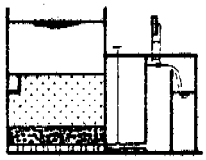
S.S.F.
Research and Demonstration
Project on
Slow Sand Filtration



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Occasional Paper
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IRC – Water and Sanitation Centre

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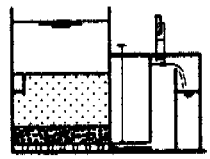

HEALTH EXTENSION IN PHASE TWO

OF THE SLOW SAND FILTRATION PROJECT

Alastair T. White

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HEALTH EXTENSION IN PHASE TWO OF THE SLOW SAND FILTRATION PROJECT

Contents

HEALTH EXTENSION IN PHASE TWO OF THE SLOW SAND FILTRATION PROJECT

1. Introduction

The following outline is intended to present some ideas as to what might be considered the objectives of community participation and health education in the slow sand filtration project. It will discuss some of the concepts involved, and set out approaches which might be adopted. It is to be regarded more as a floating of ideas and possibilities than as a set of specific recommendations for action, the more so as circumstances will differ greatly from one country to another.

The recent evidence that more rather than purer water is most important for health improvement, in the current circumstances of the majority of inhabitants of developing countries, underlines the necessity, when purer water is provided, for serious efforts to be made to improve sanitation and hygiene. Otherwise, it is clear, there will be little benefit from purification. The situation appears to be, at least in many places at present, that no demonstrable improvement in health results from the introduction of pure water supplies, because water becomes re-contaminated between the point of supply and the point of ingestion, and because poor sanitation and hygiene allow infection by other routes. It is equally clear that there is a strong need for experimentation with different approaches to the problems of improving sanitation and hygiene, including evaluative analysis of the experiments, since little is known about the conditions for success of different approaches.

No easy formula is likely to be found for improving sanitation and hygiene. It is not just a matter of building latrines, nor is it by any means enough to say that "education" is required, with the assumption that what people should do is known and that if they are told to do it in their own interests, they will. It is now increasingly recognised that dialogue is necessary, but dialogue is not a simple prescription either. There has been a tendency to idealise dialogue and community involvement. The present task is to assess their potential soberly and without ignoring the problems and difficulties.

2. The objectives of the extension programme

The experimental programme in slow sand filtration has the general aim of establishing and demonstrating to what extent it is a useful and valuable technique to be employed in rural water supply in developing countries. The technical virtues of slow sand filtration are known, but they must be realised by the actions of men, women and children in a social environment. The objectives of the extension programme are, (1) operational to facilitate the realization of the technical potential by fostering, as far as possible, a propitious social environment in the experimental communities[1] and by promoting particular actions and behaviour patterns in relation to water; and, (2) predictive to judge the extent to which similar results could be obtained in other places if the programme were extended to a large number of communities so that each one could not receive the same degree of special attention; in the course of fulfilling these primary objectives, it should also be possible, by (3) general learning to gain additional knowledge and experience of different approaches to the promotion of community development in relation to health, and in particular to the promotion of hygiene and sanitation.

A water supply system involving slow sand filtration must be constructed, operated and maintained, and used, and these three phases have different requirements for communication between external agencies and the community where the supply is to be located, in terms of the particular actions to be promoted. Construction will require (at least) a community decision and communal work; operation will require work by one or a few individuals with community support; hygienic use will require changes in personal behaviour by all members of the community. However, a propitious social environment, in terms of the prevalence of positive attitudes towards co-operation in general and the water supply system in particular, will have a

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1. It should not be forgotten that the social environment within the government agencies concerned is equally important: the positive motivation must exist at all levels to make it work.

common influence on all three phases. Thus, a convenient framework for detailing the operational objectives of the extension programme may be to divide them into these four aims:

1a To develop and maintain favourable attitudes throughout the community toward the water supply system being introduced, and toward co-operation to further it;[1] and the enhancement of a co-operative approach to community problems in general.

1b To promote community organisation to co-ordinate community efforts with respect to water supply, possibly including the use of communal labour in construction, and dealing with problems of finance.

1c To teach and supervise one or more operators in the operation and maintenance of the supply system; to settle the question of external and community support for them. One of themain virtues of slow sand filtration is simplicity of operation, but some skills are needed.

1d To ensure that the actions of community members:

i. Promote personal hygiene and sanitation.

ii. Specifically, preserve the purity of water from delivery point to ingestion: use of clean receptacles, etc.

iii. Facilitate easy access to the water supply by others, avoid waste of water and nuisance (mud, etc.) around delivery points, and cause no damage to the water system.

The predictive objective will be met largely, of course, by gauging the degree of success in fulfilling the operational objectives. This implies monitoring of fulfilment, which can be more or less formal. A more formal monitoring would involve measuring in quantitative terms the changes in attitudes toward the water supply, the success in organising communal labour, the efficiency of the operator, and the water-related actions of community members which it has been the operational aim to change. Whether such full-scale quantitative monitoring is considered desirable will depend on:

- its feasibility in terms of manpower resources, etc.
- the degree of confidence which could be placed in what would be largely an exercise in self-assessment by the extension workers

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1. but giving due weight and consideration to negative attitudes which may exist. Under some circumstances, some people may not benefit by the system. When this is so there is the need for it to be recognised and the appropriate action - modification or even abandonment of the project - to be taken.

- a judgement of its predictive value for a different situation in which the extension workers might have less time, less support, and perhaps less motivation or even less training to do the job than they have in the experimental project.

However, it may also be considered that the use of a monitoring instrument, while it may not yield fully reliable results as a predictor of success in an extended programme, is itself a valuable tool in feed-back and supervisory support for the operational objectives, as well as for general learning objectives.

The general learning objective will in the main be met by experience in pursuit of the operational and predictive objectives. Specific provision should be made for recording and communicating to relevant others the gains made in this area, but not separately for making them.

3. The general organisation of the extension programme

Specific forms of organisation of the programme will, of course, depend on the agencies available to perform the function, and their resources. The objectives require activities which have normally been undertaken by health education departments and others which have in some countries been the responsibility of community development or other agencies. It is desirable that just one agency should have responsibility for the extension programme, and that one individual should be responsible for its implementation in a particular community, since its elements must be coordinated to the highest degree and are, in fact, hardly separable in practice.

This implies that if a health education department is designated, and if its personnel have insufficient training and experience in community development, special attention must be given to selecting suitable staff members and preparing them for this part of the work (i.e. for stimulating cooperation and the organisation of construction work). Conversely, if a community development agency is designated, it will be necessary to ensure that the staff have sufficient knowledge of the transmission of water-related disease, and perhaps also of techniques of teaching.

The closest liaison will be necessary with the agency carrying out the technical and financial aspects of the programme (the water authority). At least three areas will need particular attention to ensure a fruitful collaboration between extension agency and water authority: (1) the question of finance: settling the amount and form of the community's obligations, particularly in money though also in materials and labour; (2) coordination of the community's labour in construction - including any community delivery of local materials - with the water authority's input of professional and skilled labour, construction machinery and tools; (3) the training and supervision of the operator.

In view of the need for such close liaison, it may be considered desirable for long-run objectives to create a permanent extension section within the water authority. Whatever solution is adopted, there should of course be as little duplication of functions as possible, e.g. in sanitary education and inspection.

It is, in any case, a question which need only be settled in connection with the expansion of a regular programme for water supply through community participation, rather than in the context of the experimental programme of slow sand filtration. Within the experimental programme, the need is to gain experience with liaison on these questions, to judge the desirability of different forms of organisation.

It is assumed, then, for the experimental programme itself, that an agency such as a health education department will be given the extension task. It is further assumed that a senior member of the department will be in charge of carrying it out, and will assign or have assigned from the department a certain number of staff (extension agents) which will depend on the number and dispersion of the experimental sites. It is essential that the department should make available sufficient transport and similar support, and assure adequate solutions to the problems which can cause low morale in rural field work, such as uncertainties over the payment of allowances or concern over accommodation or risks to personal health.

It would seem desirable for one extension agent to be responsible for a very small number - perhaps two or three - experimental sites located in close proximity to one another, with a phasing of activities such that the most intensive period of construction work is not occurring simultaneously at more than one site. If there is only one site in each large geographical area, the extension worker can work full time at this site, or might profitably work also at a comparable place in its vicinity but one without water purification: in this way the benefits of the approaches adopted to health extension could ideally be assessed in isolation from those of SSF and health extension taken together.

Similarly with supervision, a compromise must be made between the desirability of very close supervision, indeed direct involvement of supervisory personnel in each phase of the experimental programme, so that the supervisors become familiar with the problems at first hand, and the need to predict what will happen when such

supervisory support is not so readily at hand. One way of solving this problem would be to vary experimentally the amount of supervisory support given at different sites. Each extension agent should receive close supervisory support at the first site where construction is undertaken, but at other sites the frequency and length of regular visits might be deliberately varied; visits made to solve particular problems could not be varied in this way, but their number and type should be recorded.

4. Conceptualisation of the strategy at community level

We shall consider first how we might describe in greater detail what has to be achieved (the subject content of the extension programme); then examine what is meant, in terms of concrete strategy, by terms like "community participation", "self-reliance" and the like, and discuss the choice of an appropriate strategy of community participation in the present context; finally, we shall turn to the ways in which changing behaviour in relation to sanitation and hygiene might be approached conceptually. This section presents, then, the basis underlying the strategy suggested subsequently in section 5 in more detail.

i. The subject content of the extension programme

The four operational aims enumerated above (as objectives 1a - 1d) provide a framework for the subject content, thus:

a. Development of favourable attitudes toward the SSF programme, and enhancement of cooperation in general.

In some countries this need may be much more pressing than in others, where both the desirability of a pure water supply and the practice of community initiative and self-help are more accepted. But in most places, at least some sections of the population are likely to be skeptical or apathetic. In the enthusiasm to overcome skepticism and apathy there is a danger of exaggerating the virtues of water purification or overlooking sound reasons for skepticism. Keeping this in mind, the subject content implied may be detailed as:

- Creating awareness of the health hazards of a polluted water supply;
- presenting information on likely pollution of the existing supply;
- demonstrating, wherever possible, the pollution of the existing supply;
- stimulating community discussion of costs and benefits of the slow sand filtration system and the improved water supply as a whole;

- gaining an idea of where the costs borne by the community are likely to fall and whether for any section of the community they might outweigh benefits or result in a net gain much lower than for other sections;
- in such a case, endeavouring to ensure that costs are more fairly borne;
- keeping in touch with opinion in all sections of the community, and taking conciliatory or other appropriate action in case of disagreements.

b. Organisation of community inputs, especially communal labour, on the construction of the improved water supply.

In some countries it may be decided that communal labour will not be used for construction. Where it is difficult to coordinate communal labour so that it is available to work at the time that the water authority can allocate scarce skilled manpower and machines, it may be decided that it is cheaper to use paid labour. Before such a decision is taken, however, it is worth while considering, first, whether the presence of an extension agent could not sufficiently improve coordination, and second, whether sufficient account has been taken of the suitability of slow sand filtration systems for labour-intensive construction using predominantly unskilled labour. In another case community authorities may themselves consider paying a contractor for the work, or communal labour may simply not be habitual, with the monetisation of all transactions and the general demand for payment of wages for work done. It may be difficult to organise communal labour in a community divided into social classes with markedly different financial means. In such cases it may be worth while to consider the employment of labour by the community, for a wage (or through a food-for-work scheme), retaining as many as possible of the characteristics of a communal effort. In an extreme case, of course, this will not be possible, and the majority of workers engaged would be labourers from elsewhere (there may be implications for the siting of projects). Where communal labour or some variant of it is possible, however, it involves:

- Allocation of responsibilities to committees and then to individuals
- Establishing a time-table of detailed activities, in co-ordination with the water authority
- Solving practical problems arising during construction phase
- Ensuring that commitments taken on are fulfilled

Ideally, an extension agent should act only as initiator and observer, checking that these things have been done. In order to foster self-reliant capabilities in the future, (s)he should take on as little of the detailed co-ordination work as possible. In practice, a balance will have to be maintained between this goal and the smooth operation of the project, while the extension agent's availability will inevitably lead to active involvement in the day-to-day activities of organisation.

c. Arranging for a community member to be the operator of the water supply system

Slow sand filtration is technically well suited to operation by a community member with only short training. If this solution were not adopted, it would be a major failure - as it would be, of course, if the solution did not work. The arrangement involves:

- Reaching a decision on whether the operator should be a man or a woman, whether more than one person should be trained
- Selection of the individual(s)
- Settling the question of a salary or other form of recompense
- Arranging initial technical training
- Arranging on-the-job training during subsequent operation, especially the first time each kind of job has to be carried out (e.g. first removal of top layer; first replacement of sand)
- Ensuring that any difficulties arising over payment or conditions are solved

d. Health education: eliciting appropriate behaviour over use of water, hygiene, and sanitation

Health education could be conceptualised as fostering "knowledge, attitude, and practice" of the desired behaviour, but such an approach presupposes a one-way communication of a fully pre-determined message, as well as a model of the process

of adoption of behaviour patterns which may not be applicable. Alternatively, it might be conceptualised as "starting from existing knowledge and felt needs, engaging in dialogue, and developing critical consciousness", but there are dangers of over-estimating the relevance (to the particular problem in hand) of indigenous systems and concepts of medicine and disease, of underestimating the importance of simple ignorance about, for instance, the mechanisms of disease transmission, and of vagueness and uncertainty about the directions the dialogue should take.

Here, we shall conceptualise the need as being to:

i. - Build up, in consultation in the community, a detailed knowledge of the ways in which customary behaviour needs to be changed in the areas of water use, hygiene, and sanitation, by bringing together the expert's knowledge of the potential routes of disease transmission, with local persons' knowledge of local circumstances and behavioural habits

ii. - Spread, throughout the community, the knowledge that has been built up, i.e. improve the general understanding of the relevant processes of disease transmission and the ways it could be reduced

iii. - Increase each community member's motivation to reduce disease transmission in the ways suggested by the above discussion and pooling of knowledge

iv. - Facilitate such actions in any way feasible (e.g. by the provision of materials)

The major assumptions involved in this conceptualization are that it is feasible to achieve an improved understanding of disease transmission (the routes, if not the processes involved) in a largely unschooled population, and that improved understanding will motivate more effective changes in behaviour than can be achieved from recommendations or precepts not supported by improved understanding. It is possible that, for some communities at least, these assumptions are misconceived. The possibility may therefore be raised of testing them experimentally by adopting a different approach to health education at one or more of the experimental sites.

ii. Alternative meanings of the notion "community participation"

It has become increasingly clear that some degree of community involvement is essential to the success of water supply projects in rural areas of developing countries, as it is to grass-roots development in other sectors. Amid the general agreement on the desirability of community participation, there is a danger of over-estimating its potential as a technique to solve the problems which have been encountered in the past, for instance the problems of maintenance of the water supply.

In different countries, community participation has taken different forms. In particular, there is a wide variation in the intensity of involvement. Yet terms like "self-help", "self-reliance", even "endogenous development", as well as "participation" and "involvement" are often used almost interchangeably to refer to the different approaches which are adopted. There is therefore a need to clarify what may be meant when one of these terms is used.

The following list of meanings is arranged in approximate order of degree of involvement and can be seen as a kind of scale: the later steps are more difficult to achieve, but if they can be achieved, the potential effect in improving the living conditions in the communities concerned is greater.

Community participation may mean:

1.a. Consultation with community representatives or leaders, to ensure that the programme introduced by the outside agency is adapted to meet the needs of the community and to avoid difficulties in implementation.

1.b. Consultation with other members of the community, or specifically the poor, to ensure that the programme meets their needs.

2. A financial contribution by the community to construction.

3. Self-help projects in which a specific group of beneficiaries contribute labour (perhaps also materials), especially in construction work, to reduce financial costs. Large input from external agency.

4. Self-help projects in which the whole community collectively contributes labour (perhaps also materials), especially in construction work. There is also a large input from an external agency.

5. The training of one or a few community members to perform specialised tasks (e.g. as village health worker, or operator of a slow sand filtration system of water supply).

6. Mass action: collective work aimed directly at an environmental change of general benefit, e.g. to drain the waste water (distinguished from self-help by the relative unimportance of any input by an external agency).

7. Collective commitment to change in personal behaviour, and collective social pressure for the realisation of such changes, (e.g. construction and use of a latrine, frequent hand-washing with use of soap).

8. Self-reliance in the sense of the autonomous generation within the community of ideas and movements for the improvement of living conditions, as opposed to stimulation by outside agents. But the community may well have recourse to external agencies to help with implementation.

9. Self-reliance in the sense of using only the efforts of the community members themselves, not appealing to outsiders for help.

10. Self-reliance in the sense of using local materials and manpower directly, rather than collecting funds internally in order to purchase goods and services from outside; including increasing local capacities with this kind of self-reliance as a goal.

iii. Choosing a strategy of community participation

The strategy chosen will depend on part on the emphasis given to each of these three goals of community participation:

1) Ensuring that the specific actions are taken which will lead to successful implementation of the water supply project.

2) Fostering the growth of the community's capacity for self-reliant cooperation.

3) Ensuring that the interests of poorer sections of the population, and of women, are served; raising the level of collective self-consciousness among them, weakening their dependence on the more powerful.

The first of these goals implies no more than a 'minimal' strategy, concentrating on meeting in the easiest way the requirements of the job on hand. This will probably mean communicating mainly with a small group of community representatives and individuals active in organising the project, and responding to difficulties as they arise rather than looking for opportunities to expand the scope of participation.[1]

The second goal involves a 'maximal' strategy of actively and imaginatively seeking ways in which more community members can become involved in more ways, understand more fully the reasoning behind what they are asked to do, and participate more fully in making the minor decisions in implementation. It requires more time, effort, and skill on the part of the extension agent. The potential reward is that the community gains in knowledge and skills, and in individual and collective self-confidence; these gains may be more important than the completion of the particular project and outweigh the costs of the greater extension effort. There will be no pre-existing community demand for this approach to be adopted: the impetus must come from a commitment among the external agencies involved. In this respect, one can draw a parallel with preventive health activities as against curative care, for which there is a

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1 With this approach, even self-help labour will often be rejected as less practical or economic. The involvement of the community is seen as a means to achieve a water supply rather than an end in itself or a step toward other improvements.

greater demand.

The third goal may raise even more problems and difficulties, for the attempt to involve most actively those sections of the population, the poor and women, where they have been relegated to a subordinate role in the past, will meet with the incomprehension and very likely the hostility of the dominant groups. In some places it will simply be impossible to achieve much in this direction; much more thorough structural reforms will be needed to break the power of the dominant groups before anyone can act against their wishes. But in other cases it is possible for an extension agency to concentrate its efforts on the subordinate groups. In the case of a water supply system, it will not be a question of working exclusively with poorer sections of the population (as it might be with agricultural extension, for instance): the point is only to ensure that the project benefits and activity involve the poor as well as the rich. However, there is a case for trying to work mainly with women, since they are the main carriers and users of water in most communities. The attempt to do so will undoubtedly meet with great problems, since women are generally regarded as incompetent to deal with a 'modern' technology introduced from outside the community, or even to deal with formal relationships with outsiders on behalf of the community. And women, largely, accept exclusion from these roles. A water project may, however, offer a 'handle' for confronting such exclusions, as it can be argued that it is a matter of particular concern to women.

If the purpose were only to ensure the smooth operation of the slow sand filter and water supply, a 'minimal' strategy of community participation would probably be chosen as having the greatest prospect of success in achieving that objective with relatively little administrative effort. Such a 'minimal' strategy would probably include a community contribution to construction, in labour and/or money, but little else.

The difficulties involved in any attempt to achieve a greater range or depth of community participation should certainly not be minimised. However unless it is achieved it is extremely

unlikely that health benefits will flow from the installation of the slow sand filter, to any measurable extent. Health benefits will result only if there is a substantial change in standards of hygiene and sanitation, and such a change is unlikely to be brought about without extensive community participation. An active involvement with the planning, construction and operation of the slow sand filter and water supply will be complementary to the efforts being made to improve hygiene and sanitation, in the sense that the more interest and involvement people have in either area, the more receptive they are likely to be to suggestions that they become involved in the other - at least, one would expect this to be so if the connexion between the two is well understood.

It is important not to over-estimate the extent to which communities can become self-reliant, particularly in so far as knowledge and ideas about what changes are necessary are concerned. Typically, a community's stock of technical knowledge is limited. Community members are aware of this, and reasonably assume that the answer is to bring to the community what exists in larger and more prestigious communities: there is little basis for attempting to solve the community's problems in original and self-reliant ways: outside advice will be necessary to point out how this may be possible, or indeed to teach the necessary knowledge and skills.

It is also important to recognise that internal differences of interest within communities may make the pursuit of common goals very difficult.

iv. The conceptual approach to changing behaviour

It is reasonable to classify the reasons why people may adopt a change in behaviour relevant to health, as follows:

1) they understand, more or less well, the process by which change is likely to have a positive effect. Motivation is directly in terms of the health goal, and is self-directed.

2) They accept authoritative assurances that it will have a good effect for health. The acceptance may be hedged with skepticism, and it may be short-lived.

3) A reference group of persons of higher or similar status adopt the change, so that it is endorsed by group judgment.

4) Informal social rewards and sanctions may play a role: they may seek admiration for innovating in directions others will follow, or fear to incur a low opinion, negative comments, etc. by omitting to do what has become conventional.

5) Formal sanctions (punishments, fines, etc.) are threatened against those who fail to perform the action. This may, of course, apply to children within a family, or others in subordinate positions, while the motivation of the parent can be classified in another category.

These reasons are not, of course, mutually exclusive, and they do shade into one another. But they provide a basis for thinking about the ways in which behaviour can be influenced.

The less publicly visible - more private - the behaviour, the less the latter reasons (3, 4, 5) can apply, and the more emphasis must be put on the development of understanding. This is probably why many programmes aimed at the improvement of sanitation have concentrated on the construction of latrines (visible), neglecting for instance the washing of hands (private).

The use of authoritative assurances (2), which is indicated when the behaviour is highly specific (while the reasoning concerning the need is complex) (e.g. taking a particular medicine), is less useful when the behaviour cannot be specified in such detail (hygiene requires the exercise of judgment, therefore understanding).

A private activity can be turned into a more public one by public discussion or, in particular, by any kind of check-up or evaluation in which people are asked whether they have adopted a certain practice. This makes it impossible to avoid observer bias in an evaluation aiming to compare the effectiveness of different approaches to health education, in so far as the private areas of behaviour are concerned.

Another way in which private behaviour can be made more subject to change through social rewards and sanctions, is by linking it with a visible change. For instance, handwashing is generally a private activity. But increased handwashing may be achieved through a physical change, such as the installation of a tap in a place convenient for washing on return from a latrine, or by encouraging the use - visible for others to see - of a bowl and soap.

In this example there is also, of course, an element of facilitation: any policy to persuade people to change their behaviour should provide, wherever possible, for making it easier for them to do so.

With this conceptual approach, then, the problems of achieving appropriate behaviour in relation to water use, hygiene, and sanitation become:

First, establishing, in consultation with local people, what are the appropriate behavioural changes.

Then, establishing, again in consultation with local people, which of these changes may be susceptible to feasible efforts to:

a - increase understanding by detailed explanation, demonstration, etc.

b - have authoritative statements made (by various authoritative figures, from the extension agent or other health personnel, to community leaders, religious leaders or traditional practitioners, or perhaps by bringing in a cinema van with films, using the authority of a modern medium)

c - have a group of persons adopt the innovation in a publicly visible way, or gain group commitment to do so and follow it through

d - check up by asking people about their behaviour, or otherwise manipulate informal rewards and sanctions

e - impose rules for public behaviour, e.g. acts which cause public nuisance

f - facilitate changes: helping with obtaining materials, mutual aid in construction of latrines, etc. It may well be necessary to start with design of an appropriate latrine for local conditions: cheap to construct, but effective and odourless, etc.

5. Methods and techniques for a strategy of community involvement

i. Initial contact and the putting of proposals

It is assumed that there will be an early meeting with community authorities, at which the plans for the water supply will be put and discussed. It is important that this meeting should leave no doubt about the extent of the water authority's commitment: whatever costs will fall upon the community should be explained then. This implies that the policy on the division of costs has already been decided. It is also necessary that the first meeting should raise, if not decide upon, other basic questions such as the particular form of financing, the use of communal labour in construction, and whether house connections are envisaged for some or all households, or only public standpipes. If the water authority is not to take responsibility for payment of the operator, then this difficult question must be settled.

The extension agent should then begin gathering baseline information (see below) and at the same time make informal contacts in all sections of the community, engaging in dialogue concerning the proposed project, and making sure that the whole population is well informed about the proposal including its benefits and what they will be expected to contribute. At the same time he or she will be making contact with organisations and key individuals (see above: "Elements of a maximal strategy for community participation") and should perhaps[1] gather a group of appropriate persons, formally as a committee on sanitation or perhaps informally (avoiding questions of status rivalry with other committees). This committee or group will be consultative in the first instance: it may or may not take on an active role later. It will be the group in which expert knowledge and local knowledge are pooled to produce ideas on necessary changes in behaviour and how to bring them about. It will probably be best to include a schoolteacher or similar person with formal education, but also to include persons from less advantaged sections of the population and, where possible, women. If it is drawn only from an upper stratum, it is likely in many communities merely to condemn rather than to understand the behaviour of the poorer classes.

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1 The alternative is to involve the whole community in this way. This will be more feasible in small villages, but also depends on the enthusiasm which can be generated.

See Checklist No. 3 for starting points for discussion with the group.

ii. Gathering baseline information

There must always be a compromise between the desirability of thorough knowledge about a community before an attempt is made to influence it, and the need to get on with necessary changes. It is not usually practical to take the advice of a prominent anthropologist who says "It is therefore necessary, not only before implementing a scheme, but before creating it, to begin with a careful study of the population on which one wishes to act, to know its culture in all its details and in all sectors...." (Roger Bastide, Applied Anthropology, London: Croom Helm 1973, p.121). Indeed, it can also be argued that knowledge of a community's capacity to change can only be confidently established in the process of introducing change. However, some pitfalls may be avoided by information which allows the anticipation of certain difficulties. In particular, information about whether the changes which seem necessary to the outsider are seen as necessary within the community.

The topics on which baseline information about a community should be gathered, then, are those which are relevant to the acceptance of the programme and to possible constraints upon its implementation; also data on the institutions and organisations which may be enlisted to help with implementation.

On acceptance of the programme

Have community representatives taken an initiative to request improved water? If yes:

(1) Consult with them on whether the SSF system proposed meets with their needs:
   (a) Are they satisfied that it is sufficiently 'modern'?
   (b) Are they satisfied that the commitments, financial and other, that they will be required to make, will not be seen as too big a burden by comparison with a

lower-level improvement which, it should be pointed out, will still meet many health goals?

(2) Consult informally with community members of all strata and both sexes - in some situations this may need to be done by 2 different extension workers - discussing the technical options, their virtues and their requirements, and ascertaining whether a broad consensus already exists or is likely to be formed given existing attitudes. Elicit, in particular, attitudes of poorer strata towards paying a financial contribution and toward performing communal work in the construction phase: would they prefer to be left with more time to work on their own farms or other occupations? Do they fear that the water supply will reach or benefit only the dominant group?

If no request has come on community initiative, but the site has been chosen by project personnel on technical grounds:

(1) Establish level of satisfaction with existing water source(s). A survey is needed to establish satisfaction, in each section of the community, by geographical location, social group, and sex, with each aspect of the existing supply: accessibility, taste, appearance, and whether it is associated with disease(s). (Suggestions for survey questions are given in an Appendix.)

(2) Establish as far as technically feasible the objective level of pollution of the existing supply.

(3) Establish whether there are any features of the manner in which water is drawn from the existing source, such as the social gathering involved, which are valued and which might be lost with a reticulated supply; e.g. women may bathe at a secluded water source, but could not do so at a tap in the village.

On constraints to implementation: cooperativeness:

- What forms does cooperation already take in the community?
- What are the constraints against increased cooperation?

Every community has some interest in making a favourable impression on outsiders. This is especially true of the community authorities and dominant individuals and groups, and is most clearly expressed at formal meetings with outsiders. The more formal the enquiry, the more it is made to community representatives without realistic possibility of cross-checking with others, and the more it is made with other members of the community listening, the more likely the reply will over-estimate the degree of cooperation likely. The following approaches may circumvent the difficulty:

a) Asking not about the potential for cooperation, but about actual projects already carried out. Even here there is a danger of exaggeration, of attributing more to communal cooperation and less to outside help.

b) Establishing rapport with individuals from various groups in the community, including non-dominant groups, and asking them informally and privately about the problems of cooperation. Tact is, of course, essential.

c) Asking disinterested persons who may have objective knowledge on the question, such as schoolteachers who are not indigenous to the community. There is some danger, however, of giving undue weight to a subjective judgment which may not in fact be well founded.

d) Use of projective techniques such as the structured scenario, in which a sample of community members is asked to comment on a hypothetical situation with a theme of cooperation. Examples are given in Appendix.

On relevant features of the social structure

In many countries, the main threat to the success of the programme is likely to come from sharp differences of interest between different sections of the community. For instance, domination by one group may be so extreme that the implementation of the project will necessarily be entirely on that group's terms, with no possibility of developing self-reliant capabilities among other groups whom it would be appropriate to call the "oppressed". In another case, one group may still be powerful and politically dominant, but other groups may be more or less actively disaffected. Although a water supply project may be designed to benefit all sections of the population equally, in such circumstances it will be seen in the community largely in terms of the sectional advantages it may offer - there will be distrust and cooperation will be difficult to organise. The range of possible situations will differ in each country: it may be possible for a typology of half a dozen typical community social structures to be drawn up for each country, in terms of the types of groups or individuals holding power and the basis on which that power rests, the extent of challenge and whether it is factional or class-based, etc. A different way of approaching the fostering of cooperation, even for such a politically-neutral purpose as a water supply project, may need to be developed for each type.[1] A typology might, at least, help the extension agent to formulate a description of the informal social structure in a community where he is working. Such a description should be regarded as necessary baseline information.

The typology might be constructed according to the answers to questions about the communities such as the following:

- Is power effectively concentrated in a single group, or can it be said that any member of the community can, without reprisal, exercise a full voice in community affairs?

- If it is concentrated, is it effectively monopolised by one ethnic group, clan, or caste? Are they in a majority or a

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1 e.g. If there is considerable resentment against the power held by a dominant group, such a group's support for behaviour changes which must be voluntary (private behaviour) may be useless or have a negative effect. The extension agent will have to work more with opinion leaders in each section of the population.

minority?

- If power is concentrated, is it largely on the basis of greater wealth, rather than, say, simply a matter of traditional position or perhaps religious authority?

- Is power based on the threat of physical reprisal if challenged?

- Is there factional conflict? For example are the more influential and wealthier members of the community divided into two or more groups vying for political dominance, each with clients among poorer sections of the population?

- Is there conflict along class lines? For example, is there an open challenge by poorer sections of the community to the political power of the wealthier? If so, has it been successful in terms of taking control of local authority institutions?

- Is power, on the contrary, total? For example, exercised by a large landowner over the community living on his estate?

Sometimes a very large proportion of an area's communities might fall into just one category defined as above, and it will be convenient and useful to make further distinctions, e.g. in an African socity where traditional position remains important, it will be necessary to establish the extent to which the chief's (and elders') authority is disputed by sections of the community, or the weight it carries in face of apathy, even without being openly disputed. Or, where power is highly concentrated and the powerless present no form of challenge, it may be important to establish whether one aspect of the dominance which is exercised is control over the flow of information from the outside. In such a situation, an apparently neutral innovation such as SSF may be perceived as a potential threat by the power-holding group, who may put obstacles in the way of direct contact and dialogue with other sections of the population.

It is necessary, of course, to pay particular attention to those socio-economic divisions which might make some members of the community look on the water project with less favour than others. A checklist might be prepared, with such items as the following:

- Are there any people (men, women, or children) who are currently paid to fetch or cart water for others? If so, their predicament should be discussed both with them and with village representatives (a water carrier might, for instance, have a good claim for consideration as the operator of the new supply).

- Are there people with private wells who sell their water?

- Are there people whose incomes are so low that they will be hard pressed or unwilling to pay the charge envisaged for installation or for subsequent supply? Frequently, the fact is overlooked (by those who expect ready cooperation for communal ends) that an equal contribution or charge represents a greater proportion of a poorer family's income, and therefore a greater real burden - a situation which may well lead to apathy. If the community produces a cash crop, particularly if it is handled through a single buying agency, it may be possible for the cash contributions to come from a fund established by a levy on the cash crop, a form of progressive taxation. An alternative way of solving the problem of apathy, namely to found a self-help water association providing water only to members, would appear to solve it only by ignoring the needs of the poor (though this may not be true in all cases when the full circumstances are taken into account).

- Is there any possibility that the water might be appropriated by the powerful sections of the community just for themselves (e.g. for their farms, not leaving sufficient to reach the homes of poorer people)?

On the points where water pollution currently occurs

In Dr Feacham's companion document, 'Public Health Studies in Phase Two of the Slow Sand Filtration Project', methods of

water analysis are described and an illustration given (Figure 7) of pollution occurring between collection and use. If such data are obtained, they would clearly be most useful in health extension work in the community. However, for this purpose it would be desirable to pinpoint where the pollution occurs more exactly, by taking samples at various sub-stages of the collection and storage process and even, if observer bias can be avoided, in cups or other containers used for drinking. The main problem is one of observer bias, i.e. the likelihood that people will make a special effort to clean their utensils when they know measurements will be taken. The extension agent should pay special attention to minimising such bias if possible, and to noting down when it has clearly not been possible to avoid it.

The differences between the measurements from different households' containers might be a basis for recommending particular practices. But it is essential not to give offence by publicly identifying those whose water vessels are most polluted.

The health education purposes will be best served if people are shown as much as possible how the analysis is carried out. At the least, full explanations should be given from the time of sampling, and the average results should be shown and discussed. At best, it may be possible to arrange for schoolchildren or others to learn the procedures and carry out analyses themselves.

iii. Media and techniques in health and sanitation education

The formation of a consultative group or committee on sanitation in the community, by the extension agent (see 5.i. above), and the discussion by that group of the behavioral changes necessary to improve hygiene and health, would in itself be a concentrated form of health education for the group involved. The extension agent should then invite the same group to discuss the ways in which the rest of the community might be brought to understand the need for the necessary changes, and carry them out.

The group, with the extension worker, will consider and plan the use of some of the following educational methods:

(1) - Group teaching: groups of manageable size assembled for a talk given by the extension agent, supplemented by statements from other authority figures if this is found convenient and desirable.[1] In a small village, groups might be assemblies of all villagers, either called for this purpose alone or taking advantage of another reason for gathering, such as communal labour (addressed during a rest period). Otherwise, groups might be assembled consisting of voluntary organisations such as churches; or within wards of a large village or small town, with an effort made to get together a high proportion of the ward's inhabitants. Cooperation of schoolteachers will be sought for what can be a more thorough teaching of children at school, and active involvement of schoolchildren in all activities.

(2) - Group discussion: similar to above, but with generally smaller groups to encourage more dialogue. Dialogue and discussion are important at every level: people are, for instance, more likely to go on thinking about the subject matter if they have joined in than if they have listened passively, especially to just one speaker. For most people to be able to join in, groups have to be small. It is probably best to use both large and small groups, so that the learning is reinforced. It may be possible to hold meetings of groups of, say, 3 to 6 contiguous households, with all members, men and women, gathering in a central spot.

(3) - Individual teaching and dialogue: the extension agent, and perhaps the members of the informal group collaborating with him (say in groups of two or three persons) might go to individual houses to encourage the adoption of changes. This should be particularly useful as a way of finding out what doubts and difficulties constitute constraints on adoption; it would also be an informal way of bringing some mild pressure to bear - but for this very reason it is important that it should

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1. It is important to avoid disappointing meetings, e.g. promising an outside speaker who does not arrive. It is unrealistic to expect groups to hold meetings at which knowledge acquired by some members is passed on to others.

not be done in such a way as to cause resentment.

(4) - Visits to model sites, e.g. of slow sand filtration in operation in a different village; or of various sanitary improvements such as latrines of a particular design (one, of course, which those to whom it is shown will be able to construct or can afford to buy).

(5) - Practical demonstration of how something can be done, such as making latrine lids from local materials.

(6) - Organisation of a community self-survey. This is, of course, a more ambitious method, but it has proved valuable in widely differing communities as a way of enhancing community concern for health, hygiene and sanitation. With the collaboration of the extension agent, a group or groups within the community draw up a set of questions to ask in each household. School classes might very well be involved. Questions might cover facilities, behaviour, and perhaps beliefs or attitudes in the relevant areas; it might even be considered worth while to try to demonstrate a connection between the adoption of a certain practice and a lower incidence of, say, diarrhoea. However, the aim is educational, not scientific: people should be involved as much as possible in discussing what questions to ask.

Within the teaching or discussion sessions, there will probably be a place for techniques of enlivening presentation, involving people in a more memorable experience, or just aiding explanation, including:

(1) demonstrating the existence of microscopic organisms by use of a microscope. This has been found particularly useful. It may be important to make sure that the nature of the magnification is well understood, perhaps with the use of lenses with intermediate degrees of magnification.

(2) Visual aids including:

2.i. flip charts, useful in making a systematic presentation of points to be remembered;

2.ii. flannelgraphs, which are more adaptable to audience participation. It has been found that there is often considerable enjoyment in moving the figures around to make the characters perform such activities as, for example, washing their hands.

2.iii. Blackboard and chalk, the most adaptable aid for planning an agreed strategy between a number of people present, since alterations can easily be made, but the final result is clearer than in a purely verbal decision.

2.iv. Videotape or film, which carries the authority of 'modern' technology. If they are shown, the impact is increased by follow-up activities, ranging from discussion to a decision to take a practical action. One successful idea following the showing of a videotape on schistosomiasis transmission, in Surinam, was to organise an art contest for children in which they created their own versions of the lesson carried by the videotape.

(3) Performances, e.g. dance-dramas with a message, forms which are locally traditional, perhaps to be done by schoolchildren. Performances might be staged, for instance, in celebrations to mark the start, completion, and opening of the SSF project. There is a general value in using local artistic tradition of whatever forms, and encouraging participation by community members using these forms to recreate the message which is to be reinforced. It may be traditional to tell a story in dance or song, or by a series of painted pictures. Opportunities can be taken to invest these forms with a new content, even within original settings such as festivals. Puppet shows have also been successfully used in conveying health-related messages in village communities.

It is, however, important in the author's view that concern with technical aids should not be allowed to take up much time or effort at any level. It is face to face communication which is essential, and the more attention the extension agent gives to

technical aids, the less will be available for simple communication. The medium, it might be said, can get in the way of the message.[1] This is particularly true of visual aids such as films when the life-style of the characters portrayed differs from that of the community where it is shown - whether it portrays a community with a different cultural tradition or simply one with more financial resources at its disposal. A similar thing can happen even with still, drawn or printed pictures. At the level of planning and management of extension work, concern with the procurement of technical aids can consume time which would be more profitably spent setting up a programme with whatever means are to hand. Even at the level of conceptualising a programme, it may be necessary to resist a temptation to concentrate attention on technical aids, arising perhaps from the fact that this is an area of technical competence of the health educator. At all levels, then, technical aids carry a danger of bias against that "dialogue among equals" which is necessary at community level.

If there is a feeling that the extension agent must appear of high status in order to command respect, and that one expression of high status is modern equipment, it may be possible to meet the need (if a real one) in other ways, such as the provision of good transport for the extension agent; or, perhaps, in a community without electricity, the use of generator-powered electric light for conducting meetings in the evening, thus at the same time attracting a large crowd.

Techniques relevant to particular points which must be conveyed

1. Understanding of the role of water pollution in the causation of sickness:

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1. Microscopes are an exception because they add vivid evidence.

(a) Group teaching and discussion will elaborate on the association which is probably already made by community members between faeces (at least those of others) and the danger of disease, by presenting the facts that:

- living things too small to see which cause particular diseases ("germs") are present in faeces and remain alive when separated from them and carried or washed into streams or other water bodies
- if they are then drunk in the water, they multiply like other living things, only faster, and that is how they can become strong enough to cause disease
- they are in even the faeces of healthy people and babies
- they are completely stopped in the top layer of the slow sand filter (it may not be necessary to explain to everybody that this happens biologically)
- animal faeces are less dangerous because they have largely different diseases, but are still dangerous.

(b) Tactful enquiry will be made as to whether there is any contradiction between these ideas and other ideas which people hold in the community.[1] If such contradictions are found, there are two possible ways of confronting the problem:

(i) to find an argument that there is, after all, no incompatibility. For instance, if water from a stream is identified with, or regarded as a gift of, a deity or spirit of that stream, and hence should not be tampered with by boiling or even filtering as this would upset the deity, it may be expedient to argue that the water is pure when it originates in the stream, but that people unfortunately pollute the stream so that filtering out the pollutants is a way of purifying the stream, and may even be regarded as honouring the deity.

(ii) To oppose the traditional idea. This might be essential if no argument of the former type can be found; it carries, of course, the danger of a

1. It should not be assumed that health education is primarily a question of breaking down traditional views.

negative reaction by some or all of the people. It is necessary, then, to ascertain first approximately what proportion of the population might react negatively and to what degree. It may then be desirable to discuss the question with leaders of traditional religion, or indigenous medical practitioners, perhaps gaining their backing for a redefinition of the traditional ideology. Traditional ideas are not necessarily immutable: they evolved in step with group life and were adapted to it.

(c) The results of any tests of the quality of the water should be carefully and fully explained, preferably with demonstration of the methods by which the results were obtained - e.g. demonstrating how cultures of organisms grow in samples taken from the source but not in samples taken from other, purified, water. This is a reason for water analysis to be carried out locally if at all possible.

2. Understanding of the need to protect water from faecal pollution between collection and use:

(a) Practical demonstration of the ways in which water can be contaminated: from unclean containers, from hands or fingers coming in contact with water while carrying containers, etc. At the same time, the extension agent can discuss with people and demonstrate how the same actions of carrying and handling water can be carried out without polluting it, how containers can be cleaned, etc. This should be carefully demonstrated also to children as carriers.

(b) Discussion with the community of the analyses of water quality made not only for samples taken from the source, and stages of supply up to the collection point, but also samples taken from water at each stage from collection to final use (see above, p.27). Samples taken should be labelled and analysed to permit, as far as possible, comparison between households with

different practices and/or comparison between average values before and after efforts have been made to improve the practices. This is a matter of evaluation of the efforts being made, but it can also be used immediately to inform the community members about where pollution is occurring. But note: there may be problems of coordination between the extension agent and those who have the technical job of water quality analysis.

(c) It may be found desirable to make provision, perhaps through a bulk purchase for every household in the community, of water containers of a design which does not lead to pollution but that retains the other advantages for the local population of the containers they currently use. Such a step, however, would need to be preceded by very thorough discussion by the users concerning the merits of different containers, and might be unrealistic (at least without a subsidy) if the suggested containers are expensive relative to local incomes. In some cases it may be possible to consider local craft manufacture or improvisation. Improvised carts may encourage the transport of more water from standpipes to houses, as compared with the direct human carrying which may have been customary or necessary when water was fetched by footpath. This might be a valuable gain, given the importance for health of the quantity of water used. It is an implication of some recent studies that people do not necessarily use more water when it is piped nearer to their houses, unless the supply is brought within the compound, but they might do so if the method of bringing water were changed.

3. Personal hygiene in disease prevention.

(a) Group discussion and dialogue are particularly important as has already been stressed. There are likely to be problems of reticence, or unwillingness to discuss what are seen as 'shameful' topics. Tact is required: the extension agent must broach such topics confidently but must judge when it would cause offence to push further. In group discussions, people should not, on sensitive topics, be asked about their own behaviour, but about what is

generally done.

(b) A doctor practising in the district might be asked if there are any particular aspects of hygiene in the area which require emphasis: there might be points which a doctor is in a good position to observe, but which might not come out in discussions in the community.

(c) The use of soap for washing hands should be emphasised in teaching and discussions. (It is important that soap should be available. If this is a problem, efforts should be made to ensure supplies.)

(d) If construction of latrines is decided upon, it is absolutely essential that the design should be fully discussed among those who will build and use them, otherwise they are likely to be left unused even if constructed. Reasons for non-use include nuisance from odour, and designs using seats where the habitual position for defecation is squatting. Normally, also, a design must be made for local, low-cost, production.

4. Technical aspects of slow sand filtration.

It would be highly desirable if a number of community members, apart from the operator, could gain a good understanding - similar to that the operator needs - of the working of the slow sand filtration system. The operator would not, then, be in a monopolistic position, and there would be likely advantages in terms of the interest taken by the community in the upkeep of the system.

(a) For this purpose the extension agent should gather a group of villagers to whom explanations of the technical details will be given: if possible, first on a visit to a working SSF project elsewhere; and in any case, at appropriate points in the course of construction and initial operation. Explanations should as far as possible be given as a practical demonstration on site.

(b) Technical personnel of the agency should be consulted as to the most likely or frequent causes of damage or misuse of the SSF system, and particular efforts directed at ensuring a full understanding of the requirements of the system on these points.

(c) To the extent that is possible, the community should be consulted on the proposed technology. At the least, the water agency should be open to comments and suggestions, which should be elicited in particular from the group mentioned at (a), and conveyed to the agency by the extension agent.

5. Need to avoid waste of water and nuisance around collection points.

There are two kinds of solution to problems of water waste and of formation of mud puddles, etc.: to persuade people to avoid creating the problem, using the water only in the way intended; and to construct or adapt the physical facilities in such a way that the problem cannot arise (e.g. more elaborate drainage; types of taps which cannot be left running). Which solution, or combination of the two, should be adopted will depend on local circumstances and must be discussed in the community. Allowance should be made for a possible need to provide extra cement or other materials for a modification of the physical lay-out at collection points in the light of experience.

Misuse leading to the creation of such problems may well be a matter of children's behaviour, and it will be appropriate to discuss it with schoolteachers. If children, by active involvement in construction or with other aspects of extension work such as a community self-survey, have been imbued with some commitment toward the water project, they may feel a share of responsibility for it and be less likely to misuse it in their role as water collectors.

iv. Mobilisation of community efforts

There have been a number of difficulties with self-help projects for water supply construction. Sometimes they have been found to entail greater costs for water supply authorities, as well as adding to the administrative burden. Usually, however, the difficulties can be traced to inappropriate ways in which the co-operation with communities has been approached. There has usually been insufficient mutual understanding between project authority

and community. In the present SSF project, there is an opportunity for more extensive communication, leading to improved understanding, through the extension component. The kinds of difficulties which may arise, and which must be tackled primarily by the extension agent, are discussed below.

a) Difficulties arising from excessive expectations or demands for communal labour, or over-enthusiasm. Administrators sometimes fail to appreciate that it may not be in the real interest of poorer people to spend time, effort, or particularly money on an 'improvement' which does not benefit them very much. It may well be too easy, on occasion, to obtain community assent for an undertaking - villagers may be anxious to please an administrator (or even a traditional leader) who has high status and power relative to themselves, and at the time of giving their assent it may be not entirely clear how much they will have to contribute. Quite often it appears that authoritarian methods are employed: a district officer (or a chief, in African countries) may simply tell people to work on a project, or require contributions in cash or kind. It is not surprising if work is then performed grudgingly and poorly. An opposite case occurs when communities press ahead with a project before the administrative agency is ready to make its necessary inputs (there might be a form of competition between communities for the attention of the agency, with the advantage going to the community which does most work first).

These difficulties must be borne in mind and avoided, particularly by the extension agent maintaining continuous contact and dialogue with all sections of the community.

b) Difficulties arising from failures in coordination between agencies and community or within the agencies. There may be long delays for the community waiting for materials to arrive; skilled labour may arrive to find that the community has not yet done the preliminary work required, or that needed materials have not come.

These difficulties must be avoided by making agreements on a timetable of activities carefully and in such a way that the responsibilities of each party are clear, including the dates by which each activity must be completed. Blackboard and chalk will be useful at sessions in which programmes of activity are agreed

among several parties, since publicly writing down each commitment reduces the possibility of misunderstanding. There should be a joint programming meeting in the community at which the technical staff of the water supply agency agree with the community upon:

i. the list of operations to be carried out

ii. who is responsible for each operation (whether agency or community, and which groups or individuals, within each)

iii. start and completion times for each operation

iv. how to keep each other informed on progress and completion of each operation.

v. how each operation will be carried out, checking feasibility and looking for possible snags.

It will then be the responsibility of the extension agent to maintain a continuous check on the progress on each side toward the fulfilment of the tasks undertaken, and to take action to avoid serious failures in coordination.

c) Difficulties arising from poor quality of work. Community members will often be unskilled at the tasks involved, such as digging trenches of uniform depth. Yet these tasks are not inherently of any great complexity: it is largely a difficulty of communication, or of supervising a large number of people who are strangers to the supervising foreman. Probably too often the poor quality of work is taken as inevitable, and regular labourers hired to complete (and rectify) work started badly by communal labour. Or communal labour is simply dismissed as too low in quality for the requirements.

These difficulties can usually be overcome by careful explanation of the needs, so long as good communication has been established. This is the task of the extension agent. Often, there are one or two persons within the community who have a particular aptitude for the skills required: their emergence as informal leaders during the relevant stages of the work can be encouraged.

d) Difficulties arising from the need to work on other farming (or other economic) activities. It should always be borne in mind that anyone's willingness to contribute voluntary work will depend on his (or her) relative assessment of its value as compared with the alternative use he could have made of the time. Where farming activity is highly seasonal, communal work should preferably be arranged in the slack season. This applies doubly to water supply when the slack season is also the dry season during which the subjective valuation of water is highest. It may, of course, be difficult for a water supply agency to arrange the deployment of its equipment and skilled personnel during the rainy season if it is heavily dependent on complementary inputs of communal labour which is not forthcoming at that time. However, probably not all work requires complementary communal labour at the same time, and much can be achieved by careful pre-planning of activities well in advance.

There may well be a temptation to use payment or food-for-work as an incentive for local labour during periods of intensive farming activity. There is a danger that the cost in lost agricultural production will outweigh the gains of payment and of early completion of the project, in terms of the real interest of the local population. If the relative advantage is uncertain, the cost of waiting until a slacker period will at least be known. If payment is used in some seasons or for some communities, it may be difficult to avoid making the same payments elsewhere and in all seasons.

e) Some community members may be reluctant to do communal labour because they consider it beneath their status (relatively affluent persons, or educated young men); or it may be considered improper for women to do it.

These problems can only be solved, if at all, by thorough discussion and decisions taken by the community (to give a role to women, or to put pressure on recalcitrant persons). The extension agent can only raise such questions for discussion. The use of administrative authority (the police) to enforce conformity would usually create resentment and work against the general goal of stimulating voluntary participation.

f) Some people, or whole communities, may be reluctant to contribute by reason of previous negative experiences of cooperation with official or other agencies, or distrust of the motives of the agency or its personnel.

The only remedy is, of course, correct behaviour toward community representatives and members: a demeanour which is respectful and not overbearing or superior; honesty; keeping promises, appointments, etc.

g) The most important likely cause of reluctance to work on communal projects is the fear that the benefit will accrue to others. Checklist No. 4 lists some ways in which the project might conceivably lead to a deterioration of the relative position of poorer sections of the community. There are, conversely, other ways in which their relative position might be improved (e.g. removals of forms of monopoly control over water supply), in which case there might be opposition from those whose power is reduced.

There are also dangers that one group or individual may seek to gain an advantage from the installation of the water supply, i.e. from the way in which it is carried out, as opposed to the benefits from the subsequent supply. Ownership of land may provide one such opportunity: the slow sand filtration system must occupy a certain amount of land, and the question will arise as to which land will be used and who has rights (of ownership or usufruct) to that land, whether they will receive compensation, etc. Ideally, land which is common to the whole community will be used. If one group or individual donates the land, it must be clearly established that this does not give them any particular rights over the water supply. The manner in which this is done will vary according to local custom; in some cases it may be necessary that the land should be bought. What must be avoided is the charging of an excessive price.

In some extremely divided "communities", e.g. divided between caste and harijan sub-villages in India, it may be impossible to avoid that the sub-community on whose land the water supply is built considers that it has rights over the water. It may be necessary to provide a separate supply for each sub-village, despite technical and economic considerations.

A second type of opportunity for gaining special advantages from the process of installation is provided by the very need for organisation itself. In a community which is divided between factions, control over the organisation (the water committee or similar body) which is implementing a major improvement can be a highly important political resource, and there may be a sharp struggle to achieve such control. Clearly, there is then a danger that the defeated faction will not cooperate. In communities which are divided between factions, it is the task of the extension agent to seek cooperation by all sections on the water supply project: this will usually mean attempting to ensure that all factions are represented on organisations such as water committees, that all leaders have a role which they regard positively, and that no group feels dominated even if its opponents gain control of the most important positions.[1] This will often be a difficult task: the way in which it can be successfully carried out will vary according to local circumstances (e.g. practice concerning election or choice of committee members),

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1. As previously argued, the strategy for community participation should make optimal use of existing community organisations, though it may be necessary to establish new patterns of organisation in addition.

Thus, it will often be best to work through an existing development committee (or a health committee). If the community is a small one, such a committee will probably not have found as much to do as it has the capacity to handle. The water project will be seen as an example of the kind of activity it was set up for. In a large community, the development committee may delegate functions to a water committee, but even there it would normally be impolitic to set up a separate committee which might create rivalries over the status involved in responsibility for a prestigious project. A special situation may arise, however, where a development committee represents one faction in a divided community. In this case, it may perhaps be possible to take water out of the arena of factional strife by establishing a separate water committee or an autonomous water association (as a voluntary organisation unable to enforce participation but able to exclude non-participants from benefiting from the supply unless they make a contribution).

and the only general rule is not to become identified with one faction, but remain on good relations with all.

The extension agent should, however, attempt to avoid the gaining of any special advantages by any group or individual, and this implies a potential for tension between him (or her) and dominant or powerful groups. He (or she) should be able to count on support from the water authority - i.e. be able to speak for the authority in opposing solutions which give sectional advantage.

h) There may be reluctance that women should work in the construction of the water supply system. It is generally extremely difficult to change patterns of division of labour by sex, and the situation may have to be accepted. However, it is generally desirable that women should be involved as much as possible in all stages of decision-making, construction, and maintenance of the water supply system as they are in its use. Otherwise, this aspect of development will actually reduce the relative range of activities in which women are involved, compared with men, and this could have negative repercussions on their general status and position. At the least, women should be extensively consulted as to the role they might play.

In some circumstances it may be possible and desirable for a water committee to have a majority of women, reflecting the greater interest of women in domestic water, and their greater familiarity with detailed requirements (such questions as facilities for washing clothes).

v. Operation and maintenance

To overcome the gap which usually exists between the technological knowledge and skills existing in a rural community and those which will be required to handle a complex innovation which is introduced, the options are various combinations of: (a) training, to raise the technological level of at least some members of the community; (b) simplifying the innovation so that it can be fully understood; and (c) encapsulating the innovation in self-contained units or "modules", the internal workings of which need not be understood by the users.

Slow sand filtration is a relatively simple technique, well adapted to the attempt to close the gap by training, in such a way that community members understand the principles behind operation and maintenance rather than merely carrying out instructions. Training should, then, lead to an increase in general technical competence which might be carried over into other work. However, the extent to which training can prepare community members to carry out repairs will be small where technical skills in the community are low: the concentration must be on normal operation and preventive maintenance.

Training will, in any case, be practical, and must be carried out on the site of a system in operation. It will probably be most convenient to carry out the initial training by grouping the trainees from the various experimental sites at the first site where construction is completed. One problem is that long periods must elapse between the times when various normal operations are required: it will be necessary either to bring back the trainees on each occasion when a new operation is required at the demonstration site (e.g. the first removal of the top layer),[1] or, perhaps preferably, the professional team might demonstrate each operation of this sort individually in each experimental village at the time it becomes necessary there. It will, in any case, be necessary for professional supervision to be given on these occasions, and a timetable of visits to each site by the professional maintenance team must be worked out. Each visit should be seen primarily as an occasion for further training in preventive maintenance tasks, and if this training goes smoothly it should be possible for the frequency of visits to be reduced. But it is important not to neglect this form of supervision and training. Attention should be paid, in particular, to ensuring that the operator takes adequate account of early signs of trouble, and is able if necessary to summon help, obtain spare parts, or otherwise remedy the situation before there is a breakdown.

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1. Also, replacement of the sand. This is necessary only after a long period of operation, but training is not complete until it is demonstrated too.

It will be useful if technical personnel prepare a list of likely problems with the maintenance and operation of slow sand filters under rural conditions, so that special attention can be paid to these points in training. It may be, for instance, that operators do not appreciate the necessity for the period of ripening of the biological filter before use or re-use, since they may not understand (or give due weight to) the biological process in comparison with the mechanical filtering. By the same token, it is possible that they may be tempted to take short cuts by breaking up the Schmützdecke with rakes when the flow of water is impeded.

One way of guarding against such actions is that the operator should keep records which are inspected. Another is that more than one person in the community is taught the requirements of the system.

As mentioned above (p.10), questions of salary or other recompense for the operator should be settled at the start, before training is given: the operator should know where he or she stands. The job will normally only need to be a part-time one, however, and the possibility arises for it to be combined with related work. Serious consideration may be given to the feasibility of combining the position with that of village health worker. This will depend on the policy of the health authorities toward the training and support of village health workers; there is currently growing recognition of the need for some form of health worker in each community to provide simple preventive and curative care. It may, in fact, be argued that the full advantage of a pure water supply can only be realised if complemented by health services of this sort. A village health worker would, in the first place, be able to continue the work of the extension agent in stimulating sanitation and the hygienic use of water, and it would be appropriate if he or she were also responsible for the water supply. Another consideration is that there may need to be some vigilance over the SSF installation, e.g. to ensure that children and animals are kept away from the tanks; if the installation also houses a community clinic, this might be made easier or it might be made more difficult. Adequate

protection, in the form of fencing or other physical barriers, will probably have to be incorporated in the design in any case.

To avoid damage to the water system as a whole, the design should be discussed in detail with the community. In practice, it will be a task of the extension agent to explain plans and alternatives to the committee or group of persons most actively involved, and through them or directly to the community at large. Some of the particular points to be discussed will be:

a) what form of fencing will be required in view of the likely movements of animals and of children;

b) whether it is necessary or desirable to provide a cattle-trough for animals to drink at, and perhaps a pool for children to swim and play in;

c) whether bathing (shower) facilities should be provided (and if so, the detailed design required for privacy, etc.);

d) whether facilities should be provided for washing clothes (and what design);

e) what use should be made of the excess of water which is not of sufficient purity to be piped as drinking water. Since the slow sand filtration technique calls for large quantities of water to be diverted away, an economic use may be found for this surplus (e.g. to irrigate kitchen gardens: the extension agent may encourage the use of green vegetables for nutritional reasons).

vi. Training of extension agents

If extension agents are drawn from personnel who have previously been involved in more traditional types of health education, it will be necessary to prepare them carefully for the extension role. This means, in particular:

a) training for dialogue and sensitivity to village opinions, rather than the presentation of standard expert views. The extension agent must be able to empathise with the practical possibilities of poor villagers within the constraints of their economic situation. Very often, they have previously learnt ideal health practices taking little account of these constraints. It may be necessary to make a selection of personnel who are more flexible in this respect, i.e. are already better able to empathise and less inclined to condemn behaviour as "ignorant". Training might include one-day visits to various communities where discussions on sanitation and hygiene would be held.

b) Training for stimula ting community involvement. Previous training and experience may relate mainly to changes in individual health-related behaviour. Expertise in "community development" may be called on in most countries to play a part in training.

c) On-site training: at the first experimental site(s), the senior person(s) in charge of the programme should be closely involved,giving advice (informal training) to the extension agents, and themselves experiencing the problems at first hand.

vii. Administrative coordination

The present document will not enter into the details of the administrative requirements of the SSF project as a whole or the extension component. What must be stressed, however, is that extra problems will undoubtedly arise from the fact that decisions will have to be taken (a) in the community, and (b) in the health education department or other agency in charge of the extension component, as well as (c) within the water authority. There will be an unusual requirement for coordination. There may be frictions arising from the independence of the two administrative hierarchies.

There will need, then, to be clear agreement on the assignment of responsibilities between the agencies, and in particular on the ways in which the extension agent can represent the water authority in the discussions at community level: what commitments

he can make and how he can obtain a decision on other matters. For the most important discussions, as previously implied, it will probably be necessary for the water authority to be directly represented at meetings in the communities.

6. Evaluation

Three purposes of evaluation may be distinguished, although they are closely related. The first is the provision of "feed-back" information during the course of the experimental project, in order to correct deficiencies which are detected. The second is to provide lessons for an expanded programme and for other work in the field: the evaluation of the extent to which the experimental project has succeeded in its major aims of improving hygiene and sanitation, with some understanding of which elements of the project design contributed more, and which less, to any success achieved. The third is to assess progress toward other goals, of long-term importance but not so closely related to water use: the fostering of a cooperative approach to solving community problems, the improvement of the status of women, the improvement of the position of the poorer members of the community, etc.

i. Procedures for summing up experience at each step of implementation.

The need is to maintain a continuous monitoring of progress toward each of the goals of the programme. The danger is of setting up an over-elaborate system of record-keeping which gets in the way of the work without providing a sensitive qualitative assessment of progress.

It is therefore suggested that a simple form of qualitative assessment be adopted. It might be done as follows: the senior staff member responsible for the extension programme plans for each community and each month (or perhaps shorter period) which operational objectives and detailed sub-objectives are to be pursued there. The plan is then discussed with the extension agent. (It may be discussed directly with members of the community, but the

plan will in any case provide for discussions with the community, so this is not essential.) The discussions will go into some considerable detail on the methods to be employed to achieve such objective, and the supervisor should take notes on the methods proposed and the difficulties envisaged. The notes should be "written up" by the supervisor, so that what appear at each stage to be the main questions to resolve are drawn out and highlighted. Then, at the end of the month (or earlier periodic contact with the extension agent), progress on each of the objectives is discussed, and the supervisor takes notes of the difficulties which did in fact arise, the solutions adopted and the result. Wherever possible, the supervisor should probe the causes of difficulties and write an account which attempts to explain them. The report evaluating the previous period and the plan for the next can be combined as one document with sections on each objective.

The supervisor may require some written record-keeping or notes to be made by the extension agent, but the onus of writing the qualitative assessment should probably, in most cases, be borne by the more senior person. An alternative is to make a separate individual responsible only for evaluation in the whole country SSF programme; if this is done, special efforts must be made to preserve the close association necessary between evaluation and supervision.

ii. Overall evaluation: drawing lessons for replication

The possibilities for evaluating the overall impact of the SSF project on the health of the population are examined in a companion document.[1] It is generally acknowledged that it is extremely difficult to demonstrate an improvement in the health of a population as resulting from any specific intervention. However, it may be easier to evaluate the extent to which a project achieves its immediate objectives.

In the case of the health extension component of the SSF project, the overall evaluation of the process of construction

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1. Richard Feachem: Publich Health Studies in Phase 2 of the Slow Sand Filtration Project.

and operation and maintenance of the water supply can perhaps rely largely on a final scrutiny and analysis of the data (reports and notes) produced by the procedures described under (i) above, for summing up experience at each stage of implementation. The analysis would probably centre upon (a) a comparison of the difficulties encountered in the different experimental communities, asking which difficulties may be caused by social characteristics of different communities, and (b) each of the particular suggestions, recommendations or proposals which have been put forward at any stage: where were they tried, and with what results?

In addition, full data on costs should be collected and presented together with the above analysis. By "full" data is meant not strict accounting to the last digit, but the inclusion of hidden costs, i.e. those where money did not change hands. Thus, an estimate should be made of man-hours of labour in construction contributed free by a community, the man-hours or man-months devoted to the project by staff members, materials obtained without payment, vehicles used, etc.[1]

The other objective of the health extension, concerning water use and sanitation and hygiene practices, can in part be evaluated in the same way. However, there is also an opportunity to measure:

a) awareness among the population of the facts concerning disease transmission, and the recommendations concerning practices, which are being propagated;

b) acquisition or installation of new equipment related to sanitation (such as latrines or drains, or a bowl placed for washing hands);

c) reported practices in relation to sanitation and hygiene, which might be corroborated by informal observation of some practices;

d) water purity/pollution at various points between collection and ingestion, as discussed above (pp. 26-7, 33-4).

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1. In any replication, costs which on a small scale may have been hidden in other budgets, assume importance as they have to be taken on directly.

Ideally, the evaluation of points a-c should be carried out by an outside investigator. In practice, however, it must be borne in mind, in that case, that the extension agent will have an interest in favourable results. It is a matter for local assessment whether any checks would be possible to identify bias (e.g. part of the evaluation being done directly by the senior team member), and the degree of reliance to be placed on the results.

Ideally, also, the evaluation should take the form of surveys carried out both before the health extension work effectively starts, and at a later stage when the effects may be deemed to have reached a maximum level (and perhaps also other stages in between); and the surveys should cover either the totality of the communities' households or a representative sample of some 100 households in each community. Indeed, a further survey at a later date, several months or even two or three years after the original work, would be valuable to assess long-term changes in practice. If less importance is attached to evaluation, it may nevertheless be possible to obtain some useful data by designing a survey questionnaire to be used only after the extension work (phrasing questions to ask about changes in practices, etc.), or reducing the number of households surveyed.

If, on the other hand, it is desired to make full use of the possibilities of evaluation, it may be considered that the methods employed in the extension work could be deliberately varied from one community to another, either on matters of comparative detail or indeed of overall approach, and the evaluation used to assess which methods appear to have the greatest impact on the variables of awareness, reported practices, and water purity. For reliable results this would need to be done in a large number of communities, but some indications might be obtained even from a relatively small number of cases.

It was mentioned above (p. 29) that the community self-survey might be used as an educational technique. There is some possibility of combining information obtained by this means with that obtained by the survey now under discussion. However, they should probably be treated as two separate exercises with different primary aims.

Finally, it should be pointed out that in drawing lessons from the experimental communities for replication elsewhere, specific consideration should be given to the influences stemming from the special nature of the efforts being made in the experimental conditions, e.g. through greater interest and higher motivation of personnel.

iii. Assessment of project implications for social structure

There is again a choice to be made between a relatively minimal evaluation and a more ambitious one. A minimal evaluation might consist of an assessment by the extension agent and his or her supervisor of the following points:

a) If the project has led to a reduction in the time taken up by water carrying, what have been the main effects? Has it meant that women who previously had to carry water now have more time, or that persons who were paid for carrying water have lost a source of income? If women have more time, does it appear to have been used for leisure (or to reduce the intensity of other work), for economic activities from which they benefit, or for some other task from which they derive no greater reward materially or in status?

b) Has the project led to any negative effects on the relative position of the poor, such as those listed in checklist no. 4 ?

c) Have particular individuals gained in special ways from the project? How? To what extent?

d) Does it appear that the experience of cooperating on the construction, operation and use of the slow sand filter, and in the health education aspects of the project, has led to a greater likelihood of further cooperation on other community projects in the future?

e) Has the participation of women in community organisations (including those exclusive to women and others open to both sexes) been affected one way or the other by the project? In which parts of the implementation of the project have women been active and to what degree?

In a more ambitious evaluation, the aim would be to quantify changes wherever possible, to describe changes in greater detail, and explain them in greater depth. Quantification will involve collection of data before and after implementation of the project (e.g. for point (a) above, time budget data as described in the companion document, D. Curtis: Socio-Economic Studies, p.11; for point (e), data could be gathered on the number of women present at a meeting of each of the community organisations and at open meetings called for project purposes, and the number of interventions in the discussion made by members of each sex could be recorded by an observer). An effort could be made, in particular, to quantify the distribution of costs and economic benefits of the water supply as between community members of varying income or wealth. This will be particularly important if the water is used for economic purposes such as irrigation or stock-rearing and if there are marked differences in income and wealth.

Checklist No. 1.
/ Elements of a 'maximal' strategy for community participation

1 - extended consultations with community authorities
2 - informal dialogue with community members of all strata and both sexes
3 - making appropriate response to difficulties caused by:
  a - lack of interest in improved water supply
  b - lack of customary community cooperation: individualism
  c - factionalism and internal conflict within the community
  d - inappropriateness seen in collective work in communities with wide social differences and in which work is usually paid
  e - fears that the supply will benefit only the powerful
  f - distrust of government agencies
  d - over-enthusiastic initiatives (e.g. in collecting funds or starting work before the water agency is ready to respond)
4 - community-wide committee/self-help water association (to be fostered; founded if absent)
5 - arranging for women's representation/control on a water committee
6 - decision on financial arrangements, to take account of interest of poorer sections
7 - mobilising existing institutions and organisations within the community to play a role in the water project / health education:
  a - institutions representing women or grouping them, from a traditional head of the women to a mother's club
  b - cooperative or self-help associations
  c - church, youth, and other voluntary organisations
  d - the school
8 - mobilising any home-town or school-leaver association, uniting community members resident elsewhere (able to collect financial contributions and to coordinate with official bodies in national/regional capitals)
9 - dialogue at ward level: with representatives of wards if they exist, and open meetings held in wards (open meetings of a size small enough to give ordinary community members confidence to speak freely are important for 2-way communication; in a small community, a community-wide open meeting may be effective, but the larger the community, the more inhibited most people will be, including particularly women)

10 - community self-surveys (useful for getting people involved rather than from the standpoint of gathering reliable data; in particular, survey of morbidity from water- and hygiene-related diseases, but possibly also census-type data other than income, or time-budget or water-use data; school-children easy to involve in surveys, adults less so but worth while if at all possible)

11 - gaining active interest and involvement of key influential persons (must include convincing them to accord importance to the changes required in hygiene as well as in the more prestigious new water system)

12 - gaining support of opinion leaders on questions of health (who may include recognised traditional practitioners but will certainly include persons to whom neighbours and friends turn for advice on health)

13 - visits to other projects of a similar type

14 - using those (e.g. SSF operators) with relevant experience in their own communities, to give advice at the sites of later projects

Checklist No. 2.
/Other external organisations

Different countries will have one or more of the following types of organisation to foster community development. The possibilities for taking advantage of existing organisations of this kind should be explored.

1. The employment of 'community development officers', whose job is to activate communities, encouraging and helping them to undertake development initiatives in all sectors.
2. The use of lower-level staff of sectoral departments (e.g. community health nurses within a health ministry) to encourage community participation for purposes related to that sector.
3. The training of community members, for instance as village health workers, given responsibility to call for community efforts in that sector.
4. The training of village 'leaders' or 'youth leaders' in training centres.
5. Use of the channels of local government administration, to set up community development committees or to give existing representative bodies responsibility for development tasks.
6. Mass mobilisation through the governing party organisation and its local committee in each community.
7. Mass mobilisation through one or more national voluntary organisations sponsored by government, including women's and youth organisations.
8. A radio forum programme, with listeners' groups in rural communities.

In the experimental programme, such organisations might be approached for:

- providing background information on the communities chosen (including, for instance, data on informal aspects of the social structure)
- providing entrée (a channel of introduction to the community)
- providing general advice and assistance in community development.

In a subsequent expanded programme, these existing types of organisation might be called upon to play a bigger role, including for instance the identification of suitable communities as sites for slow sand filtration with community participation, or taking on some of the functions of community mobilisation - even, in some cases, taking it over entirely.

Checklist No.3: disease transmission

The extension worker should bring to the group a knowledge that

1. - of the diseases for which water purification might play some role in reducing incidence, it is the faecal-oral category (diseases transmitted by any faecal-oral route) which is of overwhelming importance in the tropics as a whole (together with schistosomiasis; locally, guinea worm might be important in a particular community).

2. - The faecal-oral category of disease accounts, in all the poor and relatively poor communities of the world, for a very high proportion of infant and child mortality; recent evidence suggests an even greater role for it in triggering off the spiral of worsening nutritional status and infection than was previously realised.

3. - Faecal-oral transmission routes are multiple, and only sometimes involve contamination of water prior to the point of collection. In the present project, since filtration will take care of any such contamination, primary attention must be paid to preventive interventions in those faecal-oral transmission routes which do not involve contamination of water prior to the point of collection.

4. - The number of possible routes is almost infinite, and many are in practice impossible to investigate with any precision; but the attack can be to some degree pinpointed through the exercise of logic and simple local knowledge. The logic reminds the investigator that the multiplicity of routes all lead from A to B - from defecation to ingestion - which implies that an attack concentrated around these two points has a prospect of success in cutting off a large proportion of the transmission: the limiting factor will be the difficulty of this attack - of changing behaviour in these areas - rather than the imprecision of the task.

5. - The local knowledge, primarily of the details of habitual behaviour, can be brought to bear by local people; but delicacy is involved in encouraging frank discussion.

6. - At the point of origin of the faecal-oral transmission routes, the specific matters to consider will probably include:

a. - will the faeces themselves, in the place where they are deposited, possibly start a cycle of infection through:

i) - being directly exposed to other persons or to domestic animals (rather than in a latrine hole, covered, or at good distance from houses, etc.)

ii) - being exposed to flies (inadequately covered latrine or as above)

iii) - being moved or transported (either in the case of systems of disposal of nightsoil, or the way young children's faeces are disposed)

iv) - being washed during rains or floods by water which finds its way to ponds, wells, streams, etc. (but this is the one major route which, as far as drinking is concerned, should be taken care of by water purification)

v) - being washed as above or by irrigation water - water which is waded or bathed in (danger of schistosomiasis)

b. - will soiled latrines (or potties) themselves possibly be the origin of a chain of infection?

c. - what about objects (paper, leaves, corncobs, etc.) used for personal cleansing?

d. - is personal cleansing effectively done? Is the situation frequent that the necessary paper, etc. or water is not available?

e. - is the washing of the hand(s) after defaecation habitual? Is it thorough, with soap? (It seems conceivable that this is as important as the use of a latrine, but it is far less often mentioned.)

f. - what about the disposal of the excreta of babies? If on the ground, is the clearing up thorough? May it leave particles on ground or brushes? If babies' clothes are soiled, how are they washed, where is water thrown?

7. - At the end point of the faecal-oral transmission routes, the specific considerations will probably include the following:

a. - is the washing of hands before preparation of food thorough, with soap?

b. - is there adequate cleaning of receptacles (plates, dishes, cups etc.) used in preparation and eating of food?

c. - Are hands washed before eating? Again, is it thorough, with soap?

d. - Do people put fingers into water containers and cups when taking water?

e. - Is food protected from flies? (And are flies more abundant than they need be, in the sense that breeding grounds which could be eliminated are left?)

Checklist No. 4

Ways in which water supply projects might possibly lead to a worsening of the relative position of the poor

1. Dominant groups might get a subsidised service which the poor do not receive, e.g. individual supply to their homes.

2. Access to the new water supply might be restricted or monopolised. This danger includes cases where the design of the project appears to cover the poor too, but actual flow is limited or diverted, so that only the dominant group benefits, e.g. by use of water for farming purposes, in such quantities that the supply does not reach the homes of the poor.

3. Water used for agricultural or commercial purposes by dominant groups may increase their income in ways which are not available for the poor; this can then lead to changes which worsen not just the relative but also the absolute position of the poor - changes in land tenure and others, such as the discontinuance of arrangements to share food in times of disaster.

4. Removal of an employment opportunity in water carrying.

5. Equal contributions exacted from all inhabitants for the construction or running costs of the water supply may mean a charge which poor families are in no position to afford.

6. Voluntary work demanded at peak times in the agricultural work cycle may lead to substantial loss of production.

7. The power of dominant groups may be increased by patronage available, e.g. in the form of selection of a water supply operator on a salary. At the least, the village-level organisation of the programme, in collaboration with a powerful external agency, will be a political resource in terms of prestige.

Checklist No. 5.

Tasks of extension agent

1. To establish friendly contacts with all sections of community (p.20) and maintain continuous dialogue with all sections throughout the work.

2. To inform all sections of community of intentions of project (p.20), and inform himself/herself of their views.

3. To form an active group of collaborators, or work with the whole village, to discuss behavioural changes needed (p.20)

4. To gather baseline information on attitudes to the SSF supply (pp.21-22).

5. To develop favourable attitudes to the SSF supply through dialogue (pp.8-9).

6. To assess cooperativeness in the community (p.23).

7. To assess questions of power and of individual and group interest relevant to the SSF project (pp.24-26).

8. To develop a strategy for ensuring that costs are fairly borne and benefits fairly shared (pp. 9,26, 40-1).

9. To initiate and oversee the organization of community inputs into construction of the SSF (pp.9-10, 36-42).

10. To liaise with technical personnel in testing water pollution levels, and arrange with them for testing of samples taken at stages following collection (pp.26-7, 33-4)

11. To arrange selection of an operator (p.10), and help teach the operator and a group of other community members the operation and maintenance of SSF. (pp.42-45).

12. To compile, together with collaborating group and/or whole community, a list of ways in which community members' behaviour needs to be changed, and ways in which changes might be made./(p.20. See also Checklist No.3.)

13. To organize group discussion and explain to groups and to individuals the need for changes in behaviour related to health (pp. 18, 28ff)

14. To use practical demonstration wherever possible, e.g. microscope: or show results of testing of water samples (pp. 29, 33); demonstrate hygienic practices.

15. To encourage or organize performances with a health message (p.30).

16. To arrange for any supplies that will facilitate conformity with the hygiene and sanitation practices recommended, e.g. for latrines (pp. 18-19, 34-5).

17. To discuss problems and approaches to their solution with relevant others such as personnel of other organizations reaching the community, and doctors (p. 35, Checklist No.2.).

18. To maintain, throughout, the liaison between the community and the water supply organization.

19. To keep a diary of activities and advise supervisor of problems and what was done about them. (p.48).

APPENDIX

Gathering information on the perception of the community concerning water supplies and concerning possiblities for co-operation.

If any questionnaire, schedule or other instrument is used, it should be tested first by the senior supervisor as a pilot.

Questionnaire forms should preferably be given to the extension agents in cyclostyled or similar forms (rather than just providing a set of questions and a notebook) in order to encourage the filling in of all spaces.

i. Some possible questions for a survey on satisfaction with existing supplies (see p. 22).

Please tell me what you think about the water from x source (ask separately for each source habitually used by respondent):

Taste: Does it always taste good for drinking (as plain water)?
(If no, record reason why not, or time when it is not).

Does is always taste good when used for (tea or) other drinks?
(If no, record reason).

Do you use a different source for drinking because of this?
Would you use a different source if you could?

Appearance: Can you see bits of matter in the water at any time of the year?
(If yes) Do you consider this to be a serious problem?

Possible health problems:

Do you consider that drinking this water might make you ill?
Which kind of illness?

Is there anything that gets into the water, or could sometimes get into it, which might make you ill?
What is this thing?
(Possibly give a check-list including: human faeces/human urine/animal faeces/bird droppings/human spitting/insects and larvae/decaying vegetable matter/soil).

ii. Measuring co-operativeness by structured scenario.

Possible scenarios to present to a sample of community members (see p. 23).

A piece of land in your village has been brought by a man from the city who has used it for growing /the main local cash crop/. But he dies and has no successors, and it is decided that the land now belongs to the village /or belongs to the nation, but can be used by the village as it sees fit/:

A. Some people say that it should be divided up among all the village members for their individual use.

B. Other people say that it should be farmed co-operatively, each person working one day a week or so on it, and the proceeds divided among those who work.

C. Other people say that it should be farmed co-operatively, but the proceeds should go to a fund for communal improvements.

What do you think?

What would you say would actually happen in your village?

There is a call for communal labour to build a health post. On the appointed day you turn up for the work but several others, including two of your friends do not. One of your friends, you know, failed to come because his /her: ask about friend of same sex as respondent/ child was ill and s/he had taken him to town to get some treatment. The other friend had not turned up for communal work because he had an urgent job to do on his farm.

A. Some people say that both your friends should be fined for not doing his part of the work.

B. Other people say that a person must put the health of his child first, and would fine only the friend who was doing his own work.

C. Other people say that it would lead to endless bickering if some people are fined: better not to fine anyone but appeal to their conscience to come out to work.

What do you think?

What would you say would actually happen in this community?