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SANITATION AND CULTURE—I : SOCIAL ASPECTS OF SANITATION AND PERSONAL HYGIENE IN A RURAL WEST BENGAL REGION*

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Introduction

In the perspective of ecological subsystem, sanitation is largely a matter of "regulation of man environment relationship in the interest of health" (Schaffer, 1974). In the hands of technocrats the word sanitation has however become synonymous with a few technological interventions (such as latrines, waste disposal, sewage, water supply, vector control, and more recently air and water pollution control). This has led to the neglect in public health of the whole spectrum of cultural and behavioral interventions in man environment relationship which the term "sanitary" originally signifies.

In all human cultures, the agents, situations and pathways perceived to be associated with recurrent diseases constitute a major cultural imperative (Rivers 1924; Malinowski 1944, 1948). Constant innovations and adaptations in the health culture is one of the ways in which folk communities strive to achieve a balance in relationship to perceived disease risks. The ongoing process of culture-parasite relationship (Kochar 1975) is analogous to biological interactions implicit in host-parasite relationship. Traditional cus-

toms and habits which deliberately or inadvertently regulate health risks and hazards, or promote (compensate or counterbalance) defense against the effects of such stressors are the *intrinsic homeostatic mechanisms* regulating man-parasite interactions in folk 'little communities'. In contrast *extrinsic homeostatic mechanisms* are the ways and means by which Nation-States institutionally regulate man-parasite interactions through 'cosmopolitan' medicine (and health) system (Dunn 1976). Specific health related outcomes (or specific disease related effects) in the rural communities are the sum total of all positive and negative consequences. Factors which have negative consequences are the *risk factors* and the factors which have positive consequences are protective or *promotive factors*.

Figure 1 illustrates this paradigm of sanitation sub-system. Though essentially based on Schaffer's model, it dichotomizes Schaffer's parameters in two parallel sets : (i) the folk health culture vs the cosmopolitan health system, and (ii) risk factors vs. promotive factors. This is done to highlight two basic contentions of the present author :

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1. While some aspects of folk health culture, hygiene and sanitation practices are harmful *some are beneficial* at least in relative sense. Net impact of these beneficial practices could be enhanced even further by suitable interventions and reinforcements. Socio-epidemiological accounting of these practices can provide powerful intervention strategies. Similarly, while complete elimination of harmful practices is improbable there is ample scope for suitable modifications in these practices in order to reduce the risk involved, or to counter-balance the negative effect of one factor with suitable intervention at another level.
2. Sanitation and hygiene, as part of health culture, is integral part of folk culture ("way of life" or "life style"). Promotion of "scientific" knowledge, practices, norms, technology therefore does not occur in a vacuum. The "scientific" paraphernalia itself assumes a way of life (right way of understanding and doing things) which emerges from scientific health culture of cosmopolitan-urban social milieu. Lack of fit between the *cultural load* of a sanitary device and the competing elements of folk culture create strong *medico-cultural conflicts*. While the epidemiological, engineering, administrative and economic components of the sanitation programme are well advanced much ground work is needed before socio-cultural accounting can also be built into these programmes. We even lack the basic data (Schelat and Mansuri 1977), such as provided by White *et al* (1972) on the use of water. The present paper describes the hygiene and sanitation practices in a rural W. Bengal region. In the second part behavior and practices pertaining to excreta disposal and transmission of hook-

worm infection are presented in some detail.

Material and Methods

The research from which the following material has been drawn is reported elsewhere (Kochar 1975, 1976, Schad *et al* 1973, CMRT Reports).

The field study was conducted in Bandipur *anchal* of Hooghly district, W. Bengal in 1968 for about two years. A population from twelve contiguous villages was chosen for the study. A random sample 100 households, (750 persons) was selected for epidemiological survey. A sub-sample of 50 households was drawn from the sample households for detailed anthropological studies.

The study was aimed at social ecology and social epidemiology of hookworm transmission in collaboration with parasitologists and a soil ecologist. The present paper presents selected materials pertaining to hygiene, sanitation and disposal of excreta. For the sake of space only the key results have been presented avoiding numerous tables.

The following kinds of field records have been used for the discussion below: (1) interrogations of a subsample household members once every month, for 15 months, about the time and place of defecation, (2) identification of one stool of one subject from each household every month to make direct observations, (3) observations of the actual sequence of defecation behaviour, (4) basic census survey of all the sample households, (5) ethnographic records from well informed persons in the communities and descriptive information presented during quantitative studies.

Results and discussion

Cultural idioms related to sanitation and hygiene

In rural Bengali culture personal hygiene, domestic sanitation, disposal of excreta, defe-

caution behavior, disposal of waste, and interactions with 'polluted' foci are linked with some important cultural "idioms" (Srinivas 1952). Most important of these is the idiom of purity and pollution (Dumont and Pocock 1959; Saraf 1969; Khare 1962). For a rural Bengali household the social, ethical, and ritualistic implications of these habits are integrated with the notions about sacred and profane, sin and virtue, pure and impure, etc. For a Hindu household a certain minimum degree of sacredness is necessary to maintain a normal social status. Human feces, sputum, filth and the objects (persons or places) directly contaminated with these are considered 'impure' and defiled. Since impurity is contagious, the objects or persons so polluted are taboo, a kind of social risks for the community. Cultural norms require that these should be avoided. Some purificatory ritual must be performed to restore the normal level of 'sacredness' of individuals or things so defiled. This concept is reflected in prescriptions about 'jutha', ablution, change of clothes, avoidance of defecation grounds, and taboo for defecation in fields under food crops. These notions, however, are applied and followed varying in different situations.

For a rural Bengali household the ethical, ritual and aesthetic overtones of personal conduct are intermingled with the notions about health and disease. A popular text on daily rituals for an orthodox devotee include procedures, prescriptions and even *Mantras* (sacred chants) to go with cleaning mouth, applying oil, bath, grooming, etc. (Bhattacharya n.d.). Notions of purity and pollution, sacred and profane, taboos and prescriptions, are in many ways rules for personal hygiene also. Despite the ignorance and apathy of the rural folk, and a way of life that makes it virtually impossible to emulate western

notions of hygiene and cleanliness, the canons of 'folk' hygiene embody some very powerful notions of personal hygiene. In fact, the concern of Bengali peasants for personal cleanliness and indoor cleanliness results in an obsession for washing hands and things (Bhandari 1973; Chakraborty n.d.).

Another notion involved in defecation is of shame and privacy related to the 'body image' (Opler 1963). Concern shown by females about the choice of appropriate defecation habitat or appropriate squatting spot (described later) is an expression of this notion. Avoidance, by males, of the defecation grounds used by females is also related to this notion. Yet another notion involved in personal habits is of 'regularity' (*Niyam*) as virtue. It is expected that one should pass stool, clean mouth, take bath every day, at the right time, and the right place. This makes the act of bath and defecation a kind of daily ritual. A popular text (in Bengali) on the daily rituals and rites of a religious Hindu household starts with specific directions about where not to defecate, which direction to face etc. (Bhattacharya. n.d.).

Infested foci as cultural entities

As in other folk societies, in rural Bengali communities water, soil, bamboo groves, fields, etc., acquire deep personal, social and ritual meaning consistent with customary use. Such notions influence the interaction of persons with habitats as disease foci. In Bengali folklore bamboo groves are often associated with ghosts and evil spirits. There are such anecdotes in the study area about specific bamboo groves. Bamboo groves are often used as dumping grounds for various kinds of refuse such as worn out brooms (also associated with witchcraft), earthen pots used in mortuary rites, clothes and rags belonging to the deceased persons, placenta of animals,

menstrual pads, etc. In some villages Muslims use bamboo grove as burial ground. Aside from these uses, bamboo groves are recognised as a 'public latrine' in local parlance. Fecal pollution, however, is not the only reason why people avoid bamboo groves. Even some adults would not go to a bamboo grove at night.

Fields and banana groves are in general considered 'good' (conceptually associated with the 'mother' earth). Fecal pollution in fallow fields is not abhorred. It is jokingly viewed as a kind of manure (jokingly, because human feces are not considered as the proper manure for crops and fecal pollution of fields with standing crop is a taboo in general). Banana groves are called 'garden' while other pollutable habitats (bamboo groves, bushes, pond banks, etc.) are described as 'forest' (*bon* or *jongol*) signifying marginal importance of these habitats for the human community. Although there are a few well specified taboos or prescriptions about pollutability of habitats (such as associated with fields under crop, freshly ploughed fields, bamboo grove used as a burial ground), the people seemed to implicitly recognise the plots or habitats that could not be polluted (sometimes depending upon who does it). Five minutes of loud soliloquy filled with the most poignant abuses directed at the unknown miscreant (and his relatives) was observed to be more than enough to ensure conformity to such conventions.

Interaction with habitats and other ecological foci

Different habitats represent different degree of human concern and interaction. Different persons by the virtue of their role and status have different patterns of interactions. Brahmins, for example, have traditional taboo for touching plough, and thereby can not engage in agriculture. Certain castes tradi-

tionally engage in non-agricultural pursuits. Low castes are most intensively engaged in agriculture as labourers. Females in rural Bengali communities generally do not engage in farming. There are taboos against females touching agricultural implements. Besides it is considered derogative for woman from 'respectable' families to engage in agricultural activities. However, women in the low caste families frequently perform some agricultural activities on part time basis and some regularly work as daily labourers.

Defecation is not the only activity in the defecation habitats. Bamboo groves and other miscellaneous habitats are occasionally visited for various purposes. Bamboo groves are visited for collecting fuel, cutting bamboos, collecting sticks for fencing, etc. Polluted bushy areas and pond banks are visited for collecting leaves for goats or sticks for fuel. Banana groves are visited for tending banana plants, furrowing, and clearing bushes. Due to the social conventions of division of labour within households certain members are more likely to be engaged in such activities than the others.

Limited inquiries indicated that in a three month period 22 persons from 15 households reported cutting bamboos (3.8 bamboos were cut per family). The operation on the average involved 34 minutes of total human interaction per family (in three month period). Fuel collection takes place throughout the year but most frequently after the wet session (September to February). Two to three such collections per month are done each lasting from 30 minutes to 2 hours (76 minutes of human interaction per family per month). Large amount of fuel are routinely needed for boiling paddy. It may be noted that although most of these activities, including cutting bamboos, are seasonal and infre-

quent, the total durations of human interaction with polluted habitats on account of such activities are substantial in comparison to the durations of defecation activity.

In contrast to these above mentioned activities, the activities in fields are varied and frequent. These include staking goats and cows (8-15 trips a day per family), carrying things from and to fields, chatting with others working in the fields, playing, walking around, cutting grass for cattle-feed, etc. In agricultural families women and children engage in many small jobs in fields during the busy season such as gathering vegetables, weeding, erecting fences, spraying water from canalicules during irrigation, making bundles of harvested grains, carrying bundles from fields to homes, or just keeping watch. In poorer families, which are short of labour during the rush season and can not afford to pay for it, women engage in weeding, transplantation and harvesting on full time basis.

Agriculturists engage in a great variety of farming activities throughout the year. They do so irrespective of fecal pollution. In a three month period 27 persons from 15 families reported harvesting polluted jute fields and 15 persons reported ploughing a polluted fallow field. The estimated duration of these exposures was roughly three hours and the surface area of such activities (ploughing and harvesting in polluted fields) was about 0.15 acres or 720 square yards (per person).

Domestic animals

A census of cattle population in the sub-sample household revealed the existence of 2.6 large cattle and 2.4 smaller cattle per household. In the Bandipur area about 25% of the households have less than 3 domestic animals, and 29% of the households have more than 7 domestic animals. Only two

households had no domestic animals. 0.7 domestic animal per person (or 5.3 per household) is higher than reported for a neighbouring rural area by Odendhal (1972). This is despite the fact that chickens and ducks in the Bandipur sample were under reported. The milch cattle (yielding milk) constitute less than 10% of the total stock of domestic animal population

In the most households the domestic animals are the focus of multifarious activities. Since the cattle are not generally allowed to freely roam about and feed themselves (in contrast to what one finds in small towns) they have to be staked around, taken out for grazing, have to be provided with fodder and supplement feed. The care of cattle, cleaning cattleshed, collection of cow-dung, preparation of cow-dung cakes, preparation of dung-pits, etc. were found to be the assigned duties of the specific members of the household. This does not only mean a lot of work it also means proximity to and contact with the cattle. In some houses persons were reported to sleep in rooms where fowls and goats are lodged overnight. In such a setting the parasites and micro-organisms can freely pass from the cattle to man and vice versa (Graves and Oppenheimer, 1974).

Ponds

Most households (92%) have one or more pond close to their house. Since water is stored in the house only for drinking and cooking from hand pumps all the other activities involving water must be performed in the ponds. Only about 6% of the households have to walk more than 3 minutes to reach a hand pump.

The conditions of the pond deteriorate during the summer because of lower water level. 26.4% of the ponds in regular use by the households were reported to dry in

summer. Even in the month of November when the condition of ponds generally improves after rains, 23.5% of the ponds were judged 'not clean' using ocular criteria. Occasional cleaning of the larger ponds, once or twice a year, generally in conjunction with the fishing operations, was reported.

Aside from the household needs ponds are used for other purposes like irrigation, fish culture, decomposing jute plants (for extraction of the fiber), cleaning and bathing cattle, extraction of soil for making or repairing houses. It is, therefore, not surprising that in some *paras* (neighbourhoods) upto 20% of the land surface within the settlement is under ponds. The household ponds are generally not used for activities like decomposing jute that would harm fish or make water unfit for the domestic use. In 51% of the sub-sample households a defecation ground was found to adjoin one or more sides of the ponds in domestic use. In 22% of the instances it was found that some parts of the fecally polluted surface certainly flow into the pond. However, the ponds are used only at the specific entry-points. The drainage from fecally polluted surface was never found to be along the same edge of the pond as the domestic entry point(s).

Given the fact that the ponds are used for multifarious purposes from ablution and washing cattle to bathing, washing vegetables and washing clothes and utensils, the nature, frequency and duration of the human interaction with ponds is of public health importance. Exploratory observations indicate that on the average human entries in the ponds occur every 3.7 minutes resulting in about 16 entries per hour. The average duration of contact was about 2 minutes per entry. The contact fluctuates with the rhythm of daily routine. Females and children make more

entries in the ponds than the male adults because during good part of the day they are away working in fields or elsewhere. Although pond water is not used for drinking, people freely take mouthfuls of water and spit it out. The utensils, clothes, vegetables washed in ponds are potential of establishing oral route of transmission.

Living conditions, hygiene and sanitation

Living conditions

The settlement area is defined as the area within approximately one furlong (220 yards) of cluster of houses. The settlement area of all the twelve villages is 1.16 sq. miles which constitutes about 61% of the demarcated area around the 12 study villages. The remainder is largely uninhabited farm land. The overall human density (in 1968) in relation to the total land in five *maujas* (revenue unit) is 3.5 persons per acre or 2,240 persons per square mile (Cf. Odendhal 1972). However, the density within the settlement area where most human activities are confined, is 8 persons per acre (equal to 5,120 persons per sq. mile). Human density within the settlement of each study village varied from 5 persons per acre in Khanarber (equal to 3,200 persons per sq. mile) to 14 persons per acre in Belepota (equal to 3,960 persons per sq. mile).

The density of human population within a fixed distance around the sample households is a useful measure for ecological and epidemiological comparisons with regard to diseases that have foci of transmission close to houses and which depend upon the density of human population that shares the same environment. This reflects the human density in living area around a given household. For 37 sub-sample households human density within 10 acres (220 yards square) around the sample households, varies from 1 to 14.5 persons per acre,

with an overall average of 9.8 persons per acre. It shows that 30% of the households studied (N=37) live within a human density of more than 12 persons per acre (equal to 7,424 persons per square mile).

The houses in the study area are small structures (one to six) of mud walls and gable shaped roofs thatched with paddy straw. 79.5% of the households have a separate cattleshed and 69% have a separate room, besides the main room, as a kitchen or a store room. This is usually an enclosed portion of the varanda or a hut partitioned in two rooms. The various structures are usually enclosed by a mud wall (74%). The main room is often (97%) provided with windows. The main room is, however, very small (106 sq. ft. on the average). With 3.6 persons per main room on the average, the houses provide barely 30 sq. ft. of the room space per person. The lack of space necessitates sleeping together (2.8 persons per bedding). Since the space does not allow sufficient cots or sleeping platforms (1.6 per household) about half of the beds (43%) are roll-aside beddings spread on the mud floor. About one fourth of the households do not have any cots (i. e. everybody sleeps on the floor). The residential hut is generally (88.2%) built on elevated floor (1.5 to 4 feet high) to prevent flooding and dampness. However, many (67.7%) huts were reported to leak in the rainy season.

Except during the winter months, people spend most of their time, day and night outside the rooms. The elevated varanda with an extended roof and the enclosed courtyard is where people actually spend most of their time. A two-hour observation on a winter forenoon in a household of 10 persons sharing a 3 room house revealed that only 6 minutes (.7% of total man-hours observed) were spent inside the rooms and 49% of the time was spent in the varanda.

Indoor sanitation

In the rural Bengali households brooming and moping is vigorously pursued, aside from three to five times brooming in some parts of the house. The moping with a wet cloth soaked in clay and cow-dung is done at least once in the kitchen, living room and the varanda. Special plastering in varanda is done once in a month or less often. The condition of the cattleshed is a good index of the effort for cleanliness by the household. Using the local criteria 50% of the cattleshed were judged 'not clean'. The cattleshed is smoked at least once every day during the rainy season to ward off the mosquitos and flies that bother the cattle during night.

A good deal of effort and concern is shown for the indoor sanitation and aesthetics. All valuables are stored inside the available room (s) for safe keeping in various kinds of containers stacked along the walls, in the roof-partition, or under the furniture. These keep piling up irregularly and are cleaned only occasionally. In a mud hut such numerous interspaces within and between containers provide excellent breeding grounds for the various kinds of insects, mites, bugs and other organisms including lizards, snakes and rats. Only when such unwanted populations become a menace and do some damage that action is taken against them such as by cleaning, use of insecticides, poison, etc. In a nearby town of Singur, Radinivoski identified hundreds of such organisms in samples taken from the graineries (CMRT 1967). In another study the larvae of *A. albopictus* mosquito were found in good number within the dwelling huts in Bandipur area (CMRT, 65-66).

Waste and its disposal

Waste produced by the humans and his domestic animals is generally assumed to be

the major source of insanitary conditions in the village environment. The human stool and cattle dung is by weight, as well as volume, the largest waste product that is disposed in the village environment. The stool and dung is, however, readily decomposed into soil by the dung beetles. This process takes 2 to 4 days when the soil is moist and up to 7 or more days in relatively drier season. The food waste is the second largest waste product but it is readily consumed by the domestic animals, pets and birds. Ash and trash (miscellaneous items swept from the house) are the most visible waste products around the houses since these are not readily decomposed or recycled and therefore keep piling up like kitchen middens. Pottery is the most abundant among the other waste products that do not readily decompose and thus accumulate in the environment. Wood, tin, paper, gets readily recycled.

On the average about 6.5 trash heaps or dung-pits of varied sizes were identified around the subsample households. Most common locations are: by the side of the entrance to the house, a corner in the courtyard, an edge of bamboo grove adjoining the house (if available), and a pond edge (near the entry points). Parts of such waste are washed into ponds either directly while washing utensils with ash picked from such heap, or during rain. Refuse from the cattle shed is thrown in the dung-pit. These have become common recently. The cow-dung is largely recycled as fuel (Odendhal, 1972).

Personal hygiene

Bath in ponds once everyday is the norm. In summer bath twice a day is common (82%). In winter male adults take bath less frequently than the adult females. The children become irregular (2-4 times a week). Bath takes anywhere from 40 seconds to 10 minutes or

more (average 1.5 minutes). It may range from casual rubbing of face and arms and a few dips to the application of oil and 'sagimati' (a special kind of soil) or soap, and careful scrubbing of body with cloth or gourd mesh.

Regular use of soap for bathing is avoided except by families with educated members working outside village. A small piece of soap is, however, usually kept in most houses and used for washing hair. Women also use the traditional method of *sagimati* and soda.

Oral hygiene consists of rubbing ash (from cow-dung cake) or charcoal before bath. Some adult males (42%) frequently use *datun*, a fresh stem chewed into a brush. Regular use of tooth powder and tooth-paste with fingers was reported from a few households.

Vigorously cleaning mouth a number of times with water before and after every meal is a rule necessitated by the notions of purification and is invariably followed by the adults. Sequence of casually washing feet, hands and mouth is repeated many times a day.

The change of clothes after every bath is necessitated by the practice of returning home from the pond in wet clothes. If defecation is followed by bathing, the change of 'impure' clothes ('*kapad chara*') is ritually required. The change of clothes two or three times a day does not mean wearing a new set every-time but wearing a set marked for the different purposes.

Washing of clothes is a tedious and prolonged operation done by the elderly lady of the household after every 7 to 20 days (average 12 days). The clothes of the infants and the children going to school are washed frequently. The bed clothes are washed after much longer interval (one to three months). However, the bed clothes are exposed to sun

during the winter months and occasionally during the monsoon season. Clothes are first boiled with *sagimati* (a kind of clay) and washing soda, or with soap and soda and washed in a pond by beating them on a wood or stone and rinsing in water repeatedly.

Sanitation, Health and Culture

An attempt was made to develop a quantitative index (Cf. Dunn 1972) of sanitation for the sub-sample households to explore the relationship of such an index to social and health variables. Out of 30 indicators of insanitary conditions available 15 were found to be common in most of the households and therefore did not provide a valid basis for comparison among the households. These conditions include : soil pollution around house; absence of latrine; no drain outlet from house; waterlogging around house; roof leaking; domestic use of pond water; absence of domestic well or tube well; etc.

A score was developed by assigning equal weight to the remaining 15 less common indicators. These include : condition of pond; condition of cattle shed; trash heaps more than 5; hut floor level less than 1.5 feet; person-room ratio more than 3:1; living space less than 20 sq. feet/person; separate kitchen hut; etc. Such an index is very crude and merely a simple device for relative differentiation of rural households in terms of the number of less common insanitary conditions

present. The maximum number of conditions in a household was 10 (sanitation score) and the minimum was 1 (sanitation score 9). The median value of 6 (4 or more insanitary conditions present) is used to divide the study population in two broad groups living in poorer and better sanitation.

Sanitation score shows moderate to strong association with other social variables namely, family occupation, caste, socio economic status, family size (Kendall's T values between .2 and .5). Table 1 illustrates this with regard to family occupation. The data confirms our expectation that persons from non-agricultural families, from higher castes, and from higher socio-economic status have relatively better sanitation. This may imply that an improvement in socio-economic status is likely to result in better sanitation. However, such status is itself related to higher caste status and non-agricultural occupation.

The sanitation score does not show such clear cut relationship with health variables studied. This was not expected because many important insanitary conditions were shared by all therefore excluded from the score and thus would effect everybody equally. The data, however, does show a consistent trend. Persons living in poorer sanitation tend to have slightly greater number of health complaints, slightly greater number of symptoms and greater symptom diversity, have poorer

Table 1. Relation of sanitation score to family occupation.

Sanitation	Family occupation							
	Non-Agri.		Part-Agri.		Own-Agri.		Agri-Labourers	
	No.	%	No.	%	No.	%	No.	%
Poor	18	25.7	22	51.2	69	61.1	58	81.7
Better	52	74.3	21	48.8	44	38.9	13	18.3
Total	70	100	43	100	113	100	71	100

body build, and have slightly higher level of hookworm infection. None of these however represent statistically significant differences.

While sanitation is strongly related to culture, its relation to health has often been found to be problematic. This is well illustrated in studies in Varanasi where the population within the University campus (with modern water supply, sewage system, planned housing, structured landscape and superior living conditions), have practically the same pattern of infections and similar morbidity profile as the villages near Varanasi (Marwatt *et al* 1966). Similar conclusion is found by resurvey in Singur (W. Bengal) area (Lall and Seal 1949; Seal and Patnaik 1966).

Studies have indicated that even in the case of specific rural sanitation programs such as latrines and water supply it is difficult to demonstrate definite gains in health parameters until the innovations have diffused to most of the rural population (PRAI 1967). Such an event invariably accompanies many other concurrent changes in the life style of the population which make universal diffusion possible.

The approach of linking the cost of sanitation programmes to definitive gains in the health as a key decision criteria is not a sound administrative strategy. It overlooks the fact that sanitation in rural milieu, particularly in its early phases, is more a matter of ethical, educational, aesthetic and status value than merely a matter of significant epidemio-

logical gains. People are more likely to perceive cultural values (and quality) associated with sanitary innovations than its health implications (and quality). Improvements devised in terms of health benefits (qualities) can be made more acceptable if the technology and its mode of delivery is designed in terms of perceived cultural values (and quality). This may be advisable even if in the process some proportion of health benefits (quality) is lost. A largely acceptable but a sub-standard device (or delivery mode) may have better pay off (in health terms) than a 'standard' device with very poor acceptance. Subsequently, it may be far easy to replace a sub-standard device with a device of superior standard.

Sanitation and hygiene is, more than anything else, a way of life. New innovations and technology selected for rural sanitation must be so selected, adapted and presented as to be a part of the existing rural life style and environment in terms of their perceived values and priorities and their existing pattern of habits and customs. This can be achieved by incorporating epidemiologically useful components of the local culture into sanitation programs. Only then grass root technology and designs can be conceived by the professionals who are concerned about absolutely safe standards, high technology and cosmopolitan values. The second part of this paper examines this socio-epidemiological strategy with regard to hookworm infection in rural W. Bengal.

References

- Bhandari, L. C., Review, *Transcultural Psychiatric Review*, 10, 138-140, 1973.
 Bhattacharya, T., *Nityakarma Paddhati*, Orient Library, Calcutta, (Bengali), n. d.
 Chakraborty, A., *Institutionalized obsessional behaviour in Bengali Culture*, Unpublished n.d. CMRT., *Reports*, 1964-65, 1965-66, 1967-68, 1969-70, Calcutta.
 Dumont, L. and Peacock, D., *Contributions to Indian Sociology*, Vol. III, Mouton, 1959.

- Dunn, F. L., Traditional Asian Medicine and cosmopolitan Medicine as Adaptive Systems, Inc. Heslie (ed) Asian Medical Systems, Berkley, 1976.
- Idem*, Intestinal Parasitism in Malayan Aborigines, Bull. W. H. O., 46 : 99-113, 1972.
- Khare, R. S., Ritual purity and pollution in relation to domestic sanitation, Eastern Anthropologist, 15 (2), 125-139, 1962.
- Kochar, V., Human factors in the ecology and epidemiology of hookworm infection in Rural West Bengal. Doctoral Dissertation, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, 1975.
- Idem*, Human factors in regulation of parasitic infections : Cultural ecology of Hookworm populations in Rural West Bengal, In Grollig. F. X. and Haley, H. B. (ed) Medical Anthropology, Mouton, Hague, 287-312, 1976.
- Idem*, Intrinsic Regulators of Man-Parasite Interactions, Culture Patterns and Human Behavior relevant to Hygiene, Sanitation and Disposal of Excreta in a rural W. Bengal Region. To be published in "Sanitation in Developing Countries Today, Oxford", 1977.
- Lall, R. B. and Seal S. C., General Health Survey, Singur Health Centre, Calcutta, 1949.
- Malinowski, B., A Scientific Theory of Culture, Chapel Hill, 1944.
- Idem*, Magic. Science and Religion. Glencoe, 1948.
- Marwah, S. M., Rao N. S. N. and others, Campus Health 2, B. H. U., Varanasi, 1966.
- Odendhal, S., Energetics of Indian Cattle in their Environment, *Human Ecology*, 1, 3-22, 1972. PRAI. Report, 1969.
- Rivers W. H. R., Medicine, Magic and Religion, Harcourt Brace, New York, 1924.
- Saraf, S., The Hindu ritual purity and pollution complex, Eastern Anthropologist 22 (2), 61-75, 1955.
- Schad, G. et al., Arrested development of human Hookworm infection, An adaptation to seasonally unfavourable environment. *Science* 180, 502-504, 1973.
- Schaffer, M., Administration of environmental health programmes, A Systems view public health papers 59, W. H. O., Geneva, 1974.
- Srinivas, M. N., Religion and society among the Coorgs of South India, Oxford Univ. Press, London, 1952.
- Shelat, R. N. and M. G., Mansuri, Problems of village sanitation in India, In Feachem et al. (ed) Waste, Water and Health in Hot Countries, John Wiley, 1977.
- Seal, S. C. et. al., Report of the resurvey of Singur health unit area, Calcutta, 1966.
- White, G. F., Bradley, D. J. and White, A. U., Drawers of water, Domestic water use in East Africa, Chicago, 1972.

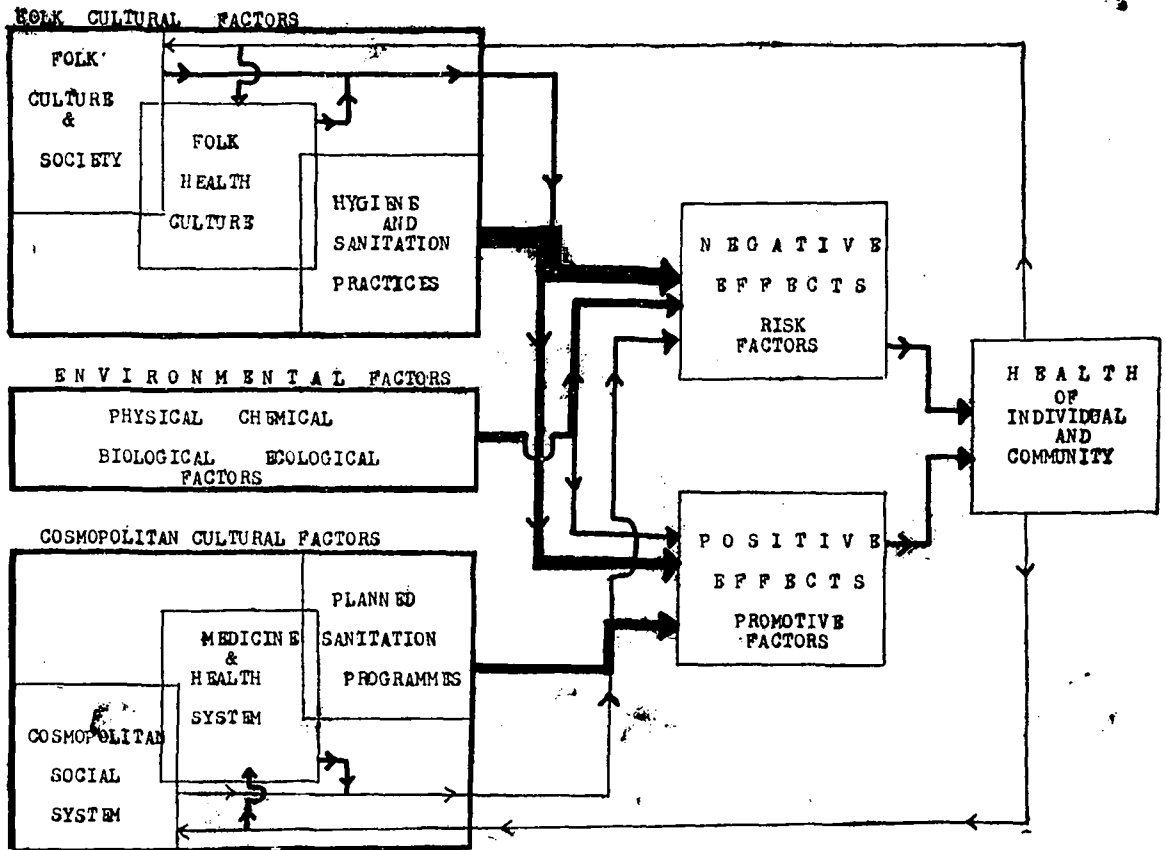


Fig. 1



सदा.
सबके लिये

वैद्यनाथ च्यवनप्राश (अष्टवर्गयुक्त)

बेसी भवाउरी कल

अब ये बड़ा जीज

बिवाउरी कगउरुवण



वैद्यनाथ

आयुर्वेद भवन प्राइवेट लि.



वैद्यनाथ च्यवनप्राश के सेवन से फेफड़ों के विकास रुफ. खीसी. श्वास (दमा), रक्तहीनता, कैल्शियम की कमी तथा मन्दाग्नि, अम्ल पित्त, कब्जियत आदि रोगों में आशातीत लाभ होता है।

यह बचपन, जवानी और बुढ़ापे में उम्र, उम्र के हिले केवरीस वीरीस कककक है।