proposed are adequate for the thirty camps in the Region of Gao. I fully endorse this chapter of the project.

Chapter 4 - Insecticide and Disinfectants \$28,535

It is proposed to provide 3,250 kg. of Dipterex insecticide, 2,500 liters of Javel water and 3,000 liters of Cresyl.

Evaluation

The products proposed are familiar to health personnel and are urgently needed for the maintenance of an acceptable level of environmental hygiene in the camps and for insect control. The quantities proposed are adequate for the short term. It is difficult to estimate the rate of use since this will vary from one location to another. I would suggest that use be monitored since I suspect that the Cresyl and Javel water will last for about only six months. The quantity of Dipterex being supplied should be adequate for the thirty camps for a year.

Chapter 5 - Medications - \$60,000

This chapter provides for the purchase of drugs in Mali for use in the nomad camps.

Evaluation

The proportion of funds provided for this category is reasonable. After lengthy discussion, Dr. Nianankoro Fomba and I drew up a list of medications which are urgently needed in the camps. These are listed in Appendix II in French. The drugs are grouped into eight categories: antibiotics, anti-diarrheal agents, antispasmodic agents, amebicides, cough preparations, antimalarials, steroids and stimulants and ophthalmic ointments and drops. These are not listed in an order of priority and within each category the individual drugs are not listed according to priority, it having been assumed that the monies available would be sufficient to cover the purchase of all.

The categories by priority should be:

1. Antibiotics -- Within this list the priorities in descending order of priority should start at the bottom of the list and work upwards. Thus the tetracyclines should come first and the penicillins last.
2. Anti-diarrheals -- The items in this list are presented in order of priority.

3. Ophthalmic Preparations (Collyre) -- These items are listed in correct priority.
4. Cough Preparations -- The list on a priority basis should begin with Terpeine - Codeine and end with hexacycline syrup. Thus, in descending order of priority the list should read inverse to the way it is now presented.
5. Amebicides -- The items are listed in descending order of priority.
6. Anti-Malarials -- The items are listed in descending order of priority.
7. Antispasmodics -- Items are listed in correct priority.
8. Steroids and Stimulants -- Items are listed in correct priority.

The above list is based upon need and knowledge of another donor programs, particularly UNICEP which is providing large quantities of anti-malarials.

Chapter 6 - Food Purchases - \$48,188.80

Provides for the purchase of meat, fish, fruits and vegetables for the most malnourished population groups.

Evaluation

The monies should be used to purchase dried and smoked fresh water fish in the Region of Gao. It would be impractical to purchase fruits and vegetables since these are difficult to find in Gao and transport expenses from Bamako to Gao prohibitive (e.g., the air transport price of a box of mangoes from Bamako to Gao is twice the purchase price). Because of the paucity of livestock in the region, it would not be practical to provide large quantities of meat.

Therefore, it is advised that the monies in this chapter be used for purchasing dried and smoked fresh water fish in the Region of Gao. This is a readily available source of cheap high quality protein.

Further Recommendations

In addition to the program presented above, the following are strongly recommended.

1. The construction of a Pediatric Pavilion at the hospital in Gao. The estimated cost is \$25,000.

2. The provision of two thousand heavy duty weather resistant rectangular cloth tarpaulins which can be used as tents when mounted by the Tuareg on their own frames. The usual tents found in the U.S.A. are unsuitable.
3. The provision of potable water supplies to the large camps. Large capacity portable filters coupled to piping and water pumping equipment would be useful in riverine camps. Similar filters were provided by the Federal Republic of Germany during the flood of 1967. One was installed at Koulikoro and one at Mopti.
4. Refrigeration units (kerosene operated) should be provided to those centers needing them where large camps are located (Goundam, Kidal, Ansongo, Menaka, Bourem, Tellatye and Bamba).
5. The formation of a Cadre of Camp Health Educators. Young literate Maures and Tuareg from the large camps would be given a course of training in environmental and personal hygiene by the Service du Education Sanitaire of the Ministry of Public Health. This course need not extend beyond two to three weeks and should enable them to become Animateurs Sanitaires in the camps. The course should be conducted in the Gao Region and not in Bamako. Their principal role in the camps would be to improve levels of personal and environmental hygiene.

EXAMINATION OF ASSISTANCE BEING
PROVIDED IN THE HEALTH FIELD
BY UNICEF

UNICEF is the principal agency now involved in implementing health programs in the Sahel. For calendar year 1974 and 1975 these programs will amount to a total cost of \$732,000. The target population of these programs are primarily women and children. The various parts of the UNICEF health program are as follows:

1. The creation of two mobile medical teams, each one with a physician, nine infirmiers and four drivers. UNICEF plans to finance operational costs (salaries and gasoline) and will provide the vehicles and required materials. The purpose of these teams will be to travel to all of the 30 camps and deliver primary medical care (total cost, 1974 and 1975, \$232,000).

Evaluation. The usefulness of mobile medical teams in this part of Africa and their appropriate place in the delivery of health services has been studied and described by many over the past several decades (17, 18, 19, 20, 21). At its face value, the UNICEF proposal runs counter to the wisdom and experience gathered in this field over the years. The use of mobile teams for delivering primary care is contraindicated in areas where there is a health delivery infrastructure. Many of the thirty refugee camps have dispensaries and adequate numbers of medical personnel working in them whose level of training is adequate for the delivery of primary care. To send mobile teams to such camps is to duplicate the delivery system at enormous cost and with no significant benefit. Mobile teams need not be used to service centers where dispensaries already exist and where health personnel are adequate. Rather, such centers should be re-inforced with drugs, biologicals, surgicals and refrigeration equipment to better enable them to delivery primary care. The Ministry of Health of Mali presently has forty-eight infirmiers on a two month rotation in nomad camps. Mobile teams should be reserved for delivering primary care to those isolated small camps where no medical facilities exist and to the sedentary population of the region in areas where there is no general health services infrastructure.

2. The provision of anti-malarials to all school children in the Region of Gao and parts of the Region of Mopti and other areas of Mali. The provision of measles vaccine (10,000 doses) and anti-diarrheals, ophthalmic preparations and anti-tussives. (Total Cost, 1974-1975, \$200,000)

Evaluation. This is a worthwhile proposal and I endorse it.

3. The provision of blankets, mats, clothing and plastic water bottles. (Total Cost, 1974-1975, \$300,000)

Evaluation. This is a worthwhile proposal and I endorse it.

UNICEF is also formulating plans to provide a per diem allowance (\$2.00 per physician) and an attractive salary to those medical workers who volunteer to work in the refugee camps in the Region of Gao. Those incentives will be paid directly out of UNICEF funds. This is, in my opinion, a worthwhile proposal. Medical volunteers would be required to work in the refugee camps for a specified period of time.

In general, there is close collaboration and coordination between the USAID R and R Program in Mali and UNICEF.

NOMADS' PLANS FOR THE FUTURE

Virtually everyone I spoke with expressed the view that the Tuareg and Maure would like to resume their pre-drought pattern of life. They have accepted their present plight with Islamic fatalism. But given a few head of livestock, the majority would probably leave the refugee camps. The future of Maure and Tuareg in the Region of Gao depends on many variables. Some families in the refugee camps still possess livestock resources which have gone south with other family members. If the rains this year are sufficient, these herds will move north again and as a result a proportion of Tuareg and Maure will leave the camps. What this proportion is, one cannot say. I personally suspect that it is not more than half of the total nomad population of the camps.

Other families with no livestock resources are trying to save up enough to buy animals. Symptomatic of this has been the sale by many nomads of their food rations. It requires only a half dozen head of cattle to support a Tuareg family of four. The Federal Republic of Germany is planning to provide cattle to nomad families who lost all their livestock. However, for the nomads to resume their pastoral life, they will require donkeys as well.

To date, the Malian Government has made no firm policy commitment concerning the nomads. Obviously, within the matrix of the present changing and evolving situation, long term policy decisions of this kind are best not made. The continuance of the drought for another year or two will, I think, make re-nomadization extremely difficult. Some form of sedentarization or semi-sedentarization will be the only viable choice. But this choice will also require careful planning and implementation.

At the present, however, most nomads would like to resume their nomadic pastoral existence.

EVALUATION OF THE GOVERNMENT OF MALI MANAGEMENT OF THE DROUGHT REFUGEES

During the spring and summer of 1973, when the refugee problem began, the Government of Mali was not prepared with an infrastructure to meet it. The early months were understandably chaotic. The government suddenly found itself with thousands of starving people on its hands. For the most part these people were in remote geographic areas of the country where transportation and communication infrastructures were either minimal or non-existent. That they were able to plan, organize and implement a refugee camp program in the short period of several months and solicit and deliver the necessary life supports to the refugees stands as a remarkable achievement.

It is difficult now to imagine that the well organized, well nourished and healthy populations of the refugee camps visited were a disorganized band of starving people only nine months ago.

The level of foreign aid which has poured into Mali has, in general, been sufficient for the short term solution of the problem. Refugees in camps along the Niger River, being closer to the heart of the transport infrastructure (river, road and air strips), are undoubtedly in better condition than the small groups at isolated northern and eastern camps. However, it is my impression that the quality of life in a refugee camp depends to a large extent on the motivation and dedication of local administrators (middle and lower management levels). Camps equally distant from supply sources were found to vary considerably, the differences being traceable to the effectiveness of middle and lower management personnel.

At the highest levels of the government there is an acute concern for the welfare of the refugees and this concern is also present down to the level of local administrators. The Minister of Defense, Security and the Interior, who is coordinating and directing drought relief activities in Mali, has traveled repeatedly all over the affected areas. Likewise, officials from Bamako and local officials as well have visited the affected areas. Dr. Fomba, the Regional Director of Health of Gao traveled 15,000 miles and visited all of the 30 camps during the month preceding my visit.

The lack of supplies, the enormous difficulties posed to transport, and inefficiency at the middle and lower management levels are factors which have resulted in conditions being less than optimal in some areas. Overall, I think that the Government of Mali has performed remarkably well thus far in meeting a serious and complex earth disaster.

Comments on Press Reports
On the Refugees in Mali

A number of journalists have visited Mali during the past year. Some had never been to Africa before and consequently had no frame of reference. They often fell into the unfortunate trap of interpreting the poverty, disease and malnutrition they saw as a result of the drought. And they refused to accept that such conditions existed before the drought. Others, familiar with Africa, have continued to write copy based on their observations of six to nine months ago, seemingly oblivious to the fact that the situation has radically changed in the past several months. Some journalists have interpreted management inefficiencies as purposeful neglect and have attributed to the Government of Mali nefarious intents which cannot be substantiated objectively.

It is, I think, a rather sad commentary to come to the realization that one has not seen a single recent press report of conditions in the refugee camps in Mali which can be said to be objectively accurate.

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LETTRE D'EXECUTION

Nom du Projet: Unité Sanitaire et Mobile
 Numéro du Projet: 688-130-I-E
 Pays: Mali
 Lettre d'Exécution: N° 1
 Date: 26 Mars 1974

Destinataires:

Ministère de la Santé
 Banque de Développement du Mali

Messieurs,

I. Introduction:

En vertu de la Section 2.2 de l'Accord de subvention entre le Gouvernement du Mali et l'U.S. AID, le but de cette lettre est d'énoncer pour l'Activité de projet N° 688-130-I-E les informations descriptives, budgétaires et administratives qui sont considérées comme suffisantes pour satisfaire aux conditions de la Section 2.2. En tant que telle, l'émission de la présente lettre constitue une notification à toutes les parties intéressées que les conditions préalables au décaissement aux fins de cette activité ont été remplies.

II. Description du Projet:

A. L'objectif principal de ce projet est d'aider le Gouvernement du Mali à résoudre les problèmes d'hygiène rurale dans les régions du Mali affectées par la Sécheresse. Le Gouvernement doit faire face à deux problèmes urgents créés par l'extension de la sécheresse: un secteur mal nourri de la population, dont la résistance à la maladie a été progressivement amoindrie, posant ainsi des problèmes d'hygiène très graves. Pour y faire face, le Gouvernement a lancé une offensive sur deux fronts:

1. Un effort intensif pour couvrir les besoins additionnels en nourriture afin de couvrir au plus près que possible les besoins en protéines des populations affectées, et
2. un déploiement intensifié d'assistance médicale sur les plans curatifs et préventifs afin d'améliorer les conditions d'hygiène de ce groupe de malades affectés.

B. Le Ministère de la Santé a tracé un programme spécial d'intervention sur le terrain qui lui permettra de s'attaquer aux graves incidences de la sécheresse frappant les régions rurales du Mali. Le Ministère de la Santé apporte déjà des secours d'urgence dans ces régions, à l'aide de son Service des Grandes Epidémies qui sillonne actuellement de vastes secteurs regroupant les victimes les plus gravement affectées. Toutefois, le Ministère subit de fortes pressions pour faire face aux nécessités croissantes de sanitation rurale, et l'assistance extérieure a été sollicitée.

C. Dans le cadre du Programme de Réhabilitation et de Remise en état à la suite de la sécheresse l'assistance financière de l'U.S.A.I.D a été sollicitée, afin de permettre au Ministère de la Santé d'augmenter le rayonnement des équipes mobiles médico-sociales comme suit:

- Acquisition de six véhicules tout-terrains (y compris les frais de fonctionnement de ces véhicules pour une période d'un an).

- Dotation du matériel et de l'équipement destinés à améliorer les conditions d'hygiène dans des zones déterminées, affectées par la sécheresse.
- Dotation de provisions de viandes, poissons et légumes pour suppléer d'urgence aux besoins en protéine, en faveur des enfants particulièrement mal nourris, des femmes enceintes et des nourrices.

III. Agence d'Exécution:

L'Agence d'exécution de ce projet sera le Ministère de la Santé et le représentant du projet responsable des attestations relatives aux demandes de décaissement, d'approvisionnement et des rapports, sera le Dr. Abdoul Karim Sangaré, Directeur du Cabinet du Ministère de la Santé.

IV. Calendrier d'Exécution:

Les efforts déployés, dans le cadre de ce projet seront concentrés sur six points géographiques qui ont gravement été affectés par la Sécheresse : Bourem, Kidal, Diré, Douentza, Nioro et Nara. Le calendrier d'exécution du Ministère comprend quatre phases:

Première phase: Intensification immédiate de la campagne déjà lancée pour l'amélioration des conditions d'hygiène des six centres de regroupement, par l'élimination des insectes porteurs de germes de maladie. L'équipement de pulvérisation et les produits mentionnés à la Section VI ci-après, seront incorporés à cette campagne, et, selon les estimations, pourront couvrir adéquatement les besoins des mois prochains.

Deuxième phase: Achat par le Ministère de produit pharmaceutique dont le besoin est urgent pour combler le "vide" des besoins qui ont été identifiés à la suite d'une livraison tardive des produits pharmaceutiques, d'une sous-estimation ou d'une apparition récente de maladie.

Troisième phase: Achat sur place de suppléments nutritionnels à entreprendre immédiatement, sur la base des besoins, afin de compléter le régime alimentaire des enfants mal nourris, des femmes enceintes et des nourrices.

Quatrième phase: Le Ministère se propose d'affecter une caravane clinique mobile à chacune des six points touchés. Chaque clinique mobile disposera d'un personnel médical actuellement au service du Ministère de la Santé, qui a été spécialement sélectionné pour cette mission spéciale et urgente. Les cliniques mobiles seront ~~équipées~~ équipées par le financement d'autres donateurs: (matériel de stérilisation et de chirurgie, matériel de réfrigération de vaccins; produits pharmaceutiques; matériel de camping pour le personnel médical, ainsi que tous autres ustensiles et fournitures requis).

V. Objectifs du Projet:

Les objectifs de base du projet sont ceux énumérés à la Section II de cette Lettre d'exécution. En ce qui concerne l'impact précis de ces objectifs, une évaluation quantitative précise serait prématurée: les regroupements de populations à secourir ne sont pas fixés et la gravité des problèmes dans les régions affectées fait l'objet de la constante surveillance des officiers du Ministère de la Santé.

Le plus important, à ce stade, est de fournir immédiatement au Ministère de la Santé l'aide nécessaire au développement de son Programme d'urgence. Au cours de ce développement le Ministère sera en mesure de fournir un état plus précis des besoins et des taux d'utilisation. Ces taux d'utilisation seront soumis dans les rapports prévus à la Section VIII.

VI. Budget:

Chapitre 1: Véhicules

6 Land-Rover 109 SW pour les équipes d'intervention basées dans les centres de santé suivants: - Diré (4 centres)
- Bourem (5 centres)
- Kidal (6 centres)
- Douentza : zone d'endémicité de choléra, méningite, grippe et rougeole
- Niore : cercle sahélic de la 1ère région, de situation périphérique
- Nara : Cercle sahélic de la 2ème Région.
Coût : $3,500,000 \times 6 = 21,000,000$ FM

5 42,000.-

Chapitre 2 : Frais de fonctionnement des 6

Véhicules : base : 20,000 Fms
par véhicule et par an.

- a) Carburant: à raison de 11,0F le litre et 20 litres aux 100 kms soit:
 $11,0 \times 20 \times 20,000 \times 6 = 3,360,000$ FM
- b) lubrifiants: à raison de 380F le litre, 10 litre par vidange et 12 vidange par an, soit: $380 \times 10 \times 12 \times 6 = 273,600$ FM

c) Pneumatiques: à raison de 4 pneus par véhicule
et par an soit: 45.000 x 4 x 6 = 1.080.000 FM

d) Réparations et imprévus

forfait de 487.000 FM

Total frais de fonctionnement
des véhicules

5.200.000 FM

\$ 10,401.20

Chapitre 3 - Matériel

- 15 Swing-fog à 412.500 x 5 = 6.187.500 FM

- 30 Poudreuses à 25.000 x 30 = 750.000 FM

Total matériel 6.937.500 FM

\$ 13,875.-

Chapitre 4 - Produits

- 3250 kg poudre Diptorex à 3770F = 12.252.500 FM

- 2500 l eau de Javel 40% à 350 = 875.000 FM

- 3000ll crésyl à 380 F = 1.140.000 FM

Total produits 14.267.500 FM

\$ 28,525.-

Chapitre 5 - Achat médicaments sur place*

Dotation spéciale pour achat sur place de médi-
caments pour faire face à des cas d'urgence

Estimation: 30.000.000 FM

\$ 60,000.-

Chapitre 6 - Achat nourriture sur place*

Dotation spéciale pour achat sur place de
viande, poisson, légumes et fruits au profit
des personnes les plus malnutries.

Estimation: 22,524.400 FM

\$ 45,128.80

Chapitre 7 - Total Général

\$ 200,000.-

Vu la collaboration étroite entre le Ministère
de la Santé et le Ministère de la Défense rela-
tive aux exigences de la sécheresse reflétées aux
Chapitres 5 et 6, les demandes de décaissements
seraient accompagnées des signatures appropriées
des deux Ministères.

VII. Apports ne provenant pas de l'AID:

Il est prévu que l'UNICEF fournira l'équipement, les médicaments et les frais de fonctionnement requis pour compléter l'assistance de l'US AID à l'opération d'équipes mobiles d'intervention dirigée par le Ministère de la Santé.

VIII. Stipulations relatives aux rapports requis

Le Représentant responsable du Projet N° 688-130-I-E s'engage à fournir à l'AID, par l'entremise du Responsable Principal de l'ensemble des projets de Relèvement et de Remise en état au Mali, un rapport trimestriel indiquant le niveau d'exécution du projet, les problèmes qui peuvent empêcher l'avancement du projet et son plein succès à cette date. Un rapport final sera soumis à l'AID, au plus tard 90 jours après la date des dernières dépenses effectuées pour le projet N° 688-130-I-E, dans le cadre de l'Accord de Subvention.

IX. Contrôle final d'utilisation

Le Gouvernement du Mali s'engage à se conformer aux prescriptions stipulées dans l'Accord de Subvention, la Lettre d'Exécution de Base et cette Lettre d'Exécution. Les obligations du Gouvernement du Mali sur le plan comptable prendront fin le 1er Avril 1975.

X. Modification de l'activité:

Si une modification est nécessaire, elle doit être effectuée par voie d'émission de Lettres d'exécution supplémentaires.

Chef de Bataillon Missira DOMGARE
Ministre de la Défense

Contre-signé par:

Ministre de la Santé
M. Aly CISSE

Directeur de Cabinet
Dr. Abdul Karim SANGARE

Attaché auprès de l'Ambassade des
Etats-Unis d'Amérique, Chargé des
Projets de la Sécheresse au Mali
M. James M. KELLY

James M. Kelly
3/20/75

REGION DE GAO
 DIRECTION REGIONALE
 DE LA
 SANTE PUBLIQUE

ANTIBIOTIQUES

Penicilline 1 M.	500	=	50.000	"
" "	500	=	50.000	"
" "	200	=	40.000	"
" "	200	=	50.000	"
Ertencilline	2.400.000	=	15.000	"
" "	1.200.000	=	10.000	"
" "	600.000	=	10.000	"
Terramycine M.		=	5.000	"
Tifonycine inj.		=	15.000	amp.
Sultirone inj.		=	15.000	"
" comprimés		=	50	btes
Fanasil inj.		=	15.000	amp.
Tifonycine dragées		=	10.000	dragées
Terramycine "		=	10.000	"
Tétracycline		=	10.000	"
Auréomycine		=	10.000	"
Hexacycline		=	10.000	"

ANEDIARRHEIQUES

Sulfaganidine		=	50.000	btes
Rhodiacarbine gran.		=	50	btes
" " comp.		=	500	tubes

ANTISPASMODIQUES

Sulfate d'atropine 0,25		=	10.000	amp
Largactil		=	5.000	"

ANTIDYSENTERIQUES

Rovanycine diphétarsone		=	1.000	comp.
" " comp.		=	1.000	"
Stovarsol 0,25		=	10.000	"
" cart.		=	20.000	"
Néoviasept		=	10.000	"
Thiacyl comp.		=	10.000	"
" au carouche		=	1.000	btes
Arobon		=	1.000	"

ANTITUSSIFS

Hexacycline sirop		=	200	fl
Pulmofluide adulte		=	200	"
" " enf.		=	200	"
Sultirone sirop		=	100	"
Terpine codéine		=	3.000	comp

