MAN AND THE ENVIRONMENT IN MARSABIT DISTRICT

Edited proceedings of a meeting held at the

UNESCO/UNEP ARID LANDS PROJECT FIELD STATION

Gatab, Mt. Kulal

December 3rd and 4th 1976

Organised by N. Sobania, J. Schwartz and C. Field

Edited by J. Lewis

EDITOR'S PREFACE

This report presents brief summaries of the papers and discussions of a meeting held at Gatab, Mt. Kulal, in early December 1976. The intention of the meeting was to bring together all those who work with the people, natural resources and development of Marsabit District so that they could discuss their work and future plans.

The purpose of the report is to provide a short record of the meeting and to describe briefly the activities which are currently being undertaken in the District. Many of the contributions contained detailed technical information which could not be fully reported in the summaries. It is to be hoped that much of this information will find its way into technical journals; anyone wishing more detailed information should contact the author concerned.

J. G. Lewis.

CONTENTS

List of Participants.

Opening Address by The Hon. Haji M. K. Adichareh M.P.

Session 1: Development plans and activities in Marsabit District

Chairman: S. Randiga

1.1 District development plans - S. Randiga.

1.2 Africa Inland Mission plans - Howard Anderson.

1.3 National Christian Council of Kenya plans - H. Miller.

1.4 Catholic Mission plans - R. Tyroller.

1.5 UNESCO/UNEP Arid Lands Project Plans - H. Lamprey.

1.6 Medical plans - D. Wiseman.

1.7 Discussion.

Session 2: Climate and vegetation

Chairman: Herbert Anderson.

2.1 Climate I - C. Field.

2.2 Climate II - M. Rainy.

2.3 Vegetation - D. Herlocker.

2.4 Rehabilitation of the Hurri Hills - Herbert Anderson

2.5 Discussion.

Session 3: Livestock

Chairman: C. Field

3.1 The management of sheep and goats - A. Field.

3.2 Studies on the management and productivity of traditional pastoral livestock - J. Schwartz.

3.3 The management of browsing herbivores - C. Field.

3.4 The management of grazing herbivores - J. Lewis.

3.5 The veterinary problems in Marsabit District - B. Ogome.

3.6 Discussion.

../3

Session 4: Human Ecology

Chairman: N. Sobania.

4.1 Research into the later prehistory of the area east of Lake Turkana - D. W. Phillipson.

4.2 A history of the Lake Turkana Region c 1840 to c 1920 - N. Sobania.

4.3 The Rendille and the ecology of camels - J. Tanaka and S. Sato.

4.4 Rendille settlements - A. Grum.

4.5 A research project on the Ndorobo - M. Ichikawa.

4.6 Health and disease in Ariaal Rendille - E. Fratkin.

4.7 Preliminary analysis of a continuous 71 year record of a single Rendille subclan settlement group - M. Rainy.

4.8 Discussion.

Session 5: Medical work in Marsabit District

Chairman: D. Wiseman.

5.1 The health of women and children - D. Wiseman.

5.2 Health education - J. Harris.

5.3 The AIM health programme - L. Cameron.

5.4 Discussion.

Session 6: Integration and Co-operation

Chairman: J. Lewis.

6.1 Discussion.

Session 7: Summary - H. Lamprey.

Bibliography.

../4

LIST OF PARTICIPANTS

The Hon. M.K. ADICHAREH, M.P. for Marsabit South
National Assembly, P.O. Box 41842, Nairobi.

Mr. Herbert ANDERSON, Africa Inland Mission, Loglogo,
P.O. Box 21028, Nairobi.

Mr. Howard ANDERSON, Africa Inland Mission, Gatab,
Mt. Kulal, P.O. Box 21028, Nairobi.

Chief BARSANTE, Gatab, Mt. Kulal.

Miss Louise CAMERON, Africa Inland Mission, Gatab,
Mt. Kulal, P.O. Box 21028, Nairobi.

Mrs. Alison FIELD, ODM Sheep & Goats Project, c/o UNESCO/UNEP
Arid Lands Project, Mt. Kulal, P.O. Box 30592, Nairobi.

Dr. Christopher FIELD, UNESCO/UNEP Arid Lands Project,
Mt. Kulal, P.O. Box 30592, Nairobi.

Mr. Elliot FRATKIN, Institute of African Studies,
P.O. Box 30197, NAIROBI.

Mr. Charles GAGAH, UNESCO/UNEP Arid Lands Project,
Mt. Kulal, P.O. Box 30592, Nairobi.

Mr. Anders GRUM, P.O. Box 48207, Nairobi.

Miss Joan HARRIS, Marsabit District Hospital, P.O. Marsabit.

Dr. Dennis HERLOCKER, UNESCO/UNEP Arid Lands Project,
Mt. Kulal, P.O. box 30592, Nairobi.

Mr. Matsui ISHIKARA, Institute of African Studies,
P.O. Box 14958, Nairobi.

Councillor LAGO, Korr, P.O. Marsabit.

Dr. Hugh LAMPREY, UNESCO/UNEP Arid Lands Project,
P.O. Box 30592, Nairobi.

Dr. Jeffrey LEWIS, Hunting Technical Services Ltd.,
P.O. Box 20139, Nairobi.

Mr. Silvester MASHETI, UNESCO/UNEP Arid Lands Project,
Mt. Kulal, P.O. Box 30592, Nairobi.

Mr. Harold MILLER, National Christian Council of Kenya,
P.O. Box 45009, Nairobi.

.../5

Dr. B.O. OGOME, District Veterinary Officer, P.O. Marsabit.

Dr. D.W. PHILLIPSON, British Institute in East Africa,
P.O. Box 30710, Nairobi.

Mr. U. POSHINGER, Livestock Recording Centre, P.O. Box 257, Naivasha.

Mr. Michael RAINY, P.O. Box 62, Maralal.

Mr. Samuel RANDIGA, District Development Officer, P.O. Marsabit.

Mr. Charles RATEMO, UNESCO/UNEP Arid Lands Project,
Mt. Kulal, P.O. Box 30592, Nairobi.

Mr. Matthew SAWASAWA, UNESCO/UNEP Arid Lands Project,
Mt. Kulal, P.O. Box 30592, Nairobi.

Dr. H.J. SCHWARTZ, University of Nairobi, P.O. Box 29053, Kabete.

Mr. Francis SINEHAYA, UNESCO/UNEP Arid Lands Project,
Mt. Kulal, P.O. Box 30592, Nairobi.

Dr. Lars SMITH, P.O. Box 259, ARUSHA, Tanzania.

Mr. Neal SOBANIA, British Institute in East Africa,
P.O. Box 30710, Nairobi.

Dr. Jiro TANAK, Primate Research Institute, Kyoto University,
Japan, I.A.S., P.O. Box 14958, Nairobi.

Father Richard TYROLLER, Catholic Mission, North Horr,
P.O. Marsabit.

Mr. Robert WAGNER, Friends World College, P.O. Box 33, Nakuru.

Mr. Edward WILSON, UNESCO/UNEP Arid Lands Project,
Mt. Kulal, P.O. Box 30592, Nairobi.

Dr. David WISEMAN, Marsabit District Hospital, P.O. Marsabit.

../6

OPENING ADDRESS by The Hon. Haji M.K. Adichareh, M.p. for Marsabit South

I am very glad to be called upon to open this meeting and to welcome the participants.

We have many problems in this area due to the drought and I hope that this meeting will be able to do something to help the people of the area, whose livelihood depends on livestock. Due to the drought the people have been living under very difficult conditions. I am glad to say that the Government has been helping the people by giving them famine relief, but we would much rather that the people were able to be self-supporting.

I hope that during these discussions we can hear more about the problems and about what ought to be done to solve them.

../7

SESSION 1

DEVELOPMENT PLANS AND ACTIVITIES IN MARSABIT DISTRICT

Chairman: S. Randiga

Firstly I would like to present the District Commissioner's apologies in his not being able to attend this conference.

The main strategy for development in the District is the improvement of animal production - the major economic activity of the people of the area. There is a negligible amount of crop cultivation and industry in the District, and only a little commercial fishing.

The Government has established livestock marketing systems in the District and wishes to develop stock routes to the rail-head at Nanyuki and possibly a feed-lot at Isiolo.

There are nine other sectors of development in the District:-

Land settlement and Cooperatives

Forests, Fisheries and Mineral Resources - We plan to conserve and plant forests around Marsabit, Moyale and the Hurri Hills, and to encourage mineral prospecting, especially around Laisamis.

Water - We hope to make water available in suitable areas throughout the District.

Roads - Access to areas of development will be improved.

Commerce and Manufacturing - We shall make available small loans to enable people to start up in commercial activities and shall encourage small-scale local industries by setting up training centres at village polytechnics.

Tourism and Wildlife - This we consider to be very important and we shall try to link up the District with the North Kenya tourist circuit. We plan to improve facilities in Marsabit town and shall

.../8

do what we can to help the Lake Turkana (East) National Park.

Education and Training

Health and housing - There is the District Hospital at Marsabit and a number of dispensaries. We try to co-ordinate our activities with those of the missionaries.

Social Services

As a result of the drought which has affected the area for the last four years our main priorities for development will be the livestock industry and the conservation of forests, wildlife and water.

1.2 AFRICA INLAND MISSION (AIM) PLANS - Howard Anderson.

Our primary aim is to deal with the people and this is done by aiding them wherever necessary. We try to give help by offering medical services, water improvements, developing roads and any other activity which will be of use.

When we first came to Kulal there was one inoperable pipe line which we have since renovated. Right from the start here we have been involved in developments; in order to get here we had to put in 120 kms. of roads. We have also tried to help in other fields and have brought Administrative Police to Kulal to try and improve security and have helped with famine relief.

We run 13 medical clinics which are serviced with a doctor and nurses at least once every three weeks.

We have water development schemes at Loglogo, Larabasi and at Songa and we have been involved in the fishing schemes at Ileret and on the other side of the Lake at Ferguson's Gulf. At Ileret we are also involved in a water development project.

In the Hurri hills we are embarking on a land reclamation project involving reafforestation and efforts to stabilize water supplies, thus making the area able to support human

.../9

habitation again.

The important aspect of our work is that we are involved in schemes which concern real problems of the people, problems which are of a specific group of people in a specific area.

1.3 NATIONAL CHRISTIAN COUNCIL OF KENYA (NCCK) PLANS - H. Miller

Several years ago we began work in Northern Kenya by responding to a need for famine relief. Since then we have become involved in a number of settlement schemes along the Ethiopian border, at Marsabit and at Ferguson's Gulf. We also feel that we have an important role in raising the level of awareness in down-country Churches about the problems in Northern Kenya.

We believe that it is important to support projects where we can assist in the mobilisation of people in schemes which try to solve long term problems, such as that in the Hurri Hills. There are some purely NCCK projects, such as the Agricultural Service Unit on the Dawda River, but normally we expect to work in supportive roles within the Church and Government context.

1.4 CATHOLIC MISSION PLANS - R. Tyroller

In the past we have been involved with medical and education projects in the area and with relief services.

At North Horr we are faced with a serious problem. There are 300 families for whom relief food is their only source of nutrition, and at present there are no proposed schemes whereby these people can be self supporting. They have no domestic stock. Some experts have suggested that as there is plenty of water at North Horr it should be possible to develop some

agriculture in the area, but we are in need of specific advice about what can be done.

1.5 UNEP-MAB INTEGRATED PROJECT IN ARID LANDS (IPAL) - H.F. Lamprey

The Project based at Mt. Kulal is one of a series planned by UNEP and UNESCO to be established in countries in the arid zone to investigate the causes of desert encroachment and possible remedies. The main objectives are to search for methods to arrest the prevailing ecological decline in arid regions and, through rehabilitation activities, to provide viable habitats for the people who live in these regions.

The Project will carry out investigations of the environment as a whole, with particular emphasis on those factors which cause deleterious changes in the vegetative cover and the soils. Such studies are expected to provide information on the processes of ecological degradation, its causes and on management activities which will eventually permit the restoration of productivity in areas which have been degraded.

People and their livestock are undoubtedly important elements in arid zone eco-systems and in the Kulal region they comprise a very high proportion of the consumer level. It has been reasonably shown in the majority of countries affected by desertification that a major cause of degradation is overstocking by domestic animals. This can be seen from the ecological decline which takes place in the vicinity of water supplies. The Project will therefore investigate the ecology of the human populations, especially their relationships with their livestock as a part of the study of the ecology of the region, including the climate, soils, vegetation, and the animal life.

Any attempt to rehabilitate the degraded areas of Marsabit District must be centred upon the people, their resources for subsistence, their economy and ways of life. In order to devise alternative livelihoods where these may become necessary, it is essential for us to understand the existing economy and cultures so that any changes to be made should cause the minimum of disruption and yet will be effective in raising standards of living and restoring the productivity of the land.

The individual scientists whose investigations in the Mt. Kulal region comprise the project's activity in Kenya, will describe their work in the following session.

1.6 MEDICAL PLANS - D. Wiseman

Marsabit District is not subject to any of the unusual classical tropical diseases of Africa, apart from hydatid disease along the shores of Lake Turkana. Most of the medical efforts in the District is therefore devoted to the ordinary common diseases. The main aim of the health service is to make the service available to the people of the District.

All main population centres have health services, some which have been provided by the Government and others by the missions.

The type of medical care offered in the District is basically curative, though more effort is being put into preventive medicine, with an emphasis on the control of contageous diseases in children and vaccination against T.B. and smallpox.

The major constraints in the area are the large distances which need to be covered and the mobility of the population. Within these constraints, however, the health services are quite good.

All of Kenya is now being developed under a 10 year programme. started in 1974, as part of the Rural Health Development Plan. In Marsabit District this will mean an increase in the number of medical personnel, an increase in the amount of mobile work and an effort to increase the awareness of the people about the health services available. One of the main developments has been the selection and training of local people to teach about family health. So far four women have been trained and they have had a considerable impact in the areas where they have workd.

1.7 DISCUSSION

FRATKIN: What specific plans are there for livestock development in the District ?

RANDIGA: We have plans for developing the marketing system so that the people can find an outlet for their animals and we have plans for developing animal health. Also we are considereing control of grazing, which needs to be co-ordinated with destocking and animal health improvements.

FRATKIN: There used to be a livestock auction in Marsabit. Will this be reopened again ?

RANDIGA: Yes, there will be an auction shortly. We have not had any due to lack of grazing in the holding area and disease problems. At the moment we can not take animals to the rail head at Nanyuki. Perhaps we can develop trucking systems which would help, as would a feed-lot at Isiolo.

FIELD: Would it help if the animals were slaughtered here in the District and the carcasses then trucked out ?

RANDIGA: Yes, it would. There used to be slaughter facilities in the District, but these are no longer working.

RAINY: The principle market for the meat from the slaughter house at Archer's Post used to be Southern Africa, but that Market is no longer available and no other market has been established.

FIELD: Are there any plans for the afforestation of areas in Marsabit District other than those already mentioned ?

RANDIGA: We have plans for other areas, but due to limitation of staff it is slow. There should be afforestation at Kulal, and near North Horr. We are always hoping to get help and are at present co-operating with NCCK in the Songa area where widespread cutivation has affected the forest and interfered with the game corridor.

../13

MASHETI: Do you have any plans for marketing Camels ?

OGOME: We have had a proposal from the Sudan Government for camel meat from this area, so there is a potential sale in this field.

RANDIGA: There is also a potential market in the Arabian Peninsular.

FIELD: There is a lot of money spent on famine relief in this area. Would it not be possible to get the people to eat their own camels, as many of the people who receive famine relief own livestock ?

RANDIGA: The people do not like to slaughter their own camels.

ADICHAREH: This is true. The people prefer to use cattle, goats or sheep. Camels are usually only slaughtered for a feast or some other important occasion. If people can be educated though, there is no reason why the abattoir at Archer's Post can not be re-opened. One reason why they do not want to slaughter camels is that it is a big animal and it is difficult to store the meat.

RAINY: This is a very dry area and micro-organisms do not thrive here. Would it not be possible to dry meat using traditional methods ?

OGOME: There are many people who do not like to eat dried meat and who do not even know how to dry it.

MILLER: Part of the problem is that famine relief mitigates against using these methods. We have found that people will not kill their animals if they know they can get famine relief.

FIELD: Should not the distributing agencies differentiate between those people who genuinly need famine relief and those who have stock of their own ?

.../14

RAINY: It should be pointed out to the people on famine relief that maize, unlike milk, is not a complete food and that they should supplement relief maize with dried meat. This could be made a condition of giving relief food.

MILLER: The only success we have had with trying to teach people to use dried meat has been in the schools. As soon as we move into the more traditional areas it does not work. We have noticed that when people go onto famine relief they almost immediately become malnourished.

WILSON: Would it not be possible to get the relief agencies to purchase the camels in return for giving out maize ?

FIELD: This would also help by reducing stocking rate.

LAMPREY: One of the most difficult things is going to be to educate the people to change their way of life. Will this be possible, and how should it be done ?

FRATKIN: I have found that if you are going to study how to educate people the first thing to study is what the people's present needs are and what their traditional systems provide. Their reasons for not wanting to sell livestock are concerned with long-term economic security; after a drought a man who had 100 camels could be left with only 20, but a man who started with only 20 will be left with none. It is a long term investment to keep as many camels as you can.

RAINY: Are there any proposals to establish group ranches in Marsabit District ?

ADICHAREH: One million acres has been set aside by the Government for group ranches in the District, but the personnel required are not yet available. Before we start it the people should be educated and told about it and have the benefits explained to them.

FIELD: I think that education is very important. We have seen what has happened in Kajiado District and how it appears that the group ranches there have virtually broken down. I would hope that if group ranches were to be set up in Marsabit, locally educated range management officers should be attached to each group ranch to give advice and supervision.

ADICHAREH: School leavers from the District should be trained so that they could give this sort of advice.

RANDIGA: There are a number of requirements of a group ranch and these include destocking and the control of grazing. In order for the ranch to work it will be necessary to be able to enforce these controls.

LEWIS: How is this education of the people to be implemented? Would it be possible for those with primary contact with the people, such as those working in clinics and dispensaries, to help in this ?

RANDIGA: There must be an integrated approach, everyone must work together. Medicine is certainly one way of getting people together in groups so that they can be educated. In the same way, restricting the flow of bore holes can be used to enforce control over grazing.

OGOME: One thing which will help in the educating of the people is the Pastoral Training Centre which is to be opened soon near Laisamis.

..../16

SESSION 2

CLIMATE AND VEGETATION

Chairman: Herbert Anderson.

2.1 CLIMATE I - C. Field

In Marsabit District everything hinges on rainfall and recently there has been a spectacular decline in the rainfall. We have 11 storage rain gauges in the study area and these supplement the five existing Government gauges.

Hypothetical mean annual rainfall isohyets suggest that the lowest rainfall occurs in the Chalbi Desert (c. 50 mm p.a.) and that there are rain shadows to the west of Marsabit and to the west of Kulal. There is another dry area, the Kaisut Desert, towards the south.

Annual rainfall records for Moyale, which started in 1915, show 5 cyclical periods of about 7 years each. This cycle stopped in 1950. The 1960s was a period of high rainfall, followed by sharp oscillations, but more recently the rainfall has declined. This decline is also shown in records from North Horr and, Gatab, which is so far having the driest year on record.

We have an automatic weather station which records radiation, humidity, wind run and temperature and we hope to establish this, and another one, down in the desert country and use it to give information on Penman Evaporation. This is a very important factor in plant growth and indicates the degree of water stress on the vegetation. We hope to improve the rain gauge network and also to study the soil moisture.

A strong easterly wind is typical of the area and undoubtably contributes towards soil erosion.

Thus to understand fully the options available to pastoralists responding to rainfall, one must know as much about rainfall run-off, flow, duration, persistence, and distant effects as about its effects on plants at the rainfall sites.

While the periods of rainfal seasonality for an area are quite easily detectable from a few annual cycles, the amounts and local distribution are generally not. Long-term average rainfall figures mean very little to pastoralists who must make the best immediate responses to rainfall in order to optimize milk yields of their herds. Pastoral management problems are compounded by the fact that wet and dry extremes of annual rainfall seldom alternate, but more often occur in association with other wet or dry cycles lasting several to many years. Studies in the Samburu Game Reserve have indicated that the vegetation there is in a dry phase of the climatic cycle. In the last 30 years mean rainfall values (at Archer's Post) have occurred in less than 20% of the record. A wet period lasting longer than three years can have dramatic effects on the survival of many plant species. In contrast a severe drought year is much more devastating to plants, animals and people if it is followed successively by one or more dry years. In the Samburu Reserve area the period of 1969 - 1975 was climatically distinct from the 1962 - 1968 period in being drier by 43% in March/May and 60% drier in October/December rainy periods. Not only have the annual and mean monthly totals been less, the wet periods have been approximately one month shorter. Thus the previous "short" dry season of January and February when river levels are lowest and plant affecting mineral concentrations highest now lasts twice as long.

../19

The increasingly severe effects of this successively limited primary production on the stock are obvious. I do not feel that we yet have enough real data to conclude that the present eight-year drought period necessarily represents "an environmental degradation tending toward desertification" that will only be stopped if we can learn enough about pastoral people to change their assumed "destructive" ways of life. On the contrary, data from the Archer's Post area and supported by others I have looked at from the Samburu highlands show that there was a dry period similar to the present one between 1949 and 1955 followed by the much wetter period between 1960 and 1968. Rainfall records of the Rendille area show similar patterns including an 18 year dry period between 1931 and 1950 when only three years had higher than average rainfall.

If without hard, factual evidence we aim to change the pastoral way of life, we may unwittingly make it impossible for them to make a viable response to the next wet period. I feel that we must use our most highly developed monitoring skills in conjunction with a rigorous analysis of the historical meteorological record of its various forms, to discern which stage of the rainfall cycle we are working in. The whole approach to the study and management of semi-arid eco-systems can be altered depending on whether one is working in a wet or dry period and how certainly one knows it.

Finally, as a cautionary example, I would like to respond to the comment in the preceding paper that the "rains of last week on Kulal taught us a lot about the relationship between overstocking and the erosive effects of runoff". Studies

.../20

in Kajiado this past summer for FAO by Drs. T. Dunne and D. Western show a strong relationship between intensity and duration of rainfall and runoff. The relationship between stocking rate and runoff is less by orders of magnitude than the size of the storm in causing erosive runoff. Last week when 1.75 inches fell at Gatab in a three hour period we can really only say that you had a big storm.

2.3 VEGETATION - D. Herlocker

My work to date has been involved in defining the different vegetation types in the area and in mapping their distribution. One category of mapping has been based on physiognomic characteristics, the other has been based on species composition. We have so far covered about half the study area and should finish this work by the end of the year.

I intend to measure the productivity of the vegetation and will relate this to climate, soil type and the degree of utilisation by domestic stock and wildlife; this work will be correlated with the other studies being carried out in the area.

We shall also try to define the type of successional and degradational patterns of vegetation within the study area. To do this I hope to choose an area where there has been heavy use and sample it for species composition and structure, as well as looking at soil texture and water retentivity. This will also be done for areas of moderate and light use. Information on the past use of these areas will be collected and I would then hope to be able to define the trends in vegetation which are taking place in the area. The extent of these areas of change will then be studied using aerial photographs. We have photographs

.../21

dating back to 1955 and we hope to do our own photography of the area so that we can compare canopy cover, tree density and soil patterns between the old and the new photographs.

Another aspect of the work is a combination of research, demonstration and management. This will involve looking at methods and techniques of vegetation rehabilitation. Due to the lack of time it will be necessary for the research to go on at the same time as the management.

2.4 REHABILITATION OF THE HURRI HILLS - Herbert Anderson

The work in the Hurri Hills began with a request from the Gabbra for water. There are not many obvious sources of water on the hills, which are about 60 km long and 40 km wide. They are rolling boulder hills with extensive grassland on the top.

We found places where water occurred, but it immediately runs off the hills; there is evidence of places where water used to be but is no longer. There is also evidence of a previous forest cover on the hills, but most of the trees have been removed to make way for cultivation or have been burnt. Although there is good grass cover on the gentle slopes the steeper slopes of the hills are severely eroded.

The cloud cover on the hills is extensive and we have found that clouds play a significant part in water harvesting. The few trees that are left probably harvest all their own water from the fog.

The development of water on the Hurri Hills is important, not only to the people living on the hills themselves, but to the areas surrounding the hills which are supplied by springs from the hills.

.../22

We hope to be able to develop a new tree canopy over the hills which would stabilise the soil and increase the water holding potential of the area. We must also develop the necessary controls to ensure the proper use of the area. At the moment we are experimenting with different species of trees, trying to find out which would do well there, and we have set up a committee which will be responsible for the management of the area. We also plan to establish watering points around the base of the hills which will make other areas available for grazing and which will help in the management of the hills.

2.5 DISCUSSION

LEWIS: Can any information on the past rainfall in this area be obtained from data on the levels of Lake Turkana, or is this too dependent on the rainfall in Ethiopia in the River Omo catchment to be of use ?

FIELD: If the Ethiopian rainfall patterns were related to those here it should be possible.

SOBANIA: Comparisons have been made between Lake Victoria, Lake Chad and the Ethiopian Lakes and the height of the Nile. They have all been found to have peaks at the same time and the driest periods correspond with the times Lake Stephanie (Chew Bahir) dries up.

RANDIGA: We have been having problems in the District with a large number of tree seedlings dying when they are planted out. I am wondering whether any one here can give us some advice.

HERLOCKER: We would need to know more about planting dates, the species concerned and the planting methods that have been used.

FIELD: There is a need for more work to be done to find out which tree species are suitable for this area.

.../23

RAINY: It appears that the conditions at the time of planting are very important in determining the survival of seedlings. Once suitable species have been identified, seedlings of these species should be kept in nurseries so that they can be ready for planting out as soon as the conditions are suitable.

FRATKIN: How much do we know about the long term climatic situation and how do we relate this to the present situation ?

LAMPREY: It is known that the last Pluvial ended approximately 5,000 years ago. Before that the weather was above 'average' and since that date it has been below 'average'. 17,000 years ago, when the previous great Pluvial ended, there was yet a higher 'average'. These changes can be expressed in terms of the extent of rain forests: 17,000 years ago they were down to the 4,000 ft contour, 5,000 years ago it was at 5,000 ft with continuous forest over the higlands of Africa from Ethiopia to Angola. The present situation is a dry phase in relation to this 20,000 year time span. In this present phase forests of all kinds will not recover if they are cut down, but if they are left alone they will maintain themselves, they only retreat if interfered with. In the long wet phase which ended 5,000 years ago it is evident that forests were capable of expanding. There is consi rable evidence that in the shorter term there is a rainfall cycle which corresponds quite closely with the 11 year sun spot cycle.

SESSION 3

LIVESTOCK

Chairman: C. Field

3.1 THE MANAGEMENT OF SHEEP AND GOATS - A. Field

As I have only just started my project I shall simply give an outline of the work I hope to do.

I shall be looking at sheep and goat ecology in the study area. The population dynamics, density and distribution of sheep and goats will be studied, mainly using data from the aerial surveys, but supplementary information from ground work will also be used. I shall study herd composition and sex and age structure, and the ratio between sheep and goats, both near settlements and in the fora herds. I shall also be studying the productivity of certain flocks in selected areas; the selection of flocks depending to a large degree on the amount of co-operation I get from the stock owners. I also wish to make a comparison of productivity between the various management regimes in the area.

A major part of the study will be to look at the effect of sheep and goats on the vegetation of the area. These animals may be playing an important part in the degradation of the habitat and it is obviously necessary that their effect on the vegetation is understood. In order to achieve this I shall be studying food preferences, the offtake of woody and herbaceous vegetation and I would hope to be able to construct a model of their effect in different vegetation communities. I shall also be looking at their role in the dispersal of woody vegetation.

.../25

Another aspect of the work will be to look at the importance of small stock in the domestic economy of the people and their traditional husbandry and management techniques. It is also intended to look at the main veterinary problems facing sheep and goat production in the District.

The possible development of the sheep and goat industry in Marsabit District will be investigated and related to the studies of other livestock in the area. I hope that this will lead to the implementation of proposals to increase the productivity of small stock while at the same time minimizing any deleterious effects they may be having on the vegetation. This may include the upgrading of existing stock, either by selected breeding of indigenous animals or by importing exotic breeds, and the improvement of husbandry techniques and disease prevention.

I also hope to investigate the possibility of improving marketing of small stock and the setting up of small cottage industries based on small stock skins.

3.2 STUDIES ON THE EFFICIENCY OF TRADITIONAL PASTORAL LIVESTOCK MANAGEMENT - H. J. Schwartz.

We have already heard about the problems of introducing development schemes into pastoral societies and we have also heard that the main problem appears to be education. I think that it is possible to take another view and to suggest that it is also a problem of the schemes. It is simple to say that such things as improved veterinary facilities and marketing systems might be the answer to the problems, but we can not necessarily understand the constraints involved. I therefore feel that we ought to try to learn first; that is why I wish

to do a comparative study of traditional livestock management and modern commercial range management practices. This work will be carried out mainly with the Rendille.

The main method of data collection will be by interviews with the people, collecting information on husbandry and management and on the beliefs and rituals connected with livestock. I shall analyse this information, using modern evaluation techniques, in order to try and identify the rational background behind it. For example, if the people are questioned about the qualities of certain boreholes they would be able to give a detailed account of under what conditions they would allow their stock to use them; we would then try and establish the physiological reasons for this.

The very fact that nomadic societies have survived in such a hostile environment for so long indicates that they are well adapted to these conditions.

The herdsmen have detailed information about the qualities of local plants, their curative values and on disease identification. By using such information it should be possible to offer advice in a more subtle way than is possible at present.

Another aspect of the work will be to find immediate solutions to improve the health status and productivity of the animals. I have set up two small projects, one to study the frequency and occurrence of external parasites and the other to study the nutritive and processing qualities of camel milk.

..../27

In the camel camps there is often an abundance of milk while in settlements there is only little. It would obviously be beneficial if we could find some way of st ..g the milk as cheese or some other long lasting product so that it could be better distributed.

3.3 THE MANAGEMENT OF BROWSING HERBIVORES - C. Field

As an area becomes more arid grass and herbs become less important and the woody vegetation is all that remains. The emphasis of my study will be on camels, the most important browsing herbivores in the area, but I will also be looking at the wild browsing herbivores.

I am using a similar approach to that being used to study small stock by my wife (Session 3.1). During the aerial surveys, of which we hope to do about 8 each year, we shall record the numbers and movements of camels and other stock, the greenness of the vegetation, the distribution of water and the distribution of manyattas. These data will be analysed using a computer programme which produces maps of the distribution of the animals and relates it to the environmental factors. This information will be supplemented with ground work in the manyattas and camel camps.

It will be very important to measure the level of browse off-take and to see what impact this has on the vegetation. This will be done by observing the species composition and preferences of the diet of camels; the quantity and quality of the diet shall also be recorded.

../28

We propose to have a number of paddocks in which we run camels and other stock at different stocking rates; the effect of nomadism will be simulated by moving the animals from one paddock complex to another at certain intervals. This experiment will enable us to measure vegetation off-take as well as being a demonstration to the people of the effect of different stocking rates.

I hope to be able to gather information on the live-weight gains of camels as well as on recruitment, mortality and milk production. By using information on the human requirement from camels for food and transport I intend to calculate whether there is an excess of production over requirements in any age or sex category of camels.

Through our assistants we hope to be able to explain to the people the purpose of this project and to start to educate the people how to manage their stock better.

Discussions with the councillors at Marsabit has indicated that some people might be willing to sell their stock, but that the lack of marketing facilities has prevented them from doing so. Before any marketing system is established however, it is necessary to know the extent and dynamics of the resource that is to be marketed. I hope that our studies would be able to supply this sort of information.

3.4 THE MANAGEMENT OF GRAZING HERBIVORES - J. Lewis

I intend to use the same approach in studying the grazing herbivores in the area as the Fields are using in the study of small stock (Session 3.2) and camels (Session 3.3). The main

.../29

grazing herbivores in the area are cattle, but donkeys and the wild grazers will also be studied. It is intended that this study should complement the other ecological studies in the area and complete the spectrum of large herbivore investigations.

Apart from this applied research I would also hope to be involved with the development of livestock management in the District and to work in co-operation with others involved in this sort of development.

3.5 THE VETERINARY PROBLEMS IN MARSABIT DISTRICT - B. Ogome

Due to the low rainfall in the District the dominant food production activity in the area is pastoralism.

Fly borne diseases are common throughout the District and tick borne diseases are found in certain areas, where they are increasingly becoming a problem, especially at Marsabit Mountain and in the Moyale area. Anthrax and Foot and Mouth also occur in the area.

Due to the mobility of the people and their livestock and the poor systems of communication in the District it is often very difficult to get reports of the outbreak of a disease. The illiteracy of the people is another problem in getting to hear of outbreaks. The people often prefer to use their own traditional methods for curing a disease rather than asking for help from the Veterinary Department.

The control of disease in the District is based on preventive vaccination. There is an annual compulsory vaccination against Rinderpest and Contageous Bovine Pleural Pneumonia, which are both

.../30

notifiable diseases. Although the vaccine is given free by the Government the people are unwilling to have their animals protected as they are very suspicious of the vaccination.

Marsabit District has been earmarked by the Government as an area for meat production and the Government is anxious that the people should be willing to sell their animals. There is much that must be done to educate the people and to make them aware of the economic value of their livestock. This, however, is a problem that has to be faced throughout all the pastoral areas of Kenya

3.6 DISCUSSION

MILLER: Is there any research being done on the optimum use of watering points ?

Herbert ANDERSON: There has been quite a lot of work done in the area on the development of known water supplies.

FIELD: It is important to remember that different species of livestock are able to range over different distances and this should be taken into account when opening up a new source of water. If this is not done there is a risk of over-grazing.

RANDIGA: In planning the development of the District we have had to face this problem of severe over-grazing around bore-holes. I would like to know if there is anyone studying the location of bore-holes in relation to available grazing, so that we can achieve a balance between the two.

LAMPREY: There has been a study on the effect of the distribution of water on grazing in the Sudan. It is accepted that there will be intense degradation around a source of water, but this diminishes as the distance from the watering point increases.

.../31

Sheep and goats can graze up to 5 miles away from water, cattle up to 8 miles and camels up to 20 miles or more. You therefore get zones of effect out from the water. The study in the Sudan suggests that if watering points are placed so that the whole country is available to animals throughout the year you will inevitably get serious degradation. The optimum appears to be a situation in which only a third of the area can be reached during the dry season and two-thirds of the grazing area would thus be rested at that time.

There are so few instances where grazing controls have been effective with pastoral people in Africa that it almost needs to be assumed that control may not be possible; management therefore have to be achieved by limiting water, as has been found in Sudan.

FIELD: It seems that in this District it is necessary to have more co-ordination between the Water Development Officer and the Range Management Officer. The Range Management Officer should be able to get help in closing down water supplies in areas which are being used too heavily.

FRATKIN: I think we are overlooking the point that all the watering points in this area are traditionally known to the people. They are well aware that they are bound to over-graze a watering area, and this is why they alternate between watering and grazing and do not water their stock every day. What has happened in recent years is that these watering areas have become more accessible and produce far more water, and therefore can support a greater number of stock than they used to.

FIELD: Another point of importance is inter-tribal friction. Due to lack of security people don't use many areas. An example of

.../32

this is the fact that there is now very much less grazing away from Mt. Kulal than there used to be in the past.

ADICHAREH: This is true. People do not move off the mountain for fear of being attacked. If more watering points could be provided and the people given the security necessary to enable them to use the areas, the over-grazing problem would decrease.

Howard ANDERSON: The local people are not entirely immune to the idea of grazing controls. About five years ago we managed to get the people at Kulal not to graze the southern end of the mountain for 8 months. During this time the grass grew well and at the end of the period, when all the grass elsewhere had been used up, it was knee-high. Just before the people of Kulal moved their stock into the area some 8,000 cattle arrived from Marsabit, having heard about the grass at Kulal, and the grass was finished in about five days. Although the scheme in fact did not work as far as the people at Kulal were concerned, it did show that, on a local level at least, grazing control is possible.

WISEMAN: I would like to ask about animal management in relation to education. The importance of livestock to the people has been stressed throughout this meeting. At the moment there are only very limited means of educating the people in livestock management; can the Pastoral Training Centre at Laisamis do anything to help here ?

The well being of animals has several parallels with the well being of people. Local people have been shown to have a great impact on the education process, an example of this is the Family Health Educators which are working in the District. Without such education all the research which is being carried out can never be implemented.

.../33

OGOME: The Pastoral Training Centre will educate the local farmers about range management and livestock husbandry.

WISEMAN: Will this Centre also train people to go out within the community and give information and advice about animal health ?

OGOME: This sort of training is given by the Animal Health and Industry Training Institute (AHITI) at Nairobi.

FIELD: Are there any AHITI graduates working in Marsabit District at the moment ?

OGOME: There is one, but we hope to have more.

HARRIS: The schools in the area are very receptive to programmes dealing with such things as animal care, land use and hygiene. I have found that the headmasters are very keen to introduce this sort of work into the curriculum if they can be given the necessary sort of advice.

RAINY: I would like to go back to Dr. Schwartz's point about the storage of surplus milk in the camel camps. Although there might be a surplus for human needs it is also necessary to consider the feeding of the calves. If there is a surplus after the calves have been fed there is then the choice between storing the milk or sharing it with others who don't have as much. In pastoral societies there does not appear to be food storage unless there is extreme polarisation of wealth.

SCHWARTZ: Due to the greater milk production potential of camels over cattle there is more likely to be a real surplus in the camel camps, especially towards the end of the lactation when the calves are begining to forage for themselves. It would be good to improve the distribution of milk throughout the population. Fresh camel milk will keep for up to four days,

.../34

but it is often difficult to get the milk from the camel camps to the settlements.

ADICHAREH: One factor which causes the lack of milk in the settlements is that they are no longer willing to move in search of better grazing. This is often the result of the establishment of famine food donations in the area, which obviously discourages the people from moving to other areas.

SAWASAWA: When I was young we used to move our villages a lot, but now the people use relief food instead of searching for better grazing. Many of the people who take famine relief have large numbers of their own livestock but find it easier to utilize relief food.

SESSION 4

HUMAN ECOLOGY

Chairman: N. Sobania

4.1 RESEARCH INTO THE LATER PREHISTORY OF THE AREA EAST OF LAKE TURKANA - D. W. Phillipson (read in Dr. Phillipson's absence by E. Wilson)

The emphasis of this study has been on the changing economic practices and settlement patterns in relation to changing environmental conditions.

Sites concentrated on a beach line of L. Turkana at a level 80 m above the present level indicate intensive exploitation of fish resources by Late Stone Age people from about 6000 B.C. onwards. At a site of this period at Lowasera, 27 km north of Loiengalani and 7 km inland, occupation material was found consisting of pottery, microlithic and heavy duty stone artefacts and barbed bone harpoon heads. There is also a single sherd of "wavy line" decorated pottery reminiscent of that from early Nile Valley sites. The fauna is almost exclusively lacustrine. The physical features of skeletal remains are indicative of an early Negroid population. The high lake level continued from about 6000 B.C. to at least 2000 B.C. The first rise of the lake to the 80 m level took place shortly after a period of volcanism on Mt. Kulal and this may be related to the volcanic barrier which marks the southern end of the Lake.

Two sites at North Horr, beside the former Chalbi Lake, have been investigated; one dated about 2500 - 1500 B.C. and the other about A.D. 500 - 1500. At the earlier site the stone industry

.../36

is more developed than at Lowasera and there is abundant elaborately decorated pottery. There are stone bowls of similar date to the ones found in the Awash area of Ethiopia, and earlier than those found in southern Kenya. Fish bones are virtually absent, perhaps due to the salinity of the lake. It is probable that pastoralism was the economic basis of the settlement. At the second North Horr site there are similar microlithic tools to the first site, but the pottery is different.

A habitation site at Kulchurdo cave on Mt. Marsabit, dated c. A.D. 1500, has virtually no pottery and the dominant stone tools are scrapers, suggesting settlement by nomadic pastoralists. The spread of human occupation on the western slopes of Marsabit may be correlated with the retreat of the forest. The spread of pastoralism may have been a major factor in the vegetational changes.

Excavations at Ele Bor, near the Ethiopian border, west of Sololo have produced evidence to suggest cereal cultivation. Material from this site is still under study.

Future work will include attempts to trace the former extent of the Chalbi Lake.

4.2 A HISTORY OF THE LAKE TURKANA REGION c. 1840 to c 1920 -

N. Sobania.

As my collection of field material is almost complete but the analysis is in only the preliminary stages, what is presented is a tentative working outline of what will , in all probability, form the essence of my thesis. Using interview techniques I have collected historical material among the Dasanech, Samburu,

.../37

Rendille and Elmolo, and anticipate extending this to Turkana and Boran groups in the future. I employ the age-set systems of the various societies in establishing chronology, the most ideal for the historian being that of the Rendille whose generation system is tied to a very specific calender to which our notions of years can easily be ascribed.

The reason for a date of c. 1840 is that it marks a time when the Turkana pushed down to the western shore of the Lake from the escarpment, causing a considerable realignment of people, its effects being felt all around the Lake. As background to this c. 1840 date archeological evidence of early fishing communities on the Lake and their role in the possible introduction of cattle to East Africa and possible ties with the Elmolo and the Dies, a fishing community inside the Dasenech, will be noted. The notion of pan-Cushitic clans predominantly east of the Lake and paranilotic clans predominantly west of the Lake will be discussed as background to the realignment of clan formations into the societies we recognize today occupying the area.

The economic organization of these societies, as well as their adaptations to and perceptions of the environment, will be discussed with reference to their livestock and population distributions. Each of the societies will then be considered in terms of modes of production, degree of transhumance, settlement patterns, internal exchanges, sub-industries and traditional distributive systems.

The 'pre-external influence' period (prior to Pax-Amharica from the north and Pax-Britannica from the south) will be described in terms of each societies major needs, sources of

.../38

these needs and the interrelationships resulting from traditional trading compared to patterns of friendship and gift exchanges. I anticipate including a case study of the Dasanech bond friendship system as it relates to these exchanges intersocietally.

A detailed analysis of the disasters of the 1890's - bovine pleural pneumonia, rinderpest, small pox and related famines - and the resulting environmental imbalances will be made. The locations and strengths of each society prior to the disasters will be established and the effects of the disasters discussed, with special attention being paid to mobility and other adaptive responses

The period of 'external influences' (the Ethiopians and the Protectorate in their various disguises) will be considered with respect to their methods, and each society's responses and perceptions to the influences. The overall impact with respect to crystalization of societal boundaries will be determined. Using a case study of Dasanech and Elmolo I shall construct a model of societal change and assimilation, often brought about by ecological stress.

4.3 THE RENDILLE AND THE ECOLOGY OF CAMELS - J. Tanaka and S. Sato

Shun Sato and myself have been working with the Rendille for the last two years. Most of the work has been done by Sato, who lived amongst the people for 19 months, but who has unfortunately returned to Japan.

The focus of the study was on the ecology of nomadic pastoralists; the first half being spent in the settlement manyattas, the second half in the camel camps.

.../39

The social and economic life of the manyattas and the camel camps were studied. A collection of camel food plants has been made and is at present being identified. The food intake, life cycles and milk, meat and blood production of the camels was also studied.

1) 405 people (male - 193, female - 212) lived in two to four TUPCHA manyattas and their sex ration was 0.91. The total number of huts was 93.

2) Age-sex composition of 16 camel herds (total of 982 head), though TUPCHA had 20 camel herds, is described below:

Adult-Adolescent	Castrated camels	-	14.5%
	Stud-camels	-	3.3
	Females	-	61.5
Juveniles		-	9.5
Infants	Males	-	4.4
	Females	-	6.7

Males/Females Sex Ratio+ : 22.2/68.2 = 0.325

+ (except of juveniles)

No. of Ad.-Adol. Female per one Stud-camel------ - 18.6 head
Birth Rate - 18.04%
Reproductive Rate - 11.3
Mortality - 3.5

(Infant Mortality; 14.4%, Juvenile Mortality; 1.1%
Ad.-Adol. Mortality; 2.3%)

3) Birth season

Record:	April to 11th May, 1976	-	21.4%
	12th May to 13th June, 1976	-	61.5
	14th June to 7th July, 1976	-	17.1

The birth season of camels is considered to be from April to June, the peak being in May.

.../40

4) 33 species of plants are used as the diet of camels. Those species are composed of shrubs (41.6%), grasses (28.8%), herbs (25%), trees (3.8%) and vines (0.5%).

5) Herding activity:

The Rendille prevented nursing calves from drinking water for 8 months and their mother camels for a month after their giving birth and all camels were prevented from drinking water for at least 3 months during the rainy season, which was because camels could get water from moist leaves and grasses. In the dry season, camel herders brought their camels to water holes or springs every 11.2 days on average.

There were two types of camel herding activity. One may be called village-based herding and the other camp-based herding. The former means such herding activity as taking the camels from the manyatta to grazing places or water every day and the latter such herding activity as taking the camels from the camp site to grazing places or water.

Camels could normally walk at the rate of 3.52 km an hour. The average daily distance moved was 26.6 km a day in the case of village-based herding, while 15.0 km a day was the average in the case of camp-based herding. Camel herders spent about 11 hours per day in grazing or watering activity.

The daily distance moved of village-based herding activity was 1.8 times as high as that of camp-based herding activity. In the case of the former, this means that camel herders spent more time on walking and less time on grazing than in the case of the latter.

The Rendille have about 690 g. of milk per person available in the villages, while in the camps there is about 3008 g. of milk per person available. Human consumption of camel milk is therefore 4.4 times greater in the camps than in the village.

.../41

4.4 RENDILLE SETTLEMENTS - A. Grum

For seven months my family and I lived with a Rendille family settlement, during which time there were two short movements and one longer one.

Excluding the Ariaal and the Ilturia, the Rendille proper are divided into 10 clans, with a total population of about 9000 people. The 10 clans are further sub-divided and those sub-divisons are important in the organisation of settlements.

Settlements vary from 4 to 115 houses; a typical size being 25-35 houses. Settlements are made up of people of the same clan. Basically of one sub-clan. Often there are in addition a smaller number from other sub-clans of the clan and a few in-laws of other clans. Each married woman or widow has a house of her own; widowers are very seldom found. In 1975 I counted averages of 5-5.5 people per house. After the marriages of a whole age-set in 1976-77, this is expected to drop to 3.5 and again rise gradually over the next 14 years to a new maximum immediately before the marriages of the following age-set. As a high number of children and unmarried people spend most of their time in the stock camps, the figure is in practical terms lower.

Mobility is traditionally very high and an account of a family settlement over a period of 71 years shows 271 movements during this time. In some years the settlement did not move at all, but in others they would move 8-10 times and cover a total of 800-900 km. The camel camps move much more than the family settlements. Family settlements with less than 20 houses tend to follow the movements of larger settlements; this is due to security problems, the major migration factor.

.../42

4.5 A RESEARCH PROJECT ON THE NDOROBO - M. Ichikawa

I just began my research on the Ndorobo in November, 1976. Setting my study area in the Matthew's Range Forest, I will be involved in this work for two years. My research project is as follows;

1) Ecological reconstruction and analysis of the Ndorobo's traditional life:- The Ndorobo were, until very recently, hunting and gathering people. Even now, they partly depend on various natural resources such as roots, fruits and honey which are available in the mountains. Usually, they have not sufficient livestock to live solely on them.

2) Analysis of their utilization of the montane forest: Honey is one of the most important foods for the Ndorobo. Most of them have a number of bee-hives and may of these bee-hives are set in the montane forest. In this sense, the Ndorobo are the only people that utilize the montane forest in a traditional way.

3) Description and analysis of the ethno-botany and ethno-zoology of the Ndorobo: As they were hunter-gathers until very recently, they have much knowledge about plants and animals. As for plants, I have collected 405 specimens, with their vernacular names. Of these they utilize 138 plants for medicines, 95 for food, and about 200 for other purposes, such as materials, instruments, huts, and livestock food. They utilize almost all the plants except a few poisonous species.

4.6 HEALTH AND DISEASE IN ARIAAL RENDILLE - E. Fratkin

From February 1974 through August 1976 I lived and worked among the Ariall Rendille, a population of 6000 people living along the eastern wall of the Ndotos and Matthew's Range Mountains.

.../43

The Ariaal live in about 25 settlements, but herd their livestock of camels, cattle, and goats and sheep in nomadic livestock camps in both Samburu and Marsabit Districts. The Ariaal, almost unique in a dual cattle-camel economy, form a bridge between the highland cattle-herding Samburu (pop. 70,000) and the lowland camel-herding Rendille (pop.9000).

In appearance, the Ariaal resemble Rendille in settlement patterns and material culture pertaining to camel management, but in social organization the Ariaal more closely resemble the Samburu in their age-grade organization of moran. The community is almost fully bilingual in Rendille and Samburu (Masai), but Samburu is more widely spoken.

My study concentrated on concepts of disease and health in the settlements, from the viewpoint of both their traditional attitudes and responses to disease, and the effect and integration of a modern health care system. Ariaal, like all societies, are concerned about good health and have definite ideas of where disease comes from, what it does, and how to treat it.

Disease is usually thought of being due to foreign elements that enter the body and cause congestion and blockage of vital pathways, leading to fever, stiffness, and death. These foreign substances are thought due to bad foods, i.e. elements from outside the traditional diet of milk, meat, and blood from domestic livestock, mosquito-carried diseases that to Ariaal include Malaria, hepatitis, polio and tuberculosis; and to human infection such as measles or VD.

To relieve these types of congestion, Ariaal employ over 150 species of plants, most of them poisonous to some degree,

that act as emetics and purgatives to cleanse the system. I have collected most of the plants, and most show strong physical properties, either as alkaloids or irritating resins. In addition to emetics, herbal cures are also employed for treatment of wounds, burns, external parasites, abortions or retained placentas, fractures and dislocations. Knowledge of herbal cures are common and widespread, but certain people aquire sufficient skill and reputation as herbal specialists, especially Wandorobo who have a wide knowledge of the forests.

This differs from the inherited specialist role of iloibonok ritual curers, who are Samburu diviners and healers of mystically-caused illness such as infertility or epidemics, in both humans and livestock. Their cures are not public and do not operate as the physical cures do, being highly charged with mystical power and having no direct physical effect as the medicinal cures. Ariaal, Samburu, Rendille, and Wandorobo separate diseases which they think are physical and can be treated with physical cures, from those which they consider to be mystical or spiritual. Their physical cures probably do not succeed by "psychological" factors, but the "mystical" cures do, particularly because the mystical specialist (oloiboni) integrates the entire family into a theurapeutic milieu for the patient.

Western medicine, introduced in the last twenty years by dispensaries and mobile clinics, is something the people seek; they believe it is more effective than their own physical cures, but their attitude is one of misinformation. There is a great need for education in this sphere, as many people misuse western

...../45

medicines or are fearful of it. In this end, health policies encouraging the promotion of rural health workers, particularly those who can visit rural manyattas on a regular basis to promote health prevention as well as disease cure, should strongly be supported.

In conclusion, my work is an attempt to effect a better health care system for pastoral peoples, by considering their attitudes to health and encouraging policies of most benefit to them. But health care cannot operate in a vacuum - only when modern health techniques such as vaccinations and health education are combined with related projects such as veterinary care, livestock management techniques, and the promotion of wider markets for livestock can the pastoralists truly benefit from any one specific development programme.

I think all of us, regardless of our discipline, are here for the fundamental purpose of improving the welfare of the people who live here. Let us never forget then our basic objective, which is to serve the people.

4.7 PRELIMINARY ANALYSIS OF A CONTINUOUS 71 YEAR RECORD OF A SINGLE RENDILLE SUB-CLAN SETTLEMENT GROUP - M. Rainy

My own work on the ecology of Samburu pastoralists lies mainly beyond the scope of this Marsabit District seminar, however, Grum has recently collected and mapped the complete movement record of one of the 16 Rendille subclans in 271 moves over the past 71 years. This mass of data is the most complete record of pastoral distribution and movement that I know. Because of its importance and with Grum's kind permission I would like to report here a very preliminary analysis that I have done. Rendille settlements are very cohesive

and stable over time. Grum's data probably refers to at least 300 people, but his informant often mentions periods when most of the 8,000 Rendille were in the same area. I have initially been interested in describing wet and dry season use and the major changes of that pattern with time.

Using data from the 10 stations in and surrounding the 44,500 km^2 total 71-year home range, an average bimodal rainfall cycle was calculated and then colour coded to represent periods of rain, growth and gradual dryout. This annual cycle was modified to correspond to the informant's mention of exceptional rain and drought. I then estimated the number of months spent at each site and determined whether these occurred during dry, wet or multi-seasonal periods on distribution maps. To provide a crude picture of the change in seasonal patterns with time, the record was also divided into early, middle and recent periods of 24 year durations using overlays. The total home range area was divided into 27 distinct regions whose boundaries separated the areas of settlement aggregation and whose areas were measured. I have assumed that settlement size has been reasonably constant over time and that the extent of rangeland use has been directly proportional to the time spent there in each 24 year period. If the proportion of time spent in a region equals part of the total home range used in a 24 year period then no selection for or against the region is indicated. Departures from this case of "random" selection, on the other hand, indicate selection for or against the region in varying degree. The selection factors applying to each 24 year period have been plotted for each region.

.../47

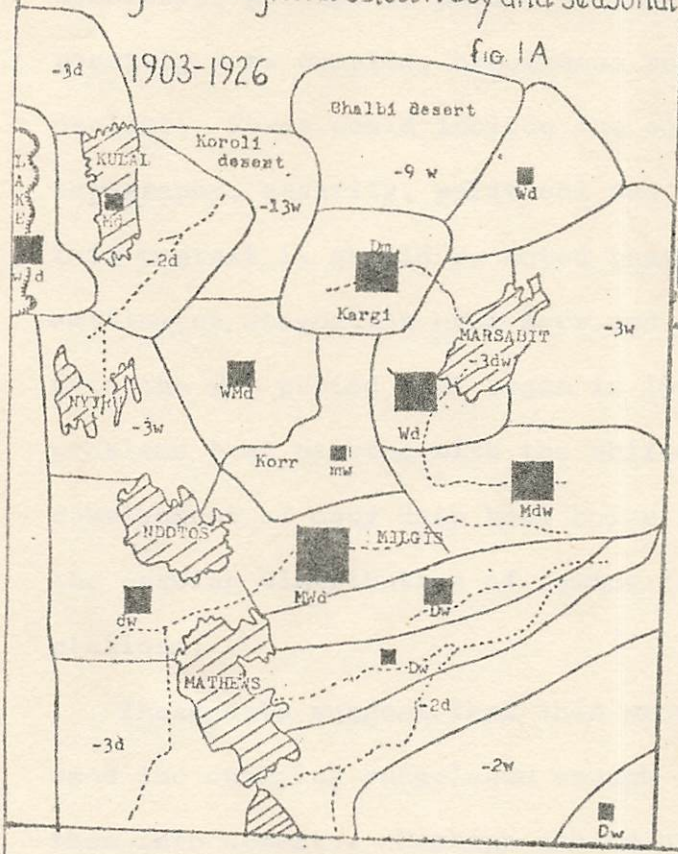
It is clear that this Rendille subclan has avoided both mountain masses and desert areas. Except in the early periods, and then mainly for brief wet season stays, they have avoided the areas to the north, east and south which are generally more arid and dominated by rival Gabbra and Boran pastoralists. In multi-seasonal and dry periods they have concentrated near the major sources of runoff water from the highland areas, notably the Milgis, Lodosoit and Seya drainages in the south, and near Kargi in the north. They have made use of the east shore of Lake Turkana in multi-seasonal or wet periods, particularly for major ceremonies. The lower western slopes of Marsabit have also received consistent wet season use. In the west the areas dominated by friendly Samburu pastoralists have been used mainly in limited dry periods. Until very recent years the annual home range averaged 1400 - 1600 km^2. However, in the two early periods these annual treks extended far in most possible directions in successive years from their central concentration areas.

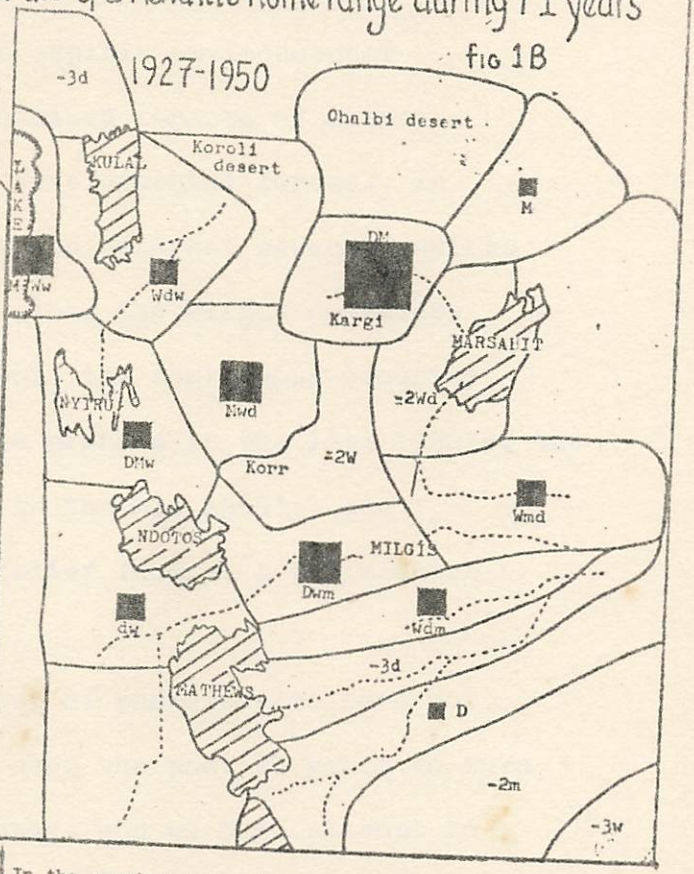
Particularly in the last 15 years their movements have become much more static. A drastic decline in annual home range area has occurred since 1957, to an average low since 1966 of only 366 km^2, less than 25% of the mean annual home range of the most recent 24 year period.

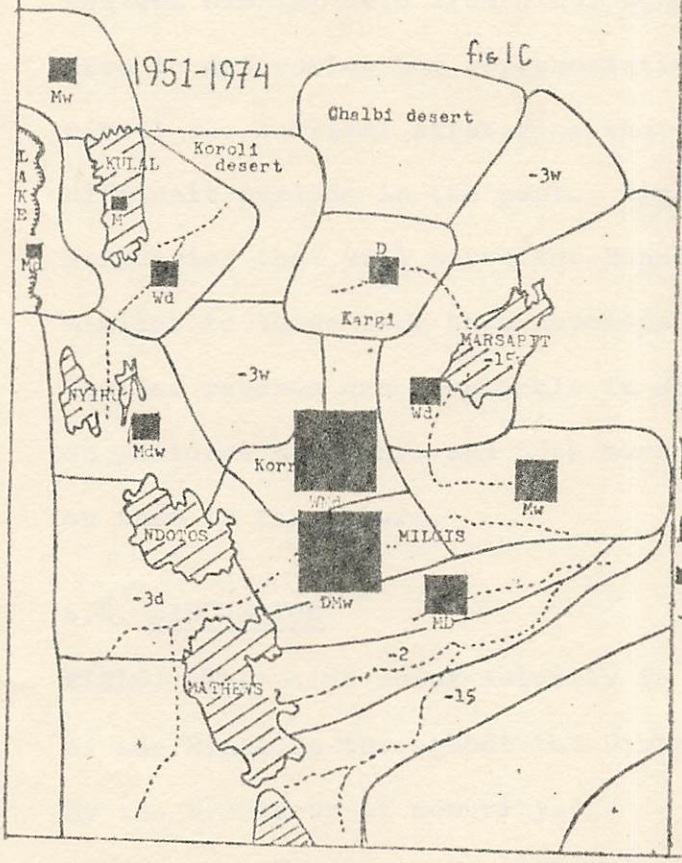
The Rendille have both a small and apparently stable population. (The D.C., Marsabit recorded 5,474 in 1919; Spencer reports 8000 in 1962; and Grum reports about 9000 in 1975:- the average Rendille is 28.5 years old compared to a 15.5 year old average Kenyan). They have many socially regulated customs that appear adapted to keep it small in an environment that has been harsh for a long time. Before we accept the notion that they are the victims of their own populations growth and destructive animal

.../48

Changes in regional selectivety and seasonal use of a Rendille home range during 71 years







In the previous three figures the size of the shaded square in each region indicates the factor by which the region was used more or less than predicted solely on the basis of area, and quantified as shown below.

D, major dry season use
d, minor dry season use
W, major wet season use
w, minor wet season use
M, major multi-season use
m, minor multi-season use

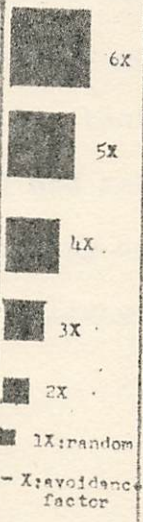


Fig 1D

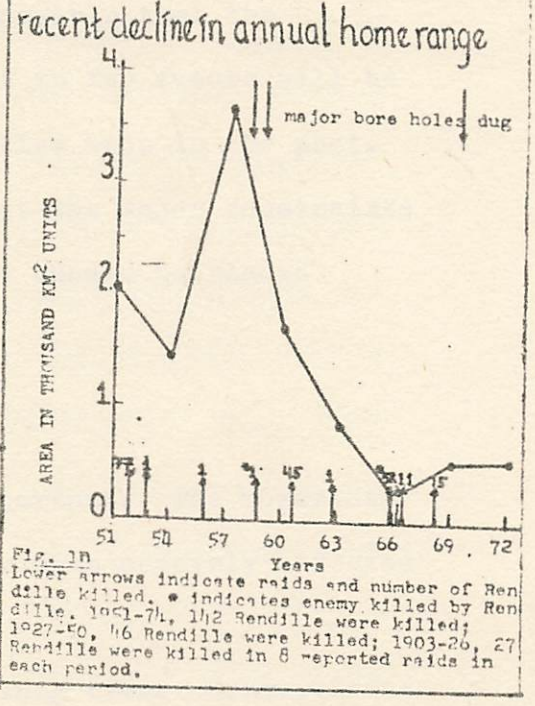


Fig. 1n
Lower arrows indicate raids and number of Rendille killed. • indicates enemy killed by Rendille. 1951-74, 142 Rendille were killed; 1927-50, 46 Rendille were killed; 1903-26, 27 Rendille were killed in 8 reported raids in each period.

camel keepers such as the Rendille can not afford to lose either man-power or stock in order to colonise an area.

ADICHAREH: This lack of security is indeed a very great problem and is one of the main reasons why the people no longer move in search of better grazing.

FRATKIN: The Rendille are changing to a more sedentary way of life. This is a bad thing for them to do and it is necessary that they become more mobile again

FIELD: The return to mobility can only be achieved if the security in the area is improved and if the people who offer the Rendille help are able to become more mobile.

SAWASAWA: I feel that much could be done to help in the education of the people by the catechists who are trained by the missions.

FRATKIN: That is true. They could be taught to teach the people about medical and livestock problems.

MASHETI: One useful thing they could do would be to teach and encourage the people to sell their camels.

FRATKIN: Although it is obviously a good thing to reduce the present stocking rate, if the productivity of the remaining animals can be increased, what are the people going to do with the money they earn ? The posho the people might buy with the money is not nearly as nutritious as milk, blood and meat, and there would be a real danger of malnutrition, especially to children.

GRUM: One thing which does not help the security problem is that the Rendille do not seem to be able to get themselves sufficiently well organised to send out patrols to warn them of impending raids. Instead of doing this they move away from areas which are potentially dangerous.

RAINY: There are instances of the people being self reliant as far as security is concerned and the Samburu, like many others, will take the initiative in getting their stock back after a raid.

LEWIS: How much can the Government help in improving the security of the area ?

ADICHAREH: The Government is doing its best to help. They have put Administrative Police into areas where raids are likely. Often, however, they are hampered by lack of vehicles, bad roads and no radios.

FIELD: Is there any chance that the Government will improve the communications available to the police ?

ADICHAREH: I have asked what can be done and I have been told that more radios will be made available, but so far none have arrived.

FRATKIN: Why would you expect polygamy in the camel keeping Rendille when Paul Spencer has argued that the high rate of growth in cattle would allow a greater accumulation of wealth and therefore a faster rate of wife buying for cattle keepers, such as the Samburu, than for camel keepers ?

RAINY: In the bad drought of 1970 zebra, which are polygamous, had a high rate of mortality, and 1.5 mares died in each family. Within two months after the onset of rain zebra families were larger than they were before the drought. I used this as a model of polygamy. In low productivity areas the potential rate of increase of women has to be limited by a social force; polygamy does this. In agricultural societies, where there is greater control over food production, families can be started when people are younger and a woman can produce many more

.../51

children without undergoing nutritional stress. I therefore would have expected the Rendille to have polygamy. In fact, though they have a different system altogether, the sepadine institution.

The sepadine are 1/3 of the Rendille women who cannot marry until they approach the end of their Reproductive years. The sepadine institution is a clear example of socially regulated birth-control. Present day Rendille recall a time when the sepadine marriage prohibition applied to 2/3 of Rendille females. It was abandoned apparently because it produced population decline instead of stability.

SESSION 5

MEDICAL WORK IN MARSABIT DISTRICT

Chairman: D. Wiseman

51 THE HEALTH OF WOMEN AND CHILDREN - D. Wiseman

As a result of a seminar in 1974 on the Health of Women and Children in Marsabit District I became interested in rural health in the area. The District has a very good health service, considering all the problems. I chose to be involved with the health of women and children as they represent the highest percentage of the population and they also have an inordinate percentage of the health problems, many of which are preventable by simple measures.

The common health problems of women are anaemia, due to dietry factors-particularly the fact that milk has a very low iron content, malaria, the problems of pregnancy and haemorrhage and infection at the time of delivery.

The problems of children are anaemia and respiratory and gastro-intestinal infections. They also get other common diseases of childhood, such as whooping cough and measles, which, in Africa, can often exact a high mortality.

My approach has been to work within the existing health care frame-work, using the normal facilities and personnel, including the Family Health Field Educators. The Field Educators have had an enormous impact on the health services in the District. Due to their activities there was an increase in the number of children attending Marsabit hospital for 'well-child care' from 200 a month to 800 a month. This was entirely due to improved communications with the people. The work has now been expanded into areas away from Marsabit.

.../53

Recently we have done a health survey around Ngoronit, recording the weight of children, family food consumption, child vaccination status, the health problems as perceived by the people and their use of the health service. Although these data have not yet been analysed it was evident that there was an absence of gross malnutrition among the children, even though the survey was undertaken at the end of a long dry period. It appeared that those people with more livestock were better nourished than those with only a few animals, who tended to rely more on posho.

We have started mobile clinics around Dorr to vaccinate the children against polio, whooping cough and tetanus. Before every clinic we have a meeting with all the people of the manyatta and explain to them what we are doing. We try to return to each manyatta every month.

In the future we hope to expand the programme into other areas in the District and also to investigate the causes of anaemia in the people.

5.2 HEALTH EDUCATION - J. Harris

I have been developing a rural health programme and making the supporting teaching aids, aimed at a specific group of people. The work is more concerned with the prevention of illness than its cure and the programme includes the reinforcement of traditional health practices.

As people start to adopt new ways they become confused as to whether the old ways, which always seemed to work, really were good. We therefore reinforce such ideas as breast feeding and providing older children with milk.

..../54

The programme also includes instruction on healthier ways to live which require the minimum of change to normal daily life. An example of this is eye infection, from which may children suffer. The people do not realise that if they washed the eyes out several times a day (all mothers wash their children's faces once a day) the infection could be stopped before it became serious.

Another big problem is diarrhoea and vomiting in children. This is caused because the people do not wash their hands and the dishes before eating. Because the people know these things are problems they are very receptive to simple change.

The messages used to educate the people have to be appropriate to the group. I always begin by talking to the people and therefore can learn which are the most important things to try to teach. These conversations are often about knowledge, attitudes and practice, but they are in no way formalised.

Another example of the work is the problem in Marsabit, where there is a shortage of fresh fruit and vegetables, and the people are depending more and more on posho. Although the children are given many of the wild fruits and vegetables, which emerge after even only a little rain, the people are unaware of their nutritional value. By taking photographs of these wild fruits, and by going to schools and showing the teachers how they can incorporate this sort of material into their science curriculum, we are able to show the people the value of these things. Simple teaching aids such as photographs which people can immediately recognise are very important. By using a series of three photographs of 1) a mother and a child who's eyes

...../55

are closed due to infection, 2) the mother washing the child's eyes with a little water and 3) the mother with the child who's eyes are now open, people can see what needs to be done.

5.3 THE A.I.M. HEALTH PROGRAMME - L. Cameron

Our work is based around a safari programme designed to teach the people the basis of looking after their bodies in sickness and health. Although we obviously treat people who are ill we put a heavy emphasis on how to avoid being ill. Many of the illnesses are preventable.

We have two safari bases, one at Kulal and the other at Loglogo, and there are eight centres which we hope to visit once every three weeks. We are also involved in teaching people to teach others about illness prevention and in teaching adult literacy.

It is not always change the people need. In the last eight years, since I have been working in the District, the people have tended to leave their traditional diets and in a few years time there will be kwashiorkor in the children. Breast feeding is something we try hard to encourage as, due to the advertisment of supplementary foods, people are tending to bottle feed rather than breast feed.

One problem we come across is the lack of motivation in the people to want a better way of life. Our Church work helps very much in this respect as not only does it encourage the people to try and improve their own situation, but it also teaches them to want to help others to do the same.

..../56

5.4 DISCUSSION

ADICHAREH: In many places people hardly have enough water for drinking. How, therefore, can they afford to use water for washing ?

HARRIS: The shortage of water is a serious problem, but it takes very little water to wash. Mothers always wash their children. The children who are most susceptible are those under the age of five and they are not in the camel camps, where water is very often scarce. Very little water is necessary for disease prevention.

FLATKIN: How much of the gastro enteritis comes from dirty hands and how much from infected water ?

WISEMAN: We don't yet know. The problem is that bacterial counts in water vary from day to day. Most infections, though, probably came from the water.

SCHWARTZ: One reason might not be bacteria at all, but the very high alkalinity of the water. In some places water has a pH value of 8 or 9.

RAINY: How important is the nutritional level of the people in relation to susceptibility to disease ?

WISEMAN: This is a well established relationship. A malnourished child has a risk of dying from measles which is 400 times greater than a well nourished child.

MASHETI: Could you please explain the problems of breast feeding and supplementary milk ?

CAMERON: Traditionally the people breast feed their babies and also give them supplementary camel milk. This supplement is not necessary and greatly increases the risk of infection from dirty gourds.

RAINY: Has the change from breast feeding to bottle feeding

.../57

anything to do with the mothers wish to free herself from the energy demands of lactation ?

CAMERON: No, I think that bottle feeding is done for prestige.

WISEMAN: Also a lot of people actually believe that Lactogen is better for babies.

ADICHAREH: Although you say that camel's or cow's milk is not good for a baby until it has teeth, what happens if the mother has only a little milk herself ? Should she not then give the child some camel's milk ?

CAMERON: No, the mother should drink the camel's milk herself and the baby could then drink her milk. It is very rare that mothers do not have enough milk to feed their children.

RAINY: The Samburu have a system whereby a newly delivered mother is given a massive tonic of 8 to 10 animals made up as a soup during the first six months of her lactatation. By doing this she is not competing with the rest of the family for milk.

HARRIS: Most of the people in Marsabit District do this as well.

WISEMAN: One issue which has appeared throughout this conference is the importance of considering the people, not simply in a biological sense. One of the important things is to consider the people as a resource and not a problem; one of the main aspects of this is that the people are a great source of knowledge and we should think of education as a two-way process.

Many of the frustrations we all encounter in trying to teach the people are due to the fact that we have not come to know them properly. If this happens many people are tempted to turn from education to coercion. Any change brought about by coercion is doomed to failure.

SESSION 6

INTEGRATION AND CO-OPERATION

Chairman: J. Lewis

6.1 DISCUSSION

LEWIS: One of the most important things is for us to decide what we are trying to achieve for Man and his Environment in Marsabit. Man can not be separated from his environment.

We have some idea of the sort of management we would like to see for the vegetation and the livestock and we have also seen the sort of things which are being done to improve human nutrition and the medical services. We are however, still a long way from achieving many of the developments we think necessary. So often in development it is not what needs to be done which poses the problem, but how it is to be implemented. The human ecologists could do much to help here.

It will be necessary to define what the people want and need, and to relate this to the development plans for the area. Information on how best to communicate with the people would be invaluable in any effort to implement any development and we ought to analyse the different forms of extension activities which are available.

The District Administration has plans for the development of the District and it is obviously necessary that there is as much interaction between the Administration and the other people working in the area as possible. There is a great scope for integrating these developments which are attractive to the people, such as medical services and water development, with activities which are more difficult to implement, such as livestock and vegetation management.

..../59

Another point which needs to be considered is the potential for alternatives for the pastoralists. Although all of us are working to try and maintain the pastoral way of life, opportunities for agriculture and small industries in the District should be investigated.

FIELD: There is obviously a need for greater co-operation. Would it not be possible to set up a coordination group under the District Development Officer which would have representatives from each of the permanent organisations in the area ? I also feel that there is a need for an information centre in the District where data and accounts of what is happing would be readily available.

RAINY: I feel there should be a library established in Nairobi which would hold information, not simply concerning Marsabit District, but all the arid areas of Kenya.

FRATKIN: Would it be possible for this to be at the UNEP Headquarters ?

LAMPREY: I am sure that this would be possible. UNEP have plans for a world-wide data bank on these sorts of problems.

RAINY: There is also a need for people to continue to meet and discuss the problems of the District.

GRUM: There is a District Information Officer. Much of this work could perhaps be done through this officer.

LEWIS: There are some people who, through their work, have greater contact with the people than others. Would it not be possible for those people involved in such things as the medical service to give assistance in non-medical problems ?

WISEMAN: I have attempted to do this by working with the Veterinary Department, but they are very short of personnel. It

..../60

would be very useful if there were Animal Health extension workers who could work with the medical workers.

RAINY: There is a need for everyone involved with the work in the District to communicate with the people, even though their work may not directly require this contact.

FIELD A.: Most of us who work with livestock are having problems in getting co-operation from the people to enable us to weigh and measure their animals. We do not have the time to sit down in every settlement manyatta and camel camp and to spend many hours talking to the people so that we may build up their confidence. Would it be possible for someone to suggest an approach which might solve this problem.

FRATKIN: The only possible approach is to sit down with the people and explain what you are doing.

SOBANIA: I do not think that there is a short cut. You have to spend a lot of time building up the confidence of the people.

RAINY: Even within the pastoralists themselves there are very formal sets of etiquette which have to be respected.

WISEMAN: In the medical services we alwasy have to cure the people before we can teach them. Would it not be possible to the same as far as livestock are concerned ?

FIELD A.: This we have tried to do.

ADICHAREH: The important thing is to work through the local chiefs and councillors. If you do this you will get the help of the people.

LEWIS: Would it not be possible to use the fact that those involved in medical work already have the trust of the people ? Livestock surveys could then be carried within these trusting communities ?

WISEMAN: I am sure that those of us involved in medical work would be happy to co-operate.

.../61

SESSION 7

SUMMARY - H. F. Lamprey

There are basically two viewpoints represented at this conference, although there is some overlap between them; that of the social sciences and that of the natural sciences. In order to achieve the results we are all aiming for - the rehabilitation of the region - the interests and the expertise represented by these two complementary approaches must be integrated.

In the course of the conference, we have been given accounts of the development activities in Marsabit District, including medical; veterinary; animal husbandry; range management; forestry; water; roads and communications and education. We have also heard details of the applied research that is being carried out by the UNESCO-UNEP Project on the ecology of the region. A good account has been given of present knowledge of human biology in the Marsabit District.

As yet, the information obtained is largely qualititative. Now it is necessary to build upon the descriptive work and obtain quantitative assessments of populations, of productivity, of consumption levels and of changes taking place in the ecosystem. We need to assess the quantitative relationships between plant, animal and human life in the region; this relationship is the key to several of the problems of Marsabit District. The central problem may be summarized in the question, "Is the Marsabit District a balanced ecosystem?". Few people aquainted with the region would say that it is. That it is not balanced (in the

.../62

BIBLIOGRAPHY

BARKHAM J.P. and RAINY M.E. (1976) The vegetation of the Samburu-Isiolo Game Reserve. E.Afr. Wildl. J., 14:297-329.

BAXTER P.T.W. (1954) Social organisation of the Boran of Northern Kenya. D. Phil. Thesis, Oxford University.

BREMAUD O. (1969) Notes on camel production in the northern districts of the Republic of Kenya. (Translated by ILCA, Addis Ababa).

BROWN L.H. (1971) The biology of pastoral man as a factor in conservation. Biol. Conserv.

CAMBELL Q.P., EBERSOHN J.P. & BROEMBSON H.H. (1962) Browsing by goats and its effects on the vegetation. Herb. Abotr. 32:273-275.

DALBY D. and HARRISON CHURCH R.J. (1973) (Eds) Drought in Africa. Symposium at Centre for African Studies, SOAS, University of London.

F.A.O. (1971) Rangeland Surveys in Kenya. Range Development in Narsabit District. Working paper No. 9. UNDP/FAO, (AGP: SF/KEN 11), Nairobi.

F.A.O. Sheep and Goat Development Project, Naivasha. Working Paper No. 11. Sheep and goats in the traditional livestock economy of the Samburu of Leroghi Division.

GRUM A. (1976) Rendille Habitation, Nairobi.

HEADY H.F. (1960) Range Management in East Africa. Govt. Printer; Nairobi, Kenya. Reprinted 1972. 125;.

HYDER D.N. (Editor) (1973) Arid Shrubland. Proceedings of the Third Workshop of the United States/Australia Rangelands Panel - Tucson, Arizona. Society for Range Management, Denver, Colorado. 148p.

I.A.S. (1975) Health and disease in Samburu. Institute of African Studies, Seminar Paper No. 65, October, 1975, Nairobi.

LEESE A.S. (1969) "Tips" on Camels. FAO Mimeo. Pet. No. AN MISL/69/ 13.56 pp.

LIND E.M. and MORRISON M.E.S. (1974) East African vegetation. Longman, London.

.../

MAHER C. (1948) Goats, Fire and Blowing Sands. E.Afr. Agric. J. 11: 173-180.

McKELL C.M. (1975) Shrubs - a neglected resource of arid lands. Science 187: 803-809.

MORGAN W.T.W. (Editor) (1969) East Africa: Its peoples and resources. Oxford University Press. Nairobi, Kenya 312p.

OXBY C. (1975) Pastoral nomads and development; a selected bibliography with special reference to the Sahel. International African Institute, London.

PHILLIPSON D.W. (1977) Lowasera, Azania, Vol. 12.

PHILLIPSON D.W. (1977) The later prehistory of eastern and southern Africa. Heinemann, London.

POULSEN G. (1973) CADU Forestry activities, CADU publication No.84, Asella, Ethiopia.

RAPP A. (1974) A review of desertization in Africa - Water Vegetation & Man. S.I.E.S., Stockholm. 77pp.

RAINY M.E. (1975) The Ecology of Limits and Potential for Wildlife Tourist use of the Central Uaso Nyiro River Drainage Basin. World Bank Report.

RICHARD D. (1975) Etude de la pathologie du dromadaire dans la sous-province du Borana (Ethiopie). Thesis for Veterinary Doctor, Ecole Nationale Veterinaire d'Alfort.

SACKER G.D. & TRAIL J.C.M. (1966) Production characteristics of a flock of E.A. blackheaded sheep. E.Afr. Agric. for J.

SHERBROOKE W.C. (1973) World Desertification: Cause and Effect. A Literature Review and Annotated Bibliography. University of Arizona. Office of Arid Lands Studies.

SPENCER P. (1973) Nomads in alliance, Oxford University Press.

SWIFT J. (1975) Pastoralism and Wildlife in dry marginal lands. I.U.C.N. 13th Technical Meeting, Kinshasha, Zaire. IUCN/TM/75/6.

TANAKA J. (1976) Report camel herders in Northern Kenya. Shizen, Vol. 31 (4) (in Japanese).

.../

TINKER J. (1977) Sudan challanges the sand-dragon. New Scientist 24 Feb. 448-450.

TORRY W.I. (1973) Subsistence ecology among the Gabbra: nomads of the Kenya/Ethiopia frontier. Ph. D. dissertation, University of Columbia.

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT (1975) Underexploited Tropical Plants with Promising Economic Value, National Academy of Sciences. Washington D.C. 188.

UNITED STATES FOREST SERVICE (1972) Wildland Shrubs - Their Biology and Unilization: and international symposium. Intermountain forest and range experiment station general technical report INT - 1. Ogden, Utah. 494p.

WILLIAMSON G. & PAYNE W.J.A. (1965) An Introduction to Animal Husbandry in the Tropics. Trop. Agric. Ser. 2nd Edn. Longman & Co. Ltd.