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RADA' INTEGRATED RURAL DEVELOPMENT PROJECT

Domestic practices in the Rada' district

Technical Note No 11

February 1983

Ilaco  
Arnhem, The Netherlands

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## CONTENTS

	<u>Page</u>
Summary	ii
1 INTRODUCTION	1
2 THE HOME	2
2.1 Housing	2
2.2 Household water use	3
3 IN AND AROUND THE KITCHEN	5
3.1 The kitchen	5
3.2 Fuel	5
3.3 Food storage	7
3.4 Diet	7
4 CHILD CARE	9
4.1 Baby care	9
4.2 Older children	10
5 LIVESTOCK HUSBANDRY	11
5.1 Fodder	12
5.2 Feeding	12
5.3 Production	12
5.4 Cost/benefit	14
6 CONCLUSIONS AND RECOMMENDATIONS	15
6.1 Kitchen-related conclusions and recommendations	15
6.2 Children	16
6.3 Health prospects	17
6.4 Livestock husbandry	17

## LIST OF FIGURES

Figure 1 - Camel load of firewood	6
2 - Dung cakes drying	7
3 - Cutting alfalfal	13
4 - Feeding a cow	13
5 - Churning buttermilk	18

## SUMMARY

This technical note reports on a study carried out within the framework of the Rada' Integrated Rural Development Project and aimed at evaluating household water use in a number of villages in the Yemeni province of al Beida, and identifying the main problems effecting women's lives in that area. Six households in 6 villages were observed to obtain information on the amount of time women spend on different activities and the effects of domestic conditions on their health and work. This report deals with the domestic practices aspect of that study.

*Case  
Study*

Women's work in the kitchen is affected by the very unhealthy conditions in the kitchens, which are filled with smoke and not adequately ventilated. It should be investigated whether improving the ventilation would make it possible to evacuate smoke more efficiently. Another major problem is the fuel required for cooking. This mainly consists of firewood, which is collected at great expense of time or bought equally expensively, or dung cakes, the production of which is also very labour intensive. Moreover, the dung cannot be used as fertilizer if it is used as fuel. Another time-consuming activity is collecting water in villages where there are no standpipes or domestic piped water-supply .

The traditional diet consists essentially of grains, supplemented by small quantities of greens and meat. This is hardly adequate and added to the hygienic conditions is one of the likely causes of the health problems which occur in the area.

Child care suffers from the increased use of unsuitable powdered milks and weaning foods, and the lack of proper medical advice and guidance, both preventative and curative: breast-feeding should be promoted, mobile health clinics should regularly visit the villages, and educational programmes be established.

The care of cows, and especially their feeding is the most time-consuming activity, taking about 4-7 hours a day for feeding, milking, and butter-making. Since a cow only supplies about 3 litres of milk per day this is very uneconomical. However, as this is the only fresh dairy product in the diet, keeping cows must be considered to be worthwhile.

## 1 INTRODUCTION

This technical note is the report of a study carried out from November 1982 to February 1983 by Ms H. Lackner, Ilaco social anthropologist, attached to the Rada' Integrated Rural Development Project (RIRDP) team.

The study was carried out with the objective evaluating the household water use and of identifying aspects of women's lives which are particularly in need of improvement. Improving the living and working conditions of the women in the project area is a major priority for the RIRDP's Women Participation Section. Such improvements include the introduction of piped water or butagaz cookers, as well as electricity and television.

*Selected site*

The field-work for the study was carried out in December 1982 by a method of close observation: between 30 and 48 hours were spent in 6 households in 6 villages having different water-supply systems, varying from a central system with house connections to a 10-minute walk to collect water from a spring.

All the households studied are farming households though one family did not cultivate any of its land. All the households are also familiar with emigration and except in one case, currently has at least one adult male working in Saudi Arabia. The exception is the head of his household who has no living close male relative; he used to be an emigrant but his present family and farming responsibilities now keep him at home.

The water-supply and use as well as sanitation aspects of the study are published separately in RIRDP Technical note No. 10. In this report, we present the observations and conclusions which emerge from other household practices, including cooking, cleaning, child care and livestock husbandry.

The study was made possible through the assistance of the RIRDP staff, and in particular Mr Ahmed Mohammed Azzani and Mr Zakaria Al Tashi.

Advice and information on the health and hygiene aspects of the study were generously given by the staff of the Rada' Mother and Child Health Clinic, Bengt Kristiansson and Gunnel Bågenholm of the the Swedish Save the Children Fund; Bob Grose, John Rogers, Ann Rogers, Dr Gebreab Barnabas and Dr Ann Hoskins of the British Organization for Community Development. None of these people are responsible for the views in this report.

Finally, we are very grateful to the families who received Ms Lackner as a guest in their houses and treated her with friendship and extreme generosity.

## 2 THE HOME

The study on domestic practices and household water use was carried out in the villages, 'Ajma, 'Asara, Hanakat al Mas'ud, Al Khadra, Wathba and Zakhem. All these villages have a privately-supplied electricity network, provided by a diesel generator purchased by a returned emigrant who sells electricity at a flat rate per appliance connected. It operates from nightfall till about 11 pm daily.

Two of the villages have a piped water-supply with house connections, two have a water-supply with central stand pipes, and two have no domestic water-supply system.

	Name of villages
Domestic water-supply with house connections	Al Khadra 'Ajma
Domestic water-supply without house connections	Hanakat al Mas'ud Zakhem
No domestic water-supply	'Asara Wathba

2.1 Housing

The houses in all the villages studied, like those in the rest of the Rada' area, are built of stone with mud 'cement' and natural plaster indoors. Floors and staircases are usually of packed mud and straw 'cement' and cleaned by brushing regularly, water is not suitable. The houses all contain a number of living/sleeping rooms, at least one per nuclear family, as well as one or more kitchens, store-rooms, and livestock sleeping quarters (usually the lowest floor of the house). All the houses have a washing room, which is also used as a toilet for urine. Four of the six houses studied also have a long-drop type toilet, consisting of a hole in the floor, for solid excreta which falls into a pit at the bottom of the house, either within the main walls or outside, and is collected when dry for use as agricultural fertilizer. Furthermore, all the houses have small internal water containers, filled by hand, in the bathroom or washing room.

The main domestic consumer goods to be found are televisions and radio-cassette sets: 5 of the 6 households studied have TV, of which one has colour TV; all households have a radio-cassette set. No household has a refrigerator, and only one a mixer. Village shops have refrigerators, sometimes gas or paraffin fuelled, for soft drinks, but the lack of refrigeration in the houses means that food conservation is problematic.

## 2.2 Household water use

Aspects of domestic life which involve the use of water are discussed extensively in Technical Note No. 10, but it may be worthwhile to summarize them here.

None of the villages visited has a garbage disposal or sanitation system. Drainage from the house runs along channels leading to a hole in the external wall of the house, from there a small pipe protrudes some 30 cm and used water just pours onto the street from the end of this pipe; the used water flows downhill and evaporates. In this respect, the fact that villages are built on the top of hills is an advantage. However, the increasing use of processed foods and other disposables means that the quantity of solid unrecyclable garbage in the village will eventually increase: this problem should be given consideration. Another problem for which a solution will have to be found is the predictable increased water use due to the introduction of a piped water-supply which will create more sanitary problems at the village level: a sanitation system for the disposal of used domestic water should be introduced if possible.

Water is used mainly in the kitchen, but also in the washing rooms. In these places there are usually small water containers (approximate capacity 120 l) from which water is scooped according to need.

The washing room is usually a small place, separated from a hall or staircase by a low wall (about 1 m high), and including stepping stones to stand or crouch on while washing, and a place to rest a water container. When it also has a toilet for solid excreta it is a complete room with a door, and usually larger than the average washing room. There is no special storage place for toilet articles and what is left there (sometimes soap or tooth paste) is usually deposited in one of the window openings.

A favourite time for washing is after lunch when people are preparing to relax for a few hours after the exertions of the morning. They then retire, wash partially, and usually change into clean clothes. Thorough body washing normally takes place once a week, preferably on Friday morning before the main weekly prayers. Daily ablutions before prayers sometimes take place in a "washing recess" in the main living room. In most houses visited, both men and women are meticulous about daily prayers.

Except in the two houses with piped water where laundry is done at the kitchen tap, laundry is washed near the water-supply; care is taken to ensure that the used water does not flow back into the water source. Laundry is done with soap powder which is used sparingly, and a minimum of water in a large tray-like dish with elevated sides. In most households laundry is done very frequently and efforts are made to achieve a high level of cleanliness, despite the shortage of water. Some women with small children wash clothes almost daily; if they have few or no small children laundry is done 2 or 3 times a week.

House-cleaning involves little water: when floors are not made of packed mud, they are sometimes washed, but otherwise they are swept daily; in the living rooms the floors are usually covered with lino which is swept and wiped with a wet cloth every day. Furnishing consists mainly of mattresses, blankets, and cushions of different shapes. These are all shaken regularly and blankets are often left to air in the sun for a few hours as well. Blankets are also sometimes washed.

### 3 IN AND AROUND THE KITCHEN

#### 3.1 The kitchen

There are no marked differences in the various kitchens visited as regards water-supply, except that the houses with piped water all have taps in the kitchen; all houses but one had a water tank in the kitchen. The kitchen is definitely the place where most water is used.

The kitchens are all of the typical Yemeni variety, with openings in the roof for smoke, tiny windows without any glass or shutters, and generally very dark, lacking lamps or any other source of light for work at night. There are no working surfaces other than the floor, nor shelves etc., only a few hooks for hanging mats.

The main item in every kitchen is the stone and pottery oven, or tannur, which usually includes at least 2 actual ovens, the mud cement linking them into a unit being used as a place for putting kitchen utensils on. All the kitchens visited have functioning tannurs; these are the main cookers used for making bread, 'asid, (a kind of stiff porridge), meat or chicken stew and broth, and heating water etc.

In 4 of the 6 houses, there are butagaz cookers though one of these was not working as the gaz container, which is extra large, was empty and, due to its size, difficult to have filled. One gaz cooker is a large one with an oven, which is used, but all the others are just double rings; in one house, as a security precaution for the children, the gaz bottle is kept in an unused tannur and kept covered so that it is definitely difficult to reach.

In two houses there are also supplementary, small, paraffin single-ring cookers, used for the preparation of vegetable sauces or other things which can be cooked fast. There is only one house with no other form of cooker than the tannur.

Food is systematically washed before cooking and women also wash their hands very frequently while working in the kitchen. Dishes are washed regularly with water scooped into a larger one which is used as a washing pan for smaller dishes and cutlery.

#### 3.2 Fuel

Fuel for cooking is a constant problem. A number of different fuels are used: paraffin is used in the small supplementary cookers as well as in paraffin lamps which are also usually found in each house should the electricity supply fail; butagaz is used in the gaz ovens.

The main fuel problem is the firewood, which is either collected or bought at great expense, used for the tannur. The collection of fuel is very time-consuming and can involve many hours of walking; however, purchasing it is very expensive. In the 'Asara household, where butagaz

burners and oven are used, a YR 1300 pick-up load of firewood lasted 4 to 6 weeks as it is only used for bread baking; in contrast, in another household where the tannur is the main cooker, a YR 120 camel load of firewood barely lasts 5 days. Butagaz refills cost YR 50 in the villages, but YR 40 in Rada' itself; one gas canister lasts up to three weeks when used constantly as the main fuel as in 'Asara, but much longer when a gas oven is not used, and it is a secondary fuel (see Figure 1).



Figure 1 - Camel load of firewood

Besides firewood, the main fuels used in the tannur are dry sticks collected for lighting the fire, and dung cakes which are manufactured at home with the dung of the family cow, as well as dried donkey droppings. The manufacture of dung cakes involves the collection of dung, keeping it in a special pit until there is enough, then mixing it with water and straw, forming the cakes and letting them dry over a period of days and then storing them (see Figure 2). Apart from being very time-consuming, this is also a way of using dung which deprives agriculture of a potential fertilizer, whereas the soil is in great need of such inputs.

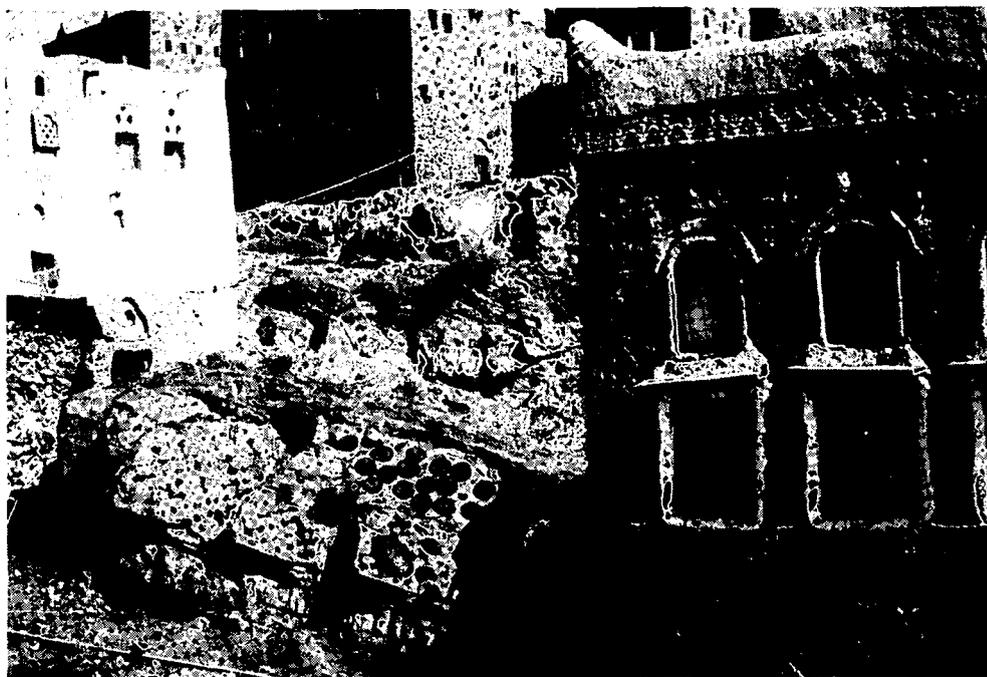


Figure 2 - Dung cakes drying

### 3.3 Food storage

All the houses studied have special store-rooms for staples, mainly grains, but spices and other lasting foods are also kept there. The method of food storage varies according to the nature of the grain, the quantities stored, and the layout of the storage room. In two houses, especially designed store-rooms are used with partitions, about 1 m high, separating the room into different sections allowing for loose storage of grains, mainly sorghum and local wheat.

Grains are also stored in tin, barrel-type containers, or in sacks; convenience seems to be the main criterion for deciding how grains are to be stored, rather than considerations of protection from losses due to rodents or insects. None of the people considered such points to be problems despite the fact that all the store-rooms have openings to the outside for ventilation which could be used by rodents and bugs to get to the grains.

### 3.4 Diet

The normal Yemeni diet is not particularly varied and most people eat the same thing everyday. In the households visited there is little variation in the diet, except for the use of vegetables which is greater in the less poor households than in others. Flat wheat bread, with or without local ghee, is the normal breakfast, followed some hours later by bread and tea, and smoked buttermilk in houses where there is a cow to produce the buttermilk. Lunch normally consists of a

sorghum 'asid, with meat or chicken broth and small amounts of meat or chicken, accompanied by bread and karath (a type of onion/leek). In the evening remnants from lunch and fresh bread and tea are normally consumed.

Of course other things can be added; it is customary to have either radish and/or hot chilli sauce to add to or replace the karath, and more meat and other grain dishes can be added if possible on ordinary days but certainly during feasts, when the number of dishes increases considerably.

On the whole this diet, when it includes substantial amounts of milk products and vegetables, is probably adequate, but the latter are not consumed in great quantities and often the only vegetables consumed are the karath, and what little onion or garlic goes into the meat broth. While this diet remains adequate as long as much local unrefined grain is used, the situation deteriorates at the dietary level as soon as imported refined grains become a dominant component.

Drinking-water is sometimes stored in special pottery jars to keep it cool, but otherwise people scoop water from the water tank with an old tin or other container and drink directly from it. There appears to be no attempt to drink only freshly drawn water, and water jars are replenished rather than emptied and refilled regularly.

## 4 CHILD CARE

Children in Yemen lead fairly undisciplined lives in their early years but they are rapidly integrated into the family labour pattern; this is particularly true of girls who are expected to help their mothers as soon as possible. Girls rarely go to school even if there is a school within reach as there are seldom women teachers, and families are reluctant to let their daughters mix with men unrelated to the family. Boys do usually go to school if there is a school in the village as was the case in three of the villages studied. Toys and educational playing is not normally part of children's lives, and children tend to be left to their own devices.

Although cleanliness is valued, on the whole children are dirty, and only their faces and hands are washed before and after meals.

4.1 Baby care

In the villages studied there were 4 babies under 18 months, two of whom were about 7 months and the other two about 18 months. Of the first two, one was breast-fed with a complement of powdered milk; the intention of the family was to wean it shortly on biscuits. The other baby was breast-fed with a complement of the lighter types of family food, e.g. diluted 'asid', vegetables, and rice.

The powdered milk was mixed with a greater degree of hygiene than has been seen in many cases: boiled water was stored in a thermos and fresh mixes prepared for each feed, but the bottle was washed in ordinary cold water.

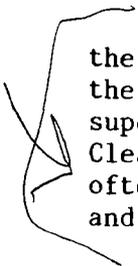
The two older babies were left to eat with the family during meals but given some encouragement and assistance; both were also given powdered milk in bottles, the usual Nido (Nestlé brand of powdered milk) preparation rather than preparations especially designed for small children.

The two smaller babies were washed daily in warm water, and one of them cleaned thoroughly and systematically as soon as it dirtied itself; their clothes were kept clean and one of them was also given much attention, including exercise of its arms and legs.

Observation was too brief to be conclusive concerning the weaning age, but it seems that foods other than milk start to be introduced at about 6 months of age, and breast-feeding when it takes place can continue for up to 2 years provided the mother has not become pregnant again, in which case breast-feeding ceases.

#### 4.2 Older children

As mentioned above, children are not given much attention in terms of home education: boys are left to play outside and girls are soon introduced to domestic tasks. When there are schools, boys usually go, as was the case for the school-age boys met on the study; they are encouraged to study at home, but without any great emphasis.



Children are expected to wash once a week thoroughly, as there is little water, and otherwise to wash their faces daily and their hands before and after meals; boys are washed by or under the supervision of their father, while the mother supervises the girls. Clean clothes are put on at least once a week, on Fridays, but more often when possible; this depends on the amount of clothes available and the time the mother has for washing them.

## 5 LIVESTOCK HUSBANDRY

Animals encountered in the study include cows, sheep, a camel, a goat and chickens. Every household has some type of livestock even if only chickens, but cows are the most important livestock, particularly as they are related to family welfare and diet.

One household has a milk goat provided by the RIRDP; this goat has been there for about 18 months; at the time of this study it produced just over a litre milk per day, while it consumed YR 3 worth of alfalfa; this milk was given to the children to drink and is the only fresh milk product they consume regularly, so despite the goat's low production, it pays an important contribution to the family diet, and this fact should be taken into consideration.

One household has a camel for working the fields. Although this animal requires approximately the same amount of time for feeding and daily care as a cow, its input into the family economy is limited to working the fields during the agricultural season and sometimes carrying things, but this is rare. Its food consumption is higher than that of a cow as it eats for as long, but much faster.

Some households have sheep which are usually herded by a village boy who is paid on a monthly basis per head. Three of the households in the study have sheep.

Most households have donkeys, which are not very highly regarded, but are the main beasts of burden, particularly for water carrying if this is done. Although people think little of their donkeys, they do not get rid of them once piped water is introduced, as donkeys are also very useful to carry loads to and from the fields. Four of the six households studied have donkeys. They are fed straw and left to go out and graze whatever they can find.

Chickens are also kept by most households; they are fed food remains and left to fend for themselves; their eggs are collected erratically and most chickens are pretty scraggy and give little impression of being worthwhile. Despite this, their price when sold for meat are exorbitant: a scraggy chicken with hardly any flesh sells for YR 60 for meat, even in a remote village where an imported frozen 1.2 kg chicken costs YR 20 (compared to the YR 15 it would cost in Rada').

All animals are kept indoors at night either in the lower storeys of the house or in special sheds; this is to keep them away from the cold at night as well as to protect them from attacks by wild animals.

The following discussion is limited to cows, which are the most important form of livestock in terms of the time they demand from their owners, as well as for the value of their produce.

### 5.1 Fodder

Apart from their main form of nourishment, alfalfa and sorghum stalks, cows are also fed food remains, usually bread or 'asid and vegetable remains, in their water, making a kind of soup; they drink 15-20 l a day. In the month prior to the sorghum harvest they are also fed fresh sorghum leaves.

Alfalfa is grown by most cow-owning households, as part of the rotation system in grain crops; this alfalfa is an essential ingredient of the cows' diet and is cut daily or every other day, a task which can take quite a lot of time if the alfalfa field is a long way from the house (see Figure 3). When there is insufficient alfalfa, it has to be purchased and this can be quite expensive, costing up to YR 15 per day. On the other hand, when grown, it can take over an hour every day to go to the fields and cut.

Sorghum stalks are the other main element of the cows' fodder and form the bulk of the animals' feed; they are harvested at the same time as the grains and kept and dried in a store-room; they must last for the year, as no other roughage is available.

### 5.2 Feeding

A walk through a Yemeni village gives the impression that there are many cows and that people are kept busy looking after them: during most of the day, in the morning and the afternoon, old women, men, and younger women can be seen sitting on the ground, in the sun or the shade depending on the season, with piles of sorghum stalks and bundles of alfalfa in front of them, usually surrounded by other people with whom they talk; they are feeding the family cow. People wrap alfalfa around pieces of sorghum stalks and these are then pushed into the cow's mouth regularly and systematically (see Figure 4).

This highly labour intensive process goes on for 1 to 2 hours in the morning, and for approximately another two hours in the afternoon. Altogether feeding cows--(or camels) is a full-time activity for one person for about  $3\frac{1}{2}$ -4 hours a day, and it is the only way in which these cows can be fed, ~~as they would not eat sorghum stalks unless wrapped in alfalfa, so the two have to be made up into bundles and pushed down the animals' throats constantly, or they spit it out again.~~ This work is not particularly tiring, but is very time-consuming and prevents the people who do it from being involved in any other activity.

### 5.3 Production

Cows are usually milked three times a day, once in the morning, once after lunch and once at sunset. This milking is done by hand by the female owner of the cow and can take up to 15 minutes for each milking. The milk production, however, is very low, on average three litres a day.



Figure 3 - Cutting alfalfa



Figure 4 - Feeding a cow

Milk is rarely drunk unprocessed, and usually it is collected throughout the day in a smoked gourd to be hand-churned in the gourd the next morning, a process which takes 40 minutes to an hour to separate it into butter and buttermilk. The smoked buttermilk is then drunk or used as a dip for bread during the morning break; often it is given to the children. Butter is kept in another small gourd or container, and left for a number of days, until the quantity is sufficient; it is then heated and made into ghee. Another product of the cows is their dung which is carefully collected for use in dung cakes for fuel in the kitchen.

Meat production is marginal; cows are not usually eaten. Female calves are brought up as future milk cows and are usually sold to another household, as keeping two cows is practically impossible given the labour input necessary for each one. Male calves, on the other hand, are usually kept for a few months and either slaughtered for a feast, or sold for slaughtering; very few bulls are kept.

#### 5.4 Cost/benefit

As has been seen above, cows are very important elements in the life of a Yemeni farming family; they are also extremely time-consuming. On an average day a cow requires full-time attention for 3 to 4 hours for feeding, up to another hour milking, and another hour for processing the milk into buttermilk and butter; furthermore some time is regularly needed for cleaning the stable and occasionally cleaning the cow itself.

Up to another hour can be spent collecting alfalfa from the fields. This means that altogether a cow can be estimated to require about 7 hours labour a day which, given its production of about 3 litres of milk and a small amount of dung, is hardly what one would call high productivity.

Despite this clearly uneconomical situation, people continue to have cows and cows are highly desirable, both because they give their owners status and because they provide highly valued and nutritious milk products.

## 6 CONCLUSIONS AND RECOMMENDATIONS

The life of a woman in rural Yemen can vary enormously depending on the number of children, their ages, her agricultural work-load, her livestock work-load, the number of other women or girls in the household able to help her, etc. In the course of the study, only one woman we met was clearly totally overworked: she has 7 young children, including an eldest daughter who is still too young to take up substantial responsibility in the house; she has neither sister nor sister-in-law, nor mother or mother-in-law to assist her, and has heavy responsibilities in agriculture as well as a cow to look after; moreover, she still manages to spend a small amount of time doing handicrafts. Her work-load is unbelievably heavy and it is obvious that she could not keep up with it and do everything adequately: a mere look at the time necessary for the different activities shows that she would need 50-hour days in order to do everything thoroughly: cooking, cleaning, looking after the children, looking after the cow, working in the fields, preparing buttermilk, etc.

On the other hand we also met women in small households, without children, who did absolutely no agricultural work and were basically bored as they only did cooking and cleaning, and did not know how to fill the many empty hours of the day.

On the whole, women spend about 3 hours a day cooking, one hour cleaning the house, anything from 4 to 7 hours working in feeding, milking, and butter-making if they have a cow, as well as sessions of 3 to 4 hours working in the fields if they are involved in agricultural labour. Child care is done in between all other activities and children are left to their own devices most of the time, although their eating, washing etc. are supervised. Laundry is done in batches taking 1 to 2 hours every few days according to circumstances, and most women also sometimes find the time (one wonders how) to do handicrafts, such as spinning, carpet weaving, basket making, and even sewing.

Fetching water can also be a fairly time and energy-consuming operation for the women who have to do it, since it requires a number of trips when the water is carried by bucket, but also a lot of loading and unloading even when donkeys are used for the carrying: an average minimum of 1 hour daily must be spent on it.

### 6.1 Kitchen-related conclusions and recommendations

Conditions in the kitchen are particularly unsatisfactory and have a strongly negative effect on women's health. The main problems are found in ventilation and fuel. At present the ventilation in all the kitchens visited is highly unsatisfactory: despite the openings in the roof and in the walls, the kitchens get totally smoked up to the extent that visibility is reduced to below one metre. This heavy smoke prevails during most of the cooking period and is due to the nature of the fuel. Given that this fuel is necessary for certain types of cooking at least - the very specific taste given to food through cooking in the

tannur is important, but only irreplaceable for baking bread; it is not essential for ordinary boiled or stewed foods - further investigations should be made to see whether improved ventilation techniques would make it possible to evacuate the smoke more efficiently.

Fuel is a serious problem in terms of time spent gathering it and the cost of purchasing firewood, etc. The labour involved in the manufacture of dung cakes is also not negligible. All these factors, added to the amount of smoke produced when using these fuels, make this type of cooking questionable.

The additional paraffin cookers are small and widely used, but in the long run it is likely that most cooking will be transferred to gas cookers, fuelled by purchased gas; given the current price of firewood it is already more economical to buy butagaz containers, despite the fact that their price increases with the distance from Rada'.

The traditional diet, though overbalanced towards staple starches, is still relatively satisfactory as unrefined grains are fairly nourishing, and the small amount of meat products used as supplement is also useful; the consumption of buttermilk and fats are also positively significant features in the diet, but the main deficiency appears to be in vegetable consumption. Meals are always accompanied either by karath or by white radish or salad, but are eaten in small quantities and considered more as decorative supplements than as integral parts of the meal.

+ water supply ✓

The difficulties involved in purchasing vegetables and the lack of them in the daily diet in the remoter areas are problems which can to some extent be dealt with through the development and encouragement of small vegetable gardens near houses. These can be grown by women when they have spare time, without involving too high an input of labour. The family could in this way obtain some vegetables in their diet without the difficulties involved in purchasing expensive vegetables in the local shop (where and when these are available) or having them brought from Rada', which can only be done by men as women would not venture alone to the town, and which does not usually happen on a daily basis.

## 6.2 Children

The most important thing which needs to be done concerning infant and small child care is the promotion of breast-feeding and the continuation of the struggle against the trend towards bottle-feeding with ordinary powdered milk, which is unsuitable for small children. This move away from breast-feeding is a very dangerous feature of child care in the Yemen Arab Republic, and the villages concerned have not avoided this unhealthy development. Given the absence of health centres and doctors in all the places visited it is imperative that the RIRD take a more active role in promoting breast-feeding; it should co-ordinate with other agencies in the country in order to work in this field.

Similar to the trend towards bottle-feeding with unsuitable powdered milks, there is a strong trend towards promoting weaning foods of which the nutritional value is close to nothing. In this respect, the traditional weaning practice of introducing diluted 'asid and other traditional foods are far more nourishing for the children and should be promoted while the artificial products which are widely available in the shops should be similarly discouraged. Here again the RIRDP can play an educational role and should treat this as a matter of urgency.

### 6.3 Health prospects

Health prospects in the villages visited are low given the total absence of any health facilities or education, and it is necessary that all kinds of health schemes be introduced, including widespread health education at the formal level in schools and informally by women among women in the homes. Similarly, preventive health and immunization schemes should be introduced both for children and for adults, and finally curative schemes should be made available.

As a first step in these directions, further efforts should be made to have female health extension officers attached to the RIRDP programme and to establish regular mobile health clinics in the villages, concentrating on mother and child health care. A hygiene education programme should also be implemented with emphasis on village sanitation and garbage disposal as well as including the usual family and house care components.

### 6.4 Livestock husbandry

As we have seen, livestock husbandry is currently run on a most uneconomical basis. The reasons for the low productivity of the local cows are not clear and could be related both to the species of animals and to a defective diet, or to a combination of these factors. The fact remains that on the whole families put in an input of up to 7 hours labour a day in order to obtain about 3 litres of milk, a highly expensive process. Improvements in cattle husbandry seem to be essential and the project Livestock Section could possibly contribute something in this field.

Despite this uneconomical aspect of cattle husbandry, the fact remains that buttermilk and ghee are the only fresh milk products available to the people in the villages and particularly to the children. It would, therefore, be unreasonable, as well as totally unrealistic, to suggest giving up cows. Cows, apart from producing milk, also give their owners status and are, therefore, highly regarded. However small, their production also means that families, and children in particular, consume at least a small amount of fresh dairy products daily and this is extremely important for their health.

One aspect of this process where improvement could be done is the churning of milk: at the moment women spend up to an hour a day hand churning milk in gourds suspended from a forked branch (see Figure 5)

by shaking rhythmically; this is exhausting and prevents them from doing anything else. A simple mechanical churn might be able to assist them and save them this labour if such a thing exists and is not powered by electricity or other unavailable energy.

In attempts to improve living conditions, chickens and their potentials should be considered. Given the high price of frozen chickens in villages and the outrageous price of local chickens, the supply of young broilers to village women appears sensible. Layers can make an even greater contribution to family diet by providing fresh eggs. It is however important to ensure that they are fed and looked after in such a way that they remain more productive than local chickens, and therefore evaluation of a chicken programme should be done over a period of time.

Similarly, the RIRD P's goat programme has until now proved unconvulsive as the goats' milk production has gradually decreased. A serious evaluation and comparison programme between goats and cows' milk production should be made, also establishing processing possibilities for goats' milk.



Fig. 5 - Churning buttermilk