

HEALTH, CULTURE AND COMMUNITY

*Case Studies of Public Reactions
to Health Programs*

Edited by

BENJAMIN D. PAUL
Lecturer on Social Anthropology
Harvard School of Public Health

With the Collaboration of

WALTER B. MILLER

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WATER BOILING IN A PERUVIAN TOWN

by Edward Wellin

To evaluate their success in South Africa, Dr. Cassel and his colleagues compared infant mortality rates and incidences of gross nutritional failure before and after nine years of public health work; the results were impressive. By a similar before-and-after comparison, the Cummings were able to document the fact that their six-month campaign to alter mental health attitudes had failed to produce any significant change. In evaluating the results of a rural hygiene worker's attempts over a two-year period to persuade Peruvian housewives to boil their drinking water, Dr. Wellin likewise had access to before-and-after data. Out of about 200 households the number of women who regularly boiled their drinking water rose from 15 to 26. Little significance could be attached to these numbers, however, in the absence of a standard against which to measure the worker's efficiency, especially since she was trying with varying success to introduce other health innovations over the same period of time.

A more meaningful approach was to compare the motives and circumstances of the women who boiled the water with those of women who did not. The biographical comparisons which comprise the heart of Dr. Wellin's intensive study of a restricted subject show the extent to which culture and ecology control the motivations of individuals even in apparently simple matters such as accepting competent advice to boil contaminated water. They also show the selective effects of social distinctions within the community, and the case is thus akin to those in Part IV of this volume.—EDITOR

THE PROBLEM

Evaluating the Results of a Rural Hygiene Project

Nelida is a rural hygiene worker whose full-time job is visiting households in the small town of Los Molinos in order to help the people improve their hygiene. The water in Los Molinos is contaminated. There is no sanitary water system, nor is it economically feasible to install one. The residents, however, could hope to lower the incidence of typhoid and other water-borne diseases by regularly boiling water before consuming it.

When Nelida first took up residence in Los Molinos, only a few of the 200 households were already boiling their drinking water. As one of her duties, Nelida has been trying tactfully and by indirection to persuade others to adopt this practice. She has been aided in her work by Dr. U, a health department physician who has visited the community to give public talks on topics of health and hygiene. After two years in Los Molinos, she has succeeded in getting 11 more families to boil water. Most of the families still drink unboiled water. The health department wonders what these figures mean. As health professionals see the situation, Nelida has only to prevail on housewives to add a simple habit to the sequence of preexisting water habits, that is, to get them to boil their drinking water sometime between securing and consuming it. Surely this task should not be so difficult. Why, then, have so few been persuaded and so many not?

These questions confronted the writer when he came to Los Molinos in 1953 after having spent more than two years studying the characteristics of other communities in the Ica valley. For many weeks the author interviewed Nelida and local townspeople and observed daily routines. The task of discovering systematic differences, in which Nelida was a keenly interested partner, proceeded slowly and with difficulty. It was finally accomplished to the reasonable satisfaction of the writer, but not before taking into account an unexpected number of social, cultural, and situational factors whose bearing on water boiling was not always evident on first inspection.

There were indeed differences between those who boiled their water and those who did not, but these differences were not simple. Among water boilers, as among nonboilers, there were often different and even opposing motives for the same end-product behaviors.¹

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THE SITUATION

Differences Between Women Who Boil Drinking Water and Those Who Do Not

The Hygiene Worker and the Health Department

Nelida is one of more than 20 hygiene visitors of both sexes employed by the Ica Departmental Health Service (IDHS), a regional agency of Peru's Ministry of Public Health and Social Welfare. The IDHS was launched in 1945 as a pioneer Peruvian effort to establish a regionally autonomous health department with a well-rounded program and an adequate complement of full-time personnel. Its inception and development were inspired and counseled by Dr. J. L. Hydrick, representative in Peru of the Rockefeller Foundation's Division of Medicine and Public Health and author of the volume *Intensive Rural Hygiene Work in the Netherlands East Indies*. Although it has received considerable aid from the Rockefeller Foundation and other international health agencies, the IDHS is managed by a Peruvian directorate and is supported mainly by Peruvian funds.

The IDHS operates out of the city of Ica, where it maintains administrative headquarters and a variety of installations and services. It enjoys a reputation, even outside Peru, both as a sound and efficient health department and as an important experimental departure from conventional lines of health administration and practice; the use of hygiene visitors is but one of a number of innovations.

Hygiene visitors are natives of the Ica valley who have taken courses of training extending over a year or more before being assigned to live and work in specific communities. IDHS policy is to recruit hygiene visitors from social levels or cultural groups similar to those with which they will work. They receive instruction in such topics as hygiene, communicable diseases, environmental sanitation, nutrition, dental care, and domestic economy. In addition to lectures and discussions, the training places heavy emphasis on role-playing techniques to teach the practical art of home visiting. Once assigned to a community, hygiene visitors

report weekly to administrative headquarters for control and additional training.

Dr. U's occasional talks in Los Molinos are designed specifically to convey health information to the community. They are well attended and include such topics as modes of disease transmission, dangers of contaminated water, and the preventive value of boiling drinking water. Nelida has the job of getting families to apply good health habits in their daily routines. Other categories of IDHS personnel help to inform people on health matters; the hygiene visitor tries to motivate them to apply the new information. She makes regular and repeated home visits, during which she converses with housewives and other members of the family. She attempts both to make people aware of health problems and tactfully to suggest realizable ways of handling them. She does not lecture housewives and tries not to give unsolicited advice. Nelida works out of a hygiene center, an adobe building in Los Molinos rented by the IDHS.

Nelida is a buxom married woman of twenty-five with one child. She was brought up in an Ica valley community and comes of a family not very different from most Los Molinos families of moderate means. In 1951 the IDHS assigned her to work exclusively in Los Molinos. Other health personnel—physician, dentist, nurse, trained midwife, sanitary engineer, sanitary inspector, immunizer—come to Los Molinos, but only at intervals in the course of work in scores of Ica valley communities.

The Town of Los Molinos

Los Molinos is one of several hundred rural communities in the valley of Ica, a coastal region about 200 miles south of Peru's capital city of Lima and connected with it by the Pan American Highway. The valley is one of 40-odd oases which interrupt the rainless, sun-baked desert of the Peruvian coast. To the west is the Pacific and to the east tower the Andes. A river which flows only during the four- to five-month rainy season in the Andean highlands is the valley's prime source of water and its life's blood. Nature in the region is a study in contrast between rich agricultural oasis and encompassing desert, between aridity in July and fertility in January. Culture, too, shows sharp contrasts. Agricul-

ture ranges from primitive subsistence farming to large-scale commercial cultivation. In communities like Los Molinos, one finds rude cane and adobe huts, traditional saint cults, native curers and lay midwives, and a complete absence of sanitary water or sewage systems. In the city of Ica, only 15 miles away, there are architect-designed dwellings, the Rotary Club, physicians and hospitals, and a relatively efficient water and sewage system.

Most people of Los Molinos are peasants. Some own individual family plots, but the majority work as field hands for local plantations. The plantations are given over mainly to cotton fields and vineyards; family plots grow beans, squash, corn, and fruits. Los Molinos has a population of approximately 1,000. The physical core of the town consists of two long rows of houses lining a dirt road. About midway is the town's main square, a large cleared rectangle bordered by the Catholic Church, the Civil Guard post, municipal quarters, the public well, and the dwellings of the more prominent families. Most houses are uniformly drab adobe and mud-plastered cane structures—dirt-floored, windowless, one-storied affairs.

Los Molinos is predominantly *cholo*, a term which has racial, cultural, and social meanings and corresponds to the term *mestizo* used in other parts of Latin America. Cholos are racially mixed, basically Indian with some Spanish admixture. They follow a way of life which is not Indian, Spanish, or modern western, but a vigorous mixture of the three. Socially, they rank low in Peru's social geography, just a cut above Negroes and highlanders. More than two-thirds of the community are cholo, and the remaining one-third is split between highlanders and Negroes. Highlanders are similar in racial makeup to cholos but are looked down on by coastal cholos; their native tongue (Quechua) and highland clothing are derided. The town's Negroes are descendants of slaves introduced several centuries ago by slave-trading Spaniards. Cholos, Negroes, and highlanders all speak Spanish, although recently arrived highlanders do so with a noticeable accent.

Economic distinctions are also recognized within the town. About ten families are prosperous. The rest are about equally divided between moderately well-off and poor. These distinctions

are all relative; from an outsider's point of view they might be considered three grades of poverty. Economic and ethnic distinctions enjoy only gross correspondence with each other. Cholos are found along the whole economic range; Negroes are mainly at the economic bottom; and highlanders distribute about evenly between moderate and poor. Although Los Molinos is regarded by Ica, only 15 miles away, as an undifferentiated community of poor cholos, closer inspection reveals it to be rather highly differentiated.

Water rusts no pipes in Los Molinos. It is borne directly from stream and well to large earthenware containers in the household by means of cans, pails, gourds, and casks. Children are the most frequent water carriers. It is considered inappropriate for males and females of courtship age and married men to carry water, and they seldom do. There are three sources of water: a seasonal irrigation ditch, a spring, and a public well. All are sedimented in various degrees, subject to pollution at all times, and show contamination whenever tested. Of the three, the irrigation ditch is most favored. It is close, running parallel to the main road about 50 yards distant; children can be sent to fetch its water; it has the virtue of being running rather than stagnant; and it inspires complex devotion for its annual rejuvenation of the Los Molinos soil. People like its taste. It is only seasonal, however, running from about December to April and is part of the ramified irrigation system feeding off the River Ica.

The spring lies a mile or more from the center of town; it is a year-round source and is used by many families when the ditch is dry. Several local men who are professional water sellers fill their casks and load their burros at the spring and peddle the water to housewives. During the dry-ditch season, most families deal with the water sellers; only women and children of the poorest families make the formidable trip to the spring on foot. The public well, although a year-round source, is used regularly only by families living nearby. Most Los Molineros dislike the taste of its water.

Nelida's objectives include efforts to get people to install and properly use privies, burn garbage daily, control house flies, and report suspected cases of communicable disease promptly. She also tries to get housewives to boil drinking water. When Nelida

first arrived, she discovered that 15 of the 200 households were already boiling water daily and that every household boiled water on occasion, particularly when family members were sick. During the next two years, she paid several visits to every home but devoted especially intensive effort to 21 families. She visited every one of these selected families between 15 and 25 times. Of the 21 housewives, she has induced 11 to boil water regularly. Let us look at the people behind these figures by describing six housewives, typifying different responses to water boiling. Mrs. A and Mrs. B were already boiling their drinking water when Nelida arrived. Mrs. C and Mrs. D began doing so as a result of IDHS educational efforts. Mrs. E and Mrs. F are among those who continue to drink their water unboiled.

Mrs. A, Who Obeys Custom

Mrs. A is about forty, a cholo and a native of Los Molinos. Her husband, who is fifty, came to Los Molinos as a child from his original home in the Andean highlands. He has lived in Los Molinos more than forty years, is ostensibly an accepted member of the community, and resembles native Los Molineros in appearance and actions. Yet behind his back, he is still referred to as "the highlander." He is the driver of the bus that makes two jarring round trips daily between Los Molinos and Ica. Besides the couple, there are two others in the house, a son and an unmarried sister of Mrs. A. Mrs. A used to teach in the community's public school but several years ago started a private school, which meets in her house. The A's are in the middle-income group and from bus and school enjoy a somewhat higher cash income than do most middle families.

Mrs. A suffers from what she says doctors in Ica have diagnosed as sinusitis. Although her sinus trouble is not incapacitating, the community perceives Mrs. A as one of the town's "sickly ones" by virtue of the chronic nature of the ailment. She likes to talk about her illness. The sinusitis came about, says Mrs. A, when "cold" entered her respiratory passages and lodged in her sinuses.

Every morning after breakfast she boils a potful of water. When it has had time to cool, she leaves her pupils to walk back to the kitchen and transfer the water to a fancy glass pitcher, covering

it with a cloth. Mrs. A's daily habit of preparing and drinking boiled water is a practice she initiated prior to Nelida's arrival in Los Molinos and without understanding of the germ theory of disease. Her habit is linked to the local and complex system of hot and cold distinctions. The basic principle of the system is that many things in nature are inherently hot, cold, or something intermediate, quite apart from actual temperature. Things that can be so distinguished include foods, liquids, medicines, body states, illnesses, and even inanimate materials. In essence, hot-cold distinctions serve as a series of avoidances and prescriptions, important to such areas of belief and behavior as pregnancy and child rearing, food habits and work habits. They apply especially to the entire health-illness system, including prevention, diagnosis, prognosis, home medical care, convalescence. They also provide culturally plausible explanations for chronic illness and even death.

The hot or cold nature of most foods does not change regardless of temperature variation, cooking, or other processing. Water is one of the few exceptions. "Raw" water is cold; "cooked" water is hot. Cooked water in Los Molinos has become linked with illness. Through processes of association, Los Molineros learn from earliest childhood to loathe boiled water. Most residents can tolerate boiled water only if they add a flavoring—sugar, tea, lemon juice, cinnamon, onion, lemon peel, barley, corn, or herb. Mrs. A prefers a dash of cinnamon.

Once an individual is considered sick, whatever the specific diagnosis, he or his family invoke the avoidances and prescriptions of the system. Extremes of "hot" and "cold" are denied him; it would be unthinkable, for example, to let him eat pork, which is "very cold" or to drink brandy, which is "very hot." He must avoid extremes in general, but "cold" in particular. "Cold" is virtually an evil entity; it can be absorbed through "airs" or the ingestion of food, can take up lodgings within the body, and can wreak great harm even long after it has entered. The avoidance of "cold" is a must for the very young, the very old, the pregnant, the delicate, and the sick.

At no point does the notion of bacteriological contamination of water enter the scheme. By tradition, boiling is aimed at

eliminating not bacteria but the innate "cold" quality of un-boiled water. Mrs. A's illness is chronic, but the same rules would apply to an acute or a temporary illness. In obedience to custom, one drinks boiled water during illness.

Mrs. A and others like her account for eight of the housewives who were already boiling their drinking water when Nelida arrived. All eight are sickly; only their ailments differ. Other than Mrs. A, three complain of asthma, two have tuberculosis, one has had typhoid fever, and one is just sick.

Mrs. B, Who Defies Custom

Mrs. B, like Mrs. A, is one of the 15 housewives who regularly boiled water even before Nelida came to Los Molinos. But Mrs. B does so for quite different reasons. She is about fifty-five and was born and reared in Los Molinos. She and her family are cholos. Mrs. B is a grandmother and the arbiter of domestic affairs in her ten-person household. She lives with her husband, a grown son, two married daughters and their spouses, and three grandchildren. Mr. B works on his small agricultural holdings and also hires out occasionally as a plantation hand. The son and a son-in-law work in the city of Ica, and one son-in-law is a plantation laborer. Mrs. B and both married daughters are usually occupied about the house. They keep one of the best-ordered houses of the community, from tile-floored living room to dirt-floored kitchen. Economically, they are in the community's middle group.

Mrs. B is the perennial butt of gossip, but her professed indifference blunts its bite. She is labeled a social climber, one who is pretentious and apes her betters. According to gossip, Mrs. B is no better than anyone else, "but doesn't she put on airs!" Mrs. B puts it differently; she feels she is cleaner, more refined, and generally superior to most of her neighbors. She says that Los Molinos is really a dreary place, and its people are dull, backward, and back-biting. As compared to her neighbors, she sees herself as an island of high ideals and cleanliness in a sea of low ideals and dirt.

An important event in Mrs. B's life, ultimately leading to daily water boiling, was her brother's departure for the metropolis of Lima many years ago. Starting as a poor but ambitious young

man, he apparently made good in the big city. As Mrs. B and Los Molinos now see him, he is a person of substance, worldly wisdom, and affluence. About twice a year, he visits Los Molinos for several days. Naturally, he is an authority on the current political situation, the price of cotton, and what one should do for a pain in the back. Everyone knows which parlor chair is his, and it gets dusted before he sits down. As they all sit in the parlor, Mrs. B listens attentively to her brother, while the barefoot and spectacularly dirty children of neighbors peek from the front door at the great man and the wonderful gleam of his gold teeth. When Mrs. B seats him at the head of the dining table, she gives his eating utensils another rub with the all-purpose cloth, dabs another dust speck off his plate. There is always some tension between him and the men of the household, and they rarely quote his opinions after he returns to Lima.

Why Mrs. B's brother began preferring boiled water during his sojourns in Los Molinos is unclear. At any rate, Mrs. B began to boil a daily drinking supply for him during his occasional visits. Whether because of direct suggestion or some indirect effect attached to his behavior and values, Mrs. B initiated water boiling as a daily year-round practice in her kitchen. Mrs. B herself drinks one liter of water daily and reproaches herself that she cannot get more down. "My brother says," confides Mrs. B, "that one should drink one and one-half to two liters of water a day."

Mrs. B apparently likes to talk with Nelida, perhaps in part because she has few friends. Mrs. B attended several of Dr. U's talks, including the one in which he demonstrated the microscope and emphasized the need to boil water. When Nelida visited her some days after his talk, Mrs. B was excited and quite proud of herself. "Imagine," she told Nelida in reference to her habit of boiling the water, "without even knowing, to be doing such a good thing!" In fact, a single talk by Dr. U was enough to convince her that microbes existed and that they could produce sickness. In essence, however, Mrs. B heard from Dr. U only what she wanted to hear. Microbes and dirt are identical for her; indeed, microbes is a more gratifyingly ominous synonym for plain dirtiness. To admit to "having" microbes is socially degrading;

therefore, enlightened people like Mrs. B use a duster on them, sweep them out, rub at them with a cloth.

To the community of Los Molinos, and particularly to the community of women, Mrs. B is a kind of cultural outlaw. What damns her as a deviant, in reference to water, is not simply that she boils water daily, but that she does so when no member of the family is sick. Los Molinos society exacts a price for water boiling. The price is "being sick," which involves both the right and obligation to depart from normal cultural standards. Mrs. A, we will recall, pays the price and thus is able to escape group censure.

Mrs. B, however, boils water without paying the price and thus becomes a target for semi-ostracism. Although healthy, in fact not even making a bow to cultural proprieties by pleading illness, she boils water. Of course, her repudiation of group expectations goes even further than boiling water while healthy. She also scorns local standards of cleanliness and in general flouts the values that promote group cohesiveness in Los Molinos. In rejecting local standards, Mrs. B is, of course, accepting others, the standards represented by her citified brother. She is a deviant by local norms, but according to her preferred standards is "progressive."

Mrs. B and four others like her account for five of the 15 housewives who began to boil water daily even before Nelida arrived. Of the five, three were swayed by relatives living in Lima and two by relatives in Ica. By simple arithmetic, we see that two diverging circumstances, enduring illness and the influence of a city relative, account for all but two of the 15 housewives whose water boiling antedated Nelida's arrival. The remaining two are special cases: one had worked as a cook for the mistress of a plantation and had boiled water for many years as part of her duties; the other worked with her as a laundress; and both now continue to boil their own water.

Mrs. C, Persuaded by Nelida

The C parents came originally from a valley in the Andes mountains that loom over Los Molinos to the east and north. Their home valley is "three days away" over steep animal trails. They are highlanders, but their children are accepted as coastal cholos. There are five adults in the household—Mr. and Mrs. C,

two grown sons, and a grown daughter. There are also four children, a late child of the forty-five-year-old Mrs. C and her fifty-year-old husband, and three grandchildren, the daughter's offspring. The family belongs to the middle group. Mr. C uses Los Molinos as his base between trips to the highlands, where he goes to trade and to make sure that his highland relatives are taking care of his cattle and small landholdings back in his mountain valley. The parents moved to Los Molinos to secure an education for their children.

Like many highlanders, Mr. and Mrs. C have mixed attitudes toward the coast. In addition to its superior facilities for educating one's children, it has more goods of all kinds than the highlands, has superlative fruits, and, in general, is more prestigious than the highlands. On the other hand, it has an unrelieved flatness and a desert monotony in color. Its heat and dryness are oppressive. Its people are disdainful of highlanders, even cruel to them. But perhaps worst of all, according to a deeply felt highland attitude dating back to pre-Columbian times, the coast is a miasma of disease and a potential deathtrap for highlanders. In particular, malaria and tuberculosis are feared. Within recent years the IDHS has practically eliminated malaria in the coastal area, but the fear of malaria still feeds on the terrible experiences of former years. Tuberculosis, too, is regarded by highlanders as a coastal disease, and one can collect many highland stories of individuals who have gone to the coast and even prospered, have been struck down with "the lungs," and have not even lived long enough to crawl back to their highland valleys to die. Mr. and Mrs. C, and particularly the latter, brought to Los Molinos their ambivalence toward the coast. It was a place of opportunity, wonders, good education for their children, but at the same time one of known dangers and unknown horrors.

Nelida does not patronize Mrs. C or treat her contemptuously but tries patiently to communicate with her, expresses interest in her opinions, and does not make fun of her poor Spanish. For Mrs. C, Nelida is a friendly authority who imparts "coastal" knowledge and brings protection against dangerous coastal diseases. Mrs. C now boils water regularly as a result of Nelida's efforts. She has also installed a privy and sent her youngest child

to the hygiene center for examination and weight control, accompanied by her grown daughter. Mrs. C was too "ashamed" to bring him herself.

Mrs. C brightens when she talks about her highland village and at once saddens: "Three long days away." She still wears the twin braids of highland women, although she has long since abandoned the colorful waists and skirts of her home in favor of the plain cotton dresses of the Los Molinos mode. She converses in stumbling Spanish and speaks her native Quechua tongue only with recent arrivals from the highlands. Her sons and daughter would be "ashamed" to accompany her down the long street of Los Molinos, to ride with her on the bus, or to be seen with her in Ica. Her braids and speech and subtleties of gait and posture identify her as a member of a disparaged outgroup. She can never achieve more than marginal social acceptance in Los Molinos society.

However, being an outlander, her right to do certain outlandish things is tolerated. Hence, Mrs. C's practice of boiling water is not condemned by the community. It neither improves nor worsens her generally marginal position. Having nothing to lose socially, Mrs. C gains in personal security by heeding Nelida's friendly counsel. She is ready to grant that the water, like other things in Los Molinos, is dangerous. She is grateful to Nelida for teaching her the means to neutralize the danger of contaminated water.

Although Nelida's relations with housewives are generally informal and relaxed, some housewives have an especially keen need for a friendly confidante. They include women who are lonely or who lack close ties in the community—housewives without local kinswomen, newly married women who set up separate households, people like Mrs. B who have half alienated their neighbors, and some highlanders like Mrs. C. Responding positively to Nelida's friendly overtures, they are favorably disposed toward her health message.

Of the 11 new converts to water boiling, seven can be credited exclusively to Nelida's efforts. These seven tend to place high value on their social relationship with Nelida and look forward to her visits. Although the remaining four new boilers are on friendly

terms with Nelida, friendship by itself was not enough to convert them. Mrs. D is an example.

Mrs. D, Persuaded by Dr. U

Mrs. D has been won over to water boiling but not for the same reasons as Mrs. C. Mrs. D lives in a small house. She and her husband are cholos and life-long residents of Los Molinos. Mrs. D is twenty-five, her husband about forty, and they have five children. He is a plantation field hand and she, as she says in a tone of resigned bitterness, is "always at home." They are poor.

Mrs. D receives Nelida well and enjoys talking with her. She envies Nelida's freedom to move around and talk to people about interesting things. She has responded well to the health department's program. Mrs. D and her husband are planning to install a privy. She obediently brought three of her infants to the hygiene center for examination and weight control and during her last pregnancy went to the center regularly for examinations. For this, both Nelida and Mrs. D deserve credit; extreme prudishness about exposure of the body prevents many women from submitting to prenatal examination by any person, male or female, other than one of the five local lay midwives. After her sixth visit, Nelida knew Mrs. D was convinced that local water was a potential source of disease and that boiling was an effective preventive measure. Nelida also knew that Mrs. D had both the time and facilities for boiling the water. Yet weeks and months went by and Mrs. D took no steps to put her new knowledge into practice.

After Nelida had visited Mrs. D for the twelfth time, Dr. U began his series of local talks, which were attended faithfully by Mr. and Mrs. D and all five children. On Nelida's thirteenth visit, Mrs. D announced she had already begun to boil a kettle of water after breakfast every morning. She related how Dr. U had said this and said that, and how he had recommended that everyone boil his drinking water. Nelida was pleased at the favorable turn of events. But she was also somewhat piqued; after all her patient explaining, helping Mrs. D understand the idea of contamination and providing strategic stimulation, Mrs. D ungratefully gave all the credit for her conversion to one talk by Dr. U. Mrs. D does not broadcast the fact that she boils water daily. To intimates, however, she explains that she does so because "the

doctor recommended it." Nelida has heard this so often that she is tempted to retort, "Well, I recommended it first, you know."

In boiling her water and yet hoping to escape criticism, Mrs. D is trying to have her cake and eat it, too. Her group's standards, from which she wishes to depart without being penalized, hold it proper for healthy people to drink unboiled water and for sick people to drink boiled water. But the health department has other norms: boiling water for healthy people is right and necessary, while failure to do so shows lack of concern for safeguarding health. The two standards conflict. The people of Los Molinos equate health with unboiled water; the health department equates health with boiled water.

Mrs. D was caught in the middle of conflicting assumptions—until Dr. U entered the scene. Before that time the only available "authority" who could make a new set of water usages legitimate was Nelida. Unfortunately, she is not recognized as an authority by Mrs. D and by Los Molinos society in general. Traditional water habits are maintained by the weight of Los Molinos culture and society. This is a form of authority with teeth to penalize rule breakers; the derision directed against the pretentious Mrs. B has the added effect of forewarning other would-be deviants.

With Dr. U's public and official sponsorship of water boiling, Mrs. D gained a champion who could defend her new behavior. Physicians are recognized as authorities by Los Molinos society by virtue of their professional status and superior social rank. It is significant that almost at once following Dr. U's public endorsement of water boiling, Mrs. D adopted the new behavior.

Although it is possible that Dr. U added information not already imparted by Nelida and in this way helped to convince Mrs. D on logical grounds to boil her drinking water, it is highly probable that this rational appeal played only a minor role. More important than his facts and his logic was the sanction of an accepted and respected medical authority. As the IDHS and Dr. U himself see it, his principal job is to provide new knowledge and to appeal to reason. In this he is doubtlessly effective, but in the case of people like Mrs. D his primary contribution is to give socially acceptable authorization to a departure from local cultural norms.

Mrs. D wants a ticket to boil water without paying the traditional price of being sick. Mrs. A paid the customary price, got her ticket, and the cultural gatekeepers let her pass. Mrs. B appropriated the ticket without payment and aroused indignation. Mrs. C does not really need a ticket. It would do her little good; as an outsider, she is a gate crasher to begin with. But Mrs. D is an insider; she hopes that a free pass endorsed by medical authority will be culturally accepted.

Four of the 11 new boilers, including Mrs. D, found Nelida's patient persuasions insufficient, delaying action until listening to Dr. U at a public lecture. It is too soon to know whether Los Molinos society will continue to honor free passes to water boiling issued by the hygiene visitor or by the more respected IDHS physician. What will happen as still others take advantage of this free pass? Will sickness cease to be the price of water boiling in Los Molinos? Will free passes from IDHS representatives be declared invalid? Or will some compromise emerge?

Mrs. E, Who Would but Can't

Except for the fact that she does not boil water, Mrs. E is a living vindication of the IDHS philosophy that the hygiene visitor can help people help themselves to better health. Following the stimulation of Nelida's conversations and Dr. U's public talks, Mrs. E has initiated a number of ingenious changes in household routines and has been consistently receptive to IDHS ideas. She has had the men of the household install a privy and build pens for barnyard animals, and has made hygiene innovations in her impoverished kitchen. She is even convinced of the value of boiling the drinking water, yet does not do so.

The E family is poor and cholo with deep roots in Los Molinos and an impressive number of kinsmen. The titular heads of the household are the aged grandparents. Senile and ailing, the grandmother wields little authority in household affairs and leaves their effective management to a daughter, Mrs. E, who is in her early thirties. The latter has only a daughter and the title of "Señora" to show for a brief common-law union. Neither Mrs. E nor her child suffers any stigma within the family or in the community at large. In Los Molinos, unwed mothers and their chil-

dren are "more to be pitied than scorned." Mrs. E's resourcefulness and self-sufficiency, however, invite little pity. Three other individuals complete the household of seven: Mrs. E's brother and two teen-age nephews, offspring of a dead sister.

Mrs. E has learned the meaning of contamination and acknowledges that water should be boiled, but she pleads lack of time. Nelida knows she has made other changes despite shortage of time and resources and cannot refrain from feeling, "If she *really* wants to boil water, she can find the time." But can she?

Mrs. E rises at 5 a.m. and prepares breakfast, serving her brother and nephews, who work as plantation field hands. She bolts her own meal and then leaves the house to take breakfast to her aged father, who has been working in the fields since 5:00 or 5:30. On her return route, she must collect fagots for the hearth and fodder for fowl and animals. If her preschool child is awake on her return, she slips a hand-me-down cotton dress over the petticoat in which the child has slept, watches her slosh water over hands and face, and sits her down for a morning piece of bread, ripe olive or bit of cheese, and a cup of tea or, if Mrs. E has dashed to the milk seller, coffee essence with boiled milk. At some point, Mrs. E also manages to shepherd her ailing mother to the breakfast table.

And now she shoos the child out of the way and really goes to work. She must wash the breakfast utensils; feed chickens, pigs, and a goat; take two or more trips to the well for water with a long coil of rope over her shoulder, a filler pail, and two five-gallon gasoline tins; wet down and sweep her hard-packed dirt floor and the open sandy area in front of the house; slap and arrange the bedding; check several times on why her daughter is so quiet or why she is crying; listen to her mother complain of the heat as she sits in the sun and hear her deplore the cold when moved into the shade. Mrs. E also manages to visit the homemade privy in the yard. And during the morning she has the almost daily little argument with her mother, who refuses to use the privy, complaining of the dangers of "evil odors" and "bad airs," and remarking that the fields were good enough for people in the old days and, anyway, who ever heard of doing that sitting on a box all penned up in a little enclosure of cane stalks.

Now the sun is climbing high, the day's terrible heat has begun, and Mrs. E thinks of the midday meal. She must shell corn or beans, grind peppers on a flat stone, pare potatoes, cut up squash, kindle the hearth fire, throw together a soup, and make one of the several daily premeal trips down the dusty road to the small general store. Not until all the others have been served their midday meal does Mrs. E sit down to eat.

During the baleful heat of the afternoon, all the dogs and some of the men take siestas, the children vanish, and only the flies and the women are awake. For an hour or more in the afternoon, Mrs. E relaxes. Nelida, who knows individual schedules well, may drop in, or the visitor may be one of Mrs. E's innumerable female relatives. Mrs. E may even do some visiting herself, to get away from her own kitchen and catch up on gossip.

Later in the afternoon, after one or more trips for additional water, fagots, or fodder, Mrs. E prepares the evening meal in time to serve it soon after sundown. She ends her day by crawling into the pallet beside her daughter once she has washed the meal's utensils, looked after her mother, prodded her daughter to bed, inspected the fowl and animals, and listened to her father's remarks on work and the hard life of the poor.

To generalize Mrs. E's daily schedule to other households in Los Molinos, one would subtract a little pressure for those with older daughters at home or smaller families, and would add proportionately for those with more small children or larger families. On Saturday or Sunday and on at least one weekday, she varies her routine and washes clothes. On those days, her nephews are obliged to relieve her of fetching fagots, although she compensates with more trips for water. Almost every Sunday she climbs the rickety bus for Ica and goes to the crowded Sunday market.

Nelida has visited Mrs. E more often than any other housewife in Los Molinos because they like each other and because of Mrs. E's eagerness to learn. Mrs. E has gained a workable grasp of the germ theory of disease from Nelida and from Dr. U's talks; she is one of the few members of the community who understand that houseflies are vectors rather than disease agents in themselves. Nelida is proud of Mrs. E, who does not "confuse hygiene with

elegance" but uses her meager resources for health improvements. Mrs. E is admittedly very busy, but even so why doesn't she boil water? Let us look further into the daily schedule of housewives in Los Molinos, giving special heed to the hearth and the fuel supply.

Although a few households have kerosene stoves, the majority use wood-burning hearths, waist-high structures made of adobe bricks. The fagots which serve as fuel are abundant when vineyards are trimmed or old cotton plants destroyed and when irrigation ditches first fill and float wood down from upstream. During about half the year, however, people must scour the fields and the banks of dry waterways in search of fuel. Those who can afford it sometimes buy fagots from city wood sellers. Most housewives practice rather strict fuel economies. Fire is usually kindled but three times daily, in each case to prepare the family meal. Thus, the fuel situation and the three-meal pattern place a severe limit on water boiling: it can be done only during one of the three periods when fire is kindled.

A second limiting condition, of varying force from one household to another, relates to the hearth and cooking vessels. Most hearths can accommodate no more than two vessels at a time, and some hearths are so badly constructed that they can accommodate but one. This immediately rules out boiling while the meal is being prepared. Moreover, vessels are typically in short supply, most households possessing only a frying pan and two metal pots, supplemented with tin cans and other makeshift utensils. Hence, water can be boiled only *after* the meal is prepared, when the hearth has room and a vessel is free.

A third limiting condition is imposed by firm convictions relating to food and drink. Any prepared food or boiled water left overnight is "sleeping" food or "sleeping" water on the morrow. By virtue of having "slept," it becomes dangerously "cold" within the meaning of the pervasive system of hot-cold distinctions. To neutralize the danger of sleeping food or water, it must be re-cooked. Since it would have to be boiled all over again on the following day, it is useless to boil water after the evening meal. Thus, the possible boiling periods are now reduced to two, after breakfast and after the noon meal.

A fourth limiting condition concerns water-drinking habits and further reduces the possible boiling periods to one—after breakfast. Men, women, and children drink most of their daily water during the terrible heat of midday. Moreover, people prefer to drink boiled water only after it has cooled. Since the minimum time for cooling is about two hours, and since it should be drinkable by noon, there is no alternative but after-breakfast boiling. Although these limiting conditions—fuel scarcity, the crowded hearth, “sleeping” water, and drinking habits—may not seem entirely logical to the outsider, they are logical and forceful from the vantage point of a person reared in Los Molinos.

Mrs. E lacks time to boil water during the crucial after-breakfast interval; she has to leave the house to do essential chores. During the afternoon she has a little free time; even assuming her willingness to forgo part of her break, the afternoon is inappropriate as a time to boil water. It means kindling the hearth in the awful heat, using additional fuel, having the water ready too late to satisfy midday thirsts and, if she keeps it overnight, reboiling it to remove its “sleeping” quality. Without exception, every housewife who boils water in Los Molinos either does not have to leave the house after breakfast or has a household person to whom the chore can be delegated. On the other hand, among the group of ten who have not yielded to persuasion despite intensive efforts by Nelida and Dr. U, five simply have no time after breakfast. The other five apparently do have time but resist water boiling for other reasons. Mrs. F is an example.

Mrs. F, Who Could but Won't

Both Mrs. E and Mrs. F are poor, both have been exposed to Nelida's repeated visits and Dr. U's talks, and neither boils the drinking water. There the resemblances end. The F family is culturally conservative and unresponsive to the whole range of suggested health changes.

Twelve people live here; these include the sixty-year-old widow, Mrs. F; a daughter, her spouse, and a child; a widower son and his five children; and two other grandsons, children of a daughter working away from Los Molinos. The son and son-in-law both work as plantation field hands and are the economic

mainstays of the household. Nelida visits with both Mrs. F and her daughter; one or both are invariably at home. The F family is Negro and deals with Nelida across ethnic barriers.

Although Nelida does not attempt to exercise authority, Mrs. F insists on setting her up as an expert in order to demolish her. When Nelida once discussed some safeguard to the health of infants and children, Mrs. F called to her cholo neighbor, “Come on over and listen to this young expert tell me how to take care of children.” Mrs. F is locally renowned as a superb cook, and other families solicit her services to prepare feasts. Nelida usually avoids food topics with Mrs. F, except occasionally to ask for personal advice. On one occasion, however, the buoyant Mrs. F trapped Nelida into asserting that greens should not be boiled to death, and Mrs. F pounced. In a voice that carried far in the afternoon quiet, she called to her neighbor, “Come on over and listen to the expert tell me how to cook.”

Mrs. F likes Nelida now, although at first she treated her with a coolness verging on hostility. During Nelida's first visits, Mrs. F let her carry the dead weight of a one-sided conversation. To Nelida's attempts to break conversational ground, Mrs. F returned, “Imagine,” “humph,” “really.” On one occasion she flared up and said, “I know well enough my grandchildren aren't as healthy as the children of the whites and the rich. I don't need you to tell me that. How can we give them the right things to eat when our big worry is to give them something to eat?”

In her relationship with Mrs. F, Nelida is the victim of a cross-fire of ethnic differences. She is not a completely innocent victim, however, in that she shares prevailing cholo stereotypes about Negroes. Negroes have nicknames for cholos, referring to their “faded” skin, their attempts to mimic their rich betters, their insipid foods, and general lack of flavor in their stolid pleasures. Cholos also have nicknames for Negroes, which refer to relative darkness of skin color, hair type, assumed laziness, predilection for certain foods, and assumed possession of sorcery skills. Nelida is scrupulous about avoiding the use of all such derogatory terms.

Mrs. F is not only a Negro housewife but a representative of cultural conservatism. Hence for her, as for most residents whether cholo or Negro, beliefs in hot and cold distinctions dic-

tate unboiled water for the healthy and boiled water only for the sick. Although Mrs. F and her daughter have attended several of Dr. U's talks, they remain unreceptive to the notion of bacteriological contamination and unconvinced of the need to boil their drinking water. Although accepting certain notions about germs, Mrs. F has effectively reinterpreted them to fit into the local theory of disease transmission, which is incompatible with the idea that germs may occur in water. Native theory holds, in part, that certain diseases are contagious in the sense that they can "stick to" people. Such diseases include syphilis, tuberculosis, and other respiratory disorders. They travel from the sick and "stick to" the well, crossing over by means of physical contact, the immediate air, and breath vapors. Mrs. F equates microbes with the "stick-to" quality of disease assumed in native theory.

Her understanding of microbes provides no directive for boiling water. How, she argues, can microbes fail to drown in water? Are they fish? If they are so small that they cannot be seen or felt, how can such delicate things survive in water? Even in the cleanest water, they would have no chance, let alone in dirty water. Furthermore, it is really a quality of the disease itself that brings sickness; if anything, it is the disease that produces the microbes and not the reverse. How can such minute animals, unescorted by the disease, hurt a grown person? How absurd and hypochondriac can one get? There are enough *real* threats in the world to worry about—"cold" and "airs" and poverty and hunger—without bothering oneself about animals one cannot see, hear, touch, or smell.

Unlike the group represented by Mrs. E, Mrs. F is one of those who have time to boil water but whose allegiances to traditional standards are at odds with the notion of daily water boiling for the healthy. Between them, Mrs. E and Mrs. F stand for most of the 160-odd families in Los Molinos who still do not boil their drinking water.

Each of these types, from Mrs. A to Mrs. F, represents social segments of varying sizes in the community. To shed more light on the problem of success and failure of water-boiling inducements, we must shift attention to the larger segments which the six housewives represent.

The Hygiene Worker and the Community

Nelida is very conscientious in her effort to carry out a hard job in a difficult situation. In some other aspects of her work—maximizing attendance of expectant mothers at the hygiene center, improving techniques of garbage disposal and house-fly control, serving as two-way liaison between the community and the several categories of IDHS personnel—Nelida secures results more positive than those in the household boiling of drinking water. Understandably, water-boiling efforts in Los Molinos produce slow and limited gains; they require behavioral changes which depart from prevailing patterns and are not answers to initially felt needs. This is not unusual in local health work. Although it is gratifying to tailor health work to felt needs, one must sometimes attempt to create new ones in order to bring felt needs into alignment with health requirements.

Nelida has made a good adjustment to trying circumstances. She conforms to local etiquette. She confines most of her interaction to women and is circumspect with men; defers to age seniors and is not overly intimate with juniors; accords to housewife, storekeeper, and town officers the respect, informality, or social distance due each. She knows more details of the town's life than even some of the native townspeople do. Nelida also possesses a kind of skill which virtually no amount of formal training could provide—an almost automatic understanding of the motivations of her people and the subtleties of their social structure. However, at least as important as the quality of Nelida's efforts in determining water-boiling results is the influence of factors relating to the town's social makeup and design of living.

Common to most residents are firm convictions about hot and cold distinctions, limitations of hearth and utensils, peak consumption of water during midday, the pressing fuel problem, and initial "misunderstandings" of Nelida's role. Yet there are differences between subgroups in Los Molinos which are critical for the water-boiling program.

The fuel problem is most severe for the poor, who cannot afford to buy wood when fagots are scarce; middle-level families can supplement the fagot search with wood purchased from wood sellers. During the dry-ditch season, many poor housewives take

the long trek to the spring, an arduous and time-consuming chore; middle-rung housewives, on the other hand, can buy spring water from water sellers and are in a better position to devote the gained time to just such household chores as water boiling. Because they are poor, many women must do double duty as housewives and as field hands. These women must leave their houses early and do not have an unoccupied after-breakfast interval. In part, the community considers women middle level precisely because they need not perform the double role of housewife and field hand but can dedicate their full time and energy to the household.

As would be expected, there are more water boilers among middle-level than among poor housewives in Los Molinos. Of the 21 housewives who were exposed intensively and about equally to Nelida's and Dr. U's efforts, 10 were middle and 11 were poor; this intensive sample corresponds fairly well to the proportions of middle and poor families in the community at large. Of the 10 middle-group housewives, 8 initiated water boiling and only 2 did not. Of the 11 poor families, however, only 3 initiated water boiling and 8 did not. Moreover, it is not enough that housewives need time to boil water; they also must have time to receive Nelida's visits. As a rule, housewives in middle-level homes are simply more available to Nelida than are poor housewives, whether she schedules her visits in the morning or the afternoon.

The poor are also more insular, more bound to the horizons and values of Los Molinos. Holding more firmly to tradition, the poor tend to manifest greater resistance to new ways and to be more prone to regard innovations as threats to established custom. The instance of Mrs. F, typical of both cholo and Negro cultural conservatives, demonstrates how allegiance to tradition can block acceptance of water boiling.

Although she has not yet gained complete acceptance, Nelida is generally liked. Working for two years in a community that regards people born elsewhere but with forty years' residence as outsiders, Nelida has not done too badly. When she first arrived in Los Molinos, Nelida was perceived as a threat. She suddenly appeared, took up residence, and began to walk around and visit homes, ask questions, and try to make friends. Although an IDHS

employee, she did not perform any tangible services such as examining children or giving immunizations. She was interested in one's children, animals, habits, and health. People who later grew to like Nelida were initially baffled that a stranger should want to learn about their health views and should be interested in helping them work out solutions to household problems of health and hygiene. Although it is likely that the entrance of any kind of health worker would have been regarded with suspicion, it is unfortunate that the IDHS did not hold an official ceremony to inaugurate the hygiene center and formally introduce Nelida to the community. As it was, some truly spectacular guesses were made as to what Nelida was *really* doing in town.

Where they stood in the social world of Los Molinos had much to do with the way individuals saw and evaluated Nelida and her program. Among the poor, Nelida had been cast as a dispenser of health department goods and also as a snooper. As an assumed dispenser of tangible health goods, she did not fulfill expectations; rather she proceeded to dispense quite intangible wares—attempted through tactful conversation to help people help themselves. For most poor families, she was a “dirt inspector,” sent to Los Molinos to pry for dirt and to press already harassed housewives to keep cleaner houses. Their perceptions of Nelida in turn colored Nelida's perceptions of the poor. Aware of coolness toward her but unaware of its basis, she found herself responding with resentment. As she saw the situation in her first difficult months in Los Molinos, the more you try to help some people, the more they rebuff you.

Middle-group housewives perceived Nelida primarily as “dirt inspector,” and still do to some extent. However, middle women have more time to set households in order; they feel more “inspectable” and resent Nelida's supposed snooping less than do the poor. Middle women also saw Nelida in a light that poor women did not: as an individual personality rather than a representative of a class. This is due to twin circumstances: middle-group housewives have more time to spend with Nelida, and Nelida herself is a middle-group person. Similarity of background promotes a feeling of identification and mutual sympathy between Nelida and middle-level housewives of Los Molinos.

We have said little about the few prosperous housewives. These have at least as much time and energy as the middle-group women to devote to things like boiling water. Yet Nelida has been unable to induce a single prosperous housewife to boil drinking water. These ten or so women cast Nelida in the role of "educator" or "civilizer" of the poor. When she first appeared they neither welcomed Nelida nor perceived her as a threat; in their opinion she and they obviously had nothing to do with each other. Moreover, they saw Nelida as a cholo of a lower social station than themselves. She succeeded in offending these housewives by merely visiting them and discussing the same topics she tried to cover with poor and middle families: house flies, exposed excrement, dangers of contaminated water, disposal of garbage. By attempting to "educate" them, she was perceived as equating them with the unwashed and uneducated poor, and by this token became a threat to their social position. Further, since she was tagged as belonging to a lower social level than theirs, their responses to her efforts were consistently indignant and hostile. They erected and still maintain barriers, not so much to specific water-boiling suggestions as to the socially degrading implication that their hygiene needs improving. Nelida's reception by prosperous housewives has been so cold that for practical purposes she has abandoned efforts to work with them.

Los Molinos has ethnic as well as social class differences, with a coastal cholo majority and minorities of highlanders and Negroes. We know that Nelida has achieved better results with middle-level than with poor families. We may now add that regardless of socioeconomic level she is more successful with native cholos than with the minority groups.

Among the 21 families that have been objects of Nelida's intensive efforts, 12 are cholos, 3 highlanders, and 6 Negroes; these figures correspond reasonably well to the total ethnic proportions in Los Molinos. Of the 12 cholos, 8 are now boiling water; but of the other 9, only 3—one highlander and two Negroes—have been won over. It is worth noting that the two Negroes who have been persuaded are in the middle group. Of the other four Negroes who are poor and include Mrs. F, none has begun to boil water. Expectably, Nelida's most discouraging

results are with housewives who are both Negro and poor, and her most gratifying results are with those who are both cholo and middle class.

Attention to subgroup differences should not obscure the important similarities. There is no residential zoning by ethnic group, and people of diverse backgrounds get along fairly amicably as neighbors, intermarrying and sharing a great many traditions and common values.

However, relatively slight differences of degree become impressive differences of kind upon injection of the water-boiling issue. For example, small differences between housewives in economic standing and in disposition of the after-breakfast period create a clearcut dichotomy between those for whom the boiling of drinking water is possible and those for whom it is apparently not. In the same vein, slight differences between communities in the Ica valley lead to large differences in water-boiling results. Compared with other Ica communities in which hygiene visitors work, Los Molinos is somewhat more isolated from the city, has slightly poorer fuel resources, and has a higher proportion of women who must leave their homes early to work in the fields. The accumulation of differences which singly might be non-significant helps to explain why to date only about 5 per cent water-boiling success has been registered in Los Molinos, while as high as 15 or 20 per cent has been scored in some other towns.

Before proceeding to more general implications, it may be pertinent to mention the question of local leadership. The town's officers, a mayor and town council, are unconcerned either as officials or as men with women's household routines. Although the mayor's wife now boils a daily supply of drinking water owing to Nelida's influence, the mayor himself maintains an Olympian detachment as to what his wife does with water as long as it is there for him to drink. The local lay midwives do exercise informal leadership among women, but these part-time specialists have a stake in maintaining custom. Although they cooperate with the hygiene center on maternity issues, lay midwives tend to cast their weight against such innovations as domestic boiling of drinking water, taking a position on microbes akin to that of the conservative Mrs. F.

IMPLICATIONS

Native Auxiliaries in Public Health

An issue important in international public health concerns the place of native human resources in health work. Can a health team draw key workers from the towns and villages it serves and use them efficiently without sacrificing high standards of health work? In fact, the problem of whether and how to use native workers in regions like Ica has sometimes been phrased as a choice between high and low standards. In this view, one either uses the limited supply of highly trained personnel to do less work but of high standard, or one uses many Nelidas who are available in quantity to do more work but of lower standard.

The Los Molinos material seems to challenge the validity of this either-or question. It suggests rather the desirability of even more effective integration of the efforts of local workers such as Nelida with those of physicians (or other highly trained personnel). Thus, the Los Molinos team consists of a resident hygiene worker and a physician who comes on occasion. The particular health information disseminated and the cultural soil upon which it falls are both important in determining the outcome of an educational program. More than these are involved, however, in the process of communication. Critical, too, are such matters as the social standing of the communicating agent and the circumstances under which the message is conveyed. Unlike the physician, the hygiene worker is essentially an equal among equals, sharing many values and viewpoints with her public; the physician offsets this advantage by his higher standing in local estimation. The hygiene worker can communicate her message under more intimate interpersonal circumstances than can the physician; in compensation, the latter has opportunities to proclaim the health message publicly and thereby give it "official" warrant.

It is useless to debate whether the highly qualified professional or the native auxiliary is the more effective in rural hygiene work. Rather, the need is to combine the virtues of both in complementary team efforts; each performs well what the other can perform only imperfectly. To be sure, the Los Molinos evidence

demonstrates the usefulness of the public health physician in regions marked by many health problems and few health experts; it also demonstrates that in such regions the local hygiene worker, operating as a team member at the grass-roots, can make a unique contribution to health work.

Reference Groups and Health Action

As we have seen, knowledge of the group affiliations of individuals helps one understand their responses to the water-boiling issue. Thus, by virtue of their common membership in the community as such, residents of Los Molinos share many customs and standards—including a core of common understandings about boiled and unboiled water. By providing its members with these and other standards, the community serves as a group to which individuals consciously or unconsciously refer in making judgments and decisions. In this sense, the community as a whole is a *reference group* for its component members.

However, individuals are also identified with one or another subgroup within the community. Despite its surface homogeneity, Los Molinos society constitutes a social checkerboard marked by cross-cutting distinctions of ethnic identification and relative socioeconomic standing. According to their particular subgroup allegiances within the community, individuals tend to be guided by subtly varying standards. Everyone "keeps up with the Joneses," although the relevant Joneses vary somewhat for the differing social segments.

For most individuals, the circles to which they belong are their *membership* groups as well as their *reference* groups. This is to be expected, since a self-reinforcing process is typically involved: one conforms to the standards of one's group in order to be socially accepted, and increasing acceptance in turn reinforces the drive to conform.

However, this is not always the case. Some individuals adopt reference groups other than those to which they apparently belong, sometimes even selecting groups that are totally outside the local community. Thus, the deviant Mrs. B adopts the standards of a social category beyond Los Molinos, an outgroup represented by her citified brother. For other individuals in Los Molinos, but

not for all, the health department plays a role as an influential outside group, one to which they tend to look for certain standards of thought and behavior.

Acceptance of an outgroup's standards frequently involves defection from the standards of one's ingroup. It may be useful to view the IDHS as a reference group in competition with that of the community, and the health program as a set of standards alternative to those of the community. Health departments do more in communities like Los Molinos than promote the public health. They also, perhaps inadvertently, invite people to shift their group allegiances—to change their reference group.

New Health Habits and Cultural Integration

We have seen that a practice as mundane as the domestic boiling of water is arbitrated by local cultural standards and has an investigable sociology and psychology. This suggests that even the most taken-for-granted items of action programs may be found, on scrutiny, to have linkages with unexpected parts of culture and to carry meanings that have consequences for a program's career.

Even perceptions of so common an environmental object as water are culturally screened. A trained health worker can perceive "contamination" in water because his perceptions are linked to certain scientific understandings which permit him to view water in a specially conditioned way. A Los Molinos resident also views water in a specially conditioned way. Between him and the water he observes, his culture "filters out" bacteria and "filters in" cold, hot, or other qualities that are as meaningful to him as they are meaningless to the outsider.

It is axiomatic of all human culture that customs, like men, are not islands unto themselves. Beliefs and customs are parts of cultural systems; they relate to, support, and are enforced by other beliefs and customs. This principle, not so readily discernible when a society is "at rest," becomes more apparent when an action program "disturbs" the society. It is not enough that action workers know the items of custom that characterize the community's way of life; they must also understand how these cus-

toms are linked with one another. Otherwise, one may perceive strange, different, or "illogical" customs as fortuitous things or the vagaries of ignorance; one may also fallaciously assume that new health habits can be introduced by simply adding them to preexisting sequences, or that old habits can be "subtracted" and new ones "added" in their place. The attempt to introduce the use of boiled water for the healthy in Los Molinos represents a case in point.

The IDHS wants people to boil water before consuming it and construes the practice as essentially an *additive* thing: somewhere between the act of fetching water and that of consuming it, people should add a new act to the sequence, that of boiling. Surely this is not asking people to make grand changes in their way of life or to abandon deeply held beliefs, or even to spend any money; they are urged simply to boil water before consuming it. Yet, as we have seen, water boiling is not a simple or merely additive thing in Los Molinos, and the relatively meager response to the issue is not due simply to apathy, ignorance, or stubbornness. That housewives should boil drinking water and that healthy people should drink it are matters that run the gauntlet of many factors, including the group's ecology, its economy, social differentiations, and cultural convictions and behavior.

SUMMARY

A major concern of the Ica Departmental Health Service, a regional health department in Peru, is the attempt to introduce hygienic measures at family levels. A specific problem in the rural reaches of its jurisdiction is to induce people to boil their contaminated drinking water. After two years' effort in Los Molinos, a town of 200 families, a resident hygiene worker visiting individual homes has persuaded 11 housewives to boil water. In this she was aided by a physician, who gave occasional public talks. In addition, there were 15 housewives who were already in the habit of boiling their water prior to the hygiene worker's arrival in town.

A family-by-family investigation disclosed that housewives who decided to boil water did so for different and even opposing

reasons. The diversity of motives also applied to the majority of residents who decided to continue consuming unboiled drinking water. Several boiled water because they were sickly, in conformity with pervasive theories about illness and its relation to the local dichotomy between "hot" and "cold" foods. Others boiled water because they rejected local cleanliness values and other standards. Of those who yielded to health department persuasions, some boiled their drinking water because the hygiene worker recommended it; others wanted to heed the hygiene worker but did not boil drinking water until the physician publicly "authorized" their departure from prevailing norms of water usage.

Among those who did not boil drinking water, as among those who did, motives differed. Some did not boil water because they did not have available an after-breakfast interval which, by virtue of local circumstance and belief, was the only possible and appropriate time to boil water. Included among those who decided not to do so were many whose allegiance to cultural values precluded acceptance of new and competing health values.

The hygiene worker was apparently able to secure more positive results with housewives whose economic level and cultural background were similar to her own. Her own background was middle class by Los Molinos standards, and she belonged to the majority cholo group. She was apparently unable to secure equally positive results when dealing with Negroes or with families of markedly different socioeconomic level from her own.

The Los Molinos experience supports the notion that action programs in regions like Ica can effectively supplement professional personnel with local people trained as auxiliary health workers. The study suggests that detailed knowledge of social and cultural factors of the community is vital to the efficiency of the water-boiling program. It also suggests that useful wisdom comes not simply from knowing the scattered items of cultural belief and practice but from the appreciation that they constitute a system in which the individual parts are linked to form a meaningful structure.

SELECTED REFERENCES

- Foster, George M., "Relationships Between Spanish and Spanish-American Folk Medicine," *Journal of American Folklore*, vol. 66, July-September, 1953, pp. 201-219. The article includes an analysis of Hippocratic-Galenic "humoral" theory incorporated into Spanish-American folk medicine as sets of hot and cold distinctions. (See also Dr. Foster's "Relationships Between Theoretical and Applied Anthropology," *Human Organization*, vol. 11, Fall, 1952, pp. 5-16.)
- Gillin, John, *Moche, A Peruvian Coastal Community*. Smithsonian Institution, Institute of Social Anthropology, Publication no. 3, Washington, D. C., 1947. An anthropological study of a north coastal community which, though unlike Los Molinos in many respects, shares many common features of culture and social organization. (Dr. Gillin also has written a more general article on "Mestizo America," drawing on Peruvian data, which appears in *Most of the World: The Peoples of Africa, Latin America, and the East Today*, edited by Ralph Linton, Columbia University Press, New York, 1949, pp. 156-212.)
- Hydrick, John L., *Intensive Rural Hygiene Work in the Netherlands East Indies*. Public Health Service of the Netherlands East Indies, 1937. (Also The Netherlands Information Bureau, New York, 1942.) Exposition of Hydrick's principles of rural hygiene work in their first large-scale demonstration. With modifications, the principles are incorporated into the rural hygiene work carried out by the Ica Departmental Health Service.
- James, Preston E., *Latin America*. Odyssey Press, New York, 1942. Chapter 5, Peru, is perhaps the best human geography source on Peru in general. A 1950 revised edition of this book is also available.
- Merton, Robert K. and Alice S. Kitt, "Contributions to the Theory of Reference Group Behavior" in *Studies in the Scope and Method of "The American Soldier"*, edited by R. K. Merton and P. F. Lazarsfeld. The Free Press, Glencoe, Ill., 1950. Two sociologists deal in detail with the concept of "reference group" briefly mentioned in the present case.
- Simmons, Ozzie G., "The *Criollo* Outlook in the Mestizo Culture of Coastal Peru," *American Anthropologist*, vol. 57, February, 1955, pp. 107-118. A scholarly and very readable study, valuable for the understanding it provides of the changing culture of coastal Peru.