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A Vicos woman who feels aches and pains has applied coca leaves to her cheeks as a curative measure.

The Quest for Well-Being¹

J. Oscar Alers²

ALL TOO BRIEFLY, this paper considers how the people of Vicos, assisted and encouraged by the power and resources of the Cornell Peru Project, have attempted to cope with the rigors of an ungracious environment, and reviews the impact of this effort on the physical, mental, and social well-being of the community to the present time.

The physical environment of the Vicosino is one of a rocky and precipitously sloping terrain, of dry spells alternating with torrential rains, of cold nights, of hidden parasitic and epidemic agents, and of a history of interpersonal conflict and social oppression. It has presented a continuing challenge to his health, safety, and comfort.

Clothing

When the Cornell Peru Project began its operations early in 1952, the Vicosinos were found to have been very poorly protected against their rather harsh climate, with most people owning only one set of clothes. This was especially true of children under the age of 12, who were frequently dressed in little more than rags. Adult Vicosinos of both sexes typically wore costumes largely made in, and distinctive to, their community. For the men these basically consisted of a greyish-white hat with downturned brim, a white shirt, a navy-blue, long-sleeved waistcoat, navy-blue, full-length trousers, and a black poncho when warranted by the weather. Women wore hats rather similar in color and design to those of the men, long-sleeved white blouses, several full-length skirts, usually red or yellow in color, and short red capes over their shoulders. The material used in the making of these clothes was almost invariably wool, and the cost of each such costume, including labor, materials, and the purchase of some finished items, was the equivalent of the annual wages of a Vicosino.³

By virtue of their increasing wealth, Vicosinos now possess many more items of clothing and a greater variety as well. By 1963, when the latest census was taken by the Cornell Peru Project, a total of 89 children owned school uniforms, whereas none did in 1952 when the first census

was completed. A great many men now possess western-style felt hats, shirts, vests, trousers, and suits purchased in nearby market towns, whereas these were almost non-existent in the community in 1952. Women's clothing has not increased as greatly in variety, but with the advent of sewing classes and the corresponding use of machines in Vicos, there has been a substantial improvement in their quantity and quality. In addition, many persons now wear sandals, while most went barefoot prior to 1952, and the number of persons owning shoes has tripled, though the actual wearing of shoes is confined mostly to special occasions.

Housing

Similar gains have been achieved in the field of housing. In 1952 the modal house in Vicos had a tile roof, two rooms, and was constructed out of adobe; but many had straw roofs, one room, and walls constructed of loosely-fitted stones. The latter were probably survivals of pre-Colonial construction techniques and were inhabited by the poorer families of the community. All houses had dirt floors and no windows, and they were thus dark and poorly ventilated. Water, gas, electricity, and sanitary facilities were, of course, also completely lacking. An average of almost five persons lived in each of these substandard houses. Because of the prevailing pattern of neolocal residence, most families maintained their own houses, and they were thus generally not severely overcrowded.

Though utilities are still lacking, in many respects the picture has changed considerably since 1952. Due to the increase in wealth and the development of building skills, the total number of houses in the community and the number of rooms per house have risen. Formerly, houses were widely dispersed throughout the estate, but many Vicosinos now have two houses, one located on the site of their farm plots and another on the main road, and the community is thus gradually approaching an urban pattern of settlement. Relatively more houses now have tile roofs and plastered walls, and almost all now have wooden doors, which were rare in 1952. Houses are now kept in

a better state of repair and there has also been a substantial increase in the number and variety of household furnishings and utensils.

Nutrition

As shown by several studies—part of the extensive research efforts that have been undertaken in the community—the nutritional level of the people has also risen.

Over an eight-year period beginning in 1951, a team of investigators carried out a series of dietary surveys in 24 localities of Peru selected in such a way as to be representative of the rural and urban zones of the three principal regions of the country, the Coast, the Sierra, and the Jungle. The studies ultimately included more than 1,000 families comprising nearly 7,000 individuals, with the families to be studied selected according to probability sampling techniques in most communities. In Vicos 463 persons in 88 families were studied in three surveys, the first in July, 1952, the second in February, 1953, and the third in May, 1956.⁴

It should be noted that, due to sampling and other methodological weaknesses, a great deal of caution must be exercised in evaluating the results of these surveys, some of which tend to overestimate and others to underestimate the actual nutritional level of the community. Thus, none of the time samples was longer than a week, so that some of the dietary fluctuations within a given year are not represented. All three surveys missed the relatively lean December-January months in Vicos, and all were taken in years when the harvest was relatively abundant. The sample of subjects for the 1956 survey apparently over-represented the well-to-do families of the community. In general, the Vicosino families also probably consumed less than what was actually weighed by the nutritionist immediately prior to their meals and more by way of snacks between meals. The nutritive benefits derived from the school lunch program after 1953, and from the consumption of alcohol and coca, were not recorded.⁵

During the first two studies, the survey team found that Vicosino families generally had two meals a day—a breakfast served between 6:00 and 9:00 a.m. and a supper between 4:00 and 6:30 p.m.—though some families enjoyed a noon meal as well. The two principal meals almost always consisted of a soup or stew and a side dish of parched corn. Parched corn was also carried by men working away from the home and consumed during rest hours.

The dietary habits of the Vicosinos were almost entirely dependent on what they produced in their fields, and their basic menu was thus generally prepared from foods of vegetable origin: the cereals (maize, wheat, and barley) and the roots and tubers (potatoes, *ocas*, and *ollucos*) depending on the particular harvest season at hand. The mean weekly expenditure per family for food was only about \$1.25 in U.S. currency. The availability of food was thus closely linked to the success of the harvests; a poor harvest would lead to malnutrition, to migrant labor in exchange for food, and to stealing.

In neither of the two initial surveys was a food of animal origin included in 25 per cent or more of the family menus. Most of the families possessed domestic animals, but only rarely did they personally consume the meat, eggs, or milk, since these were generally sold to provide one of the few sources of the cash needed to purchase items such as sugar, salt, kerosene, tools, and clothing. Oxen were also highly valued as draught animals, and sheep for the wool that the Vicosinos used in making their clothing. Overall, then, out of economic necessity the Vicosinos were largely vegetarians.

With this picture of general consumption habits, it is not surprising that the Vicosinos were deficient in their nutrition. When the average daily nutrient intakes per capita were compared with the average daily recommended intakes, it was found that intakes of calories and proteins were 76 per cent or less of the daily recommendations. The foods consumed were able to supply the needs for iron, niacin, thiamine, and vitamin C, with their average intake exceeding the recommended amounts, but the intake of calcium, riboflavin, and vitamin A was 66 per cent or less of average daily recommendations. Though not in consolation, it should be added that for the latter three nutrients the deficiency was national in scope and was not limited to Vicos. Yet it is also true that with respect to the nine principal nutrients studied, the percentages of families that consumed less than 75 per cent of the recommended amount were almost invariably higher in the rural than in the urban zones of the country.

Medical examinations of Vicosino children and adolescents revealed a number of clinical symptoms that were probably related to the nutritive deficiencies of their diet. They were found to be below average in their height and weight, most had a mild xerosis of the skin, and many showed modifications of the tongue, lips, and ears such as to suggest a deficiency of riboflavin or other B vitamins. Also, an eye pigmentation found in many of the subjects may have been related to a progressive vitamin A deficiency. Two-thirds of the adolescents had poor muscular development and more than half had a subnormal accumulation of subcutaneous tissue. The poor bodily development was probably a reflection of inadequate intakes of protein and calories. Again, however, this was not limited to the Vicosinos, but was characteristic of the entire valley in which Vicos is located.⁶

By the time of the third survey, completed in 1956 and followed by a separate study of food habits though they still ate mainly the products of their harvests, the Vicosinos consumed a somewhat larger quantity of foods of animal origin, especially during the annual festivals and among the wealthier families of the community. Potatoes were found to be consumed during six months of the year instead of during only one month. As a result, between the first two surveys and the third, only the per capita intake of thiamine had declined. The intake of proteins, calcium, iron, and riboflavin remained at about the earlier level, and the per capita consumption of calories, vitamin A, niacin, and vitamin C all increased. The increase in the daily intake of calories per capita was of a magnitude

sufficient to raise the level of Vicos to that of Peru as a whole in 1956.⁸ However, these increases apparently occurred not primarily because of the inclusion of new foods in the diet, but rather because of a higher intake of the same foods as in the early surveys, and many of the same physical effects associated with poor nutrition were thus still found to be present in the community.

The nutritive gains registered in the community between 1952 and 1956, especially in the rise of daily caloric intake per capita, were largely the result of changes brought about by the Cornell Peru Project in areas related to nutrition. Beginning in 1952, the Project introduced several agricultural innovations, including a new seed potato and the use of chemical fertilizers and insecticides.⁹ By 1958, the diffusion of these innovations had resulted in a tripling of potato production per acre in the community and in large gains in the production of other staple crops. These gains had the effect not only of directly placing more food in the hands of Vicosino families but, by making possible the large-scale cultivation of commercial crops, provided them with the income necessary to supplement their traditional diet, especially through the purchase of animal products and packaged foods. The products of the communal lands were also made available to the Vicosinos at a price lower than what they previously could obtain in nearby market towns.

In addition to this, in 1953 the Cornell Peru Project instituted a school lunch program in the community, whereby a balanced meal, including milk, was provided for all school children. The cultivation of family vegetable gardens and the raising of small domestic animals for personal consumption has also been encouraged. These efforts were accelerated after the last dietary survey in 1956 and have all been continued to the present. The people of Vicos now eat three full meals a day.

Physical Health

Aside from the previously noted consequences of poor nutrition, the physical health of the Vicosinos was threatened by several additional factors in their total environment. In 1952 an intestinal parasite survey was carried out in the *Callejon de Huaylas*, the intermontane valley in which Vicos is located.¹⁰ The survey was based on the collection of stool specimens for over 1,000 persons in five predominantly Mestizo communities, and for 200 Indians in Vicos.

The findings showed that the over-all incidence of the 16 types of intestinal parasites reported was much higher for Vicos than for the five Mestizo communities. Of the five most common intestinal parasites found in Vicos, 50 per cent of the Vicosinos were discovered to be hosting at least one and possibly all five. When the investigators conducted a series of studies to test for any possible resulting interference with the liver function, they found that very few subjects were thus afflicted and concluded that "apparently the residents of this valley have lived so many years with their parasites that their physiology is adjusted to accommodate the infections."

However, parasitic infestation probably elevates the nutrient needs of the people, increases the incidence of intestinal ulcers, and contributes to the prevalence of respiratory disorders. Parasitosis has been the number one health problem in the community. There has probably been very little change in the incidence of intestinal parasites in Vicos since the 1952 survey, but with the improvement in the level of personal hygiene, the incidence of lice and other bodily parasites has been reduced.

According to one report,¹¹ in 1955 Vicosino patients were most frequently diagnosed as suffering from gastrointestinal or specifically parasitic disorders (over 21 per cent), respiratory disorders (19 per cent), and skin and eye disorders (13 per cent). The latter disorders are probably related to the very intense ultraviolet radiation of the environment and to the dryness of the atmosphere, combined with a very low fat diet.

Disease epidemics such as measles and whooping cough have also repeatedly struck the community and have been a frequent cause of death, especially among the very young.

Mental Health

It should also be noted that a preliminary analysis of data bearing on the mental health of the Vicosinos suggests there has been an increase in the level of anxiety in the community. Questionnaire surveys of virtually all male heads of households in 1953 and again in 1963 indicate a substantial increase in the reported incidence of trembling hands, palpitations of the heart, nightmares, headaches, loss of appetite, and difficulty in falling asleep. The use of these items as a device for screening psychoneurotic individuals from the general population has previously been validated through studies carried out by the Cornell Program in Social Psychiatry.¹²

Factors that may be responsible for the increase in anxiety are now under study. A working hypothesis is that the shift has resulted from the value conflicts engendered during the transition from a traditional to a modern society. When placed in the context of the figures obtained by Whyte and Williams for some of the same questionnaire items in over 20 localities throughout Peru,¹³ since 1953 Vicos has shifted from the pattern of low anxiety presently characteristic of the relatively developed localities of the Coast to the higher levels of some of the transitional communities of the Sierra.

Social Pathology

Several findings are also available on what may conveniently be termed the level of "social pathology" in the community.

The rate of divorce and separation per 1,000 persons in Vicos has been cut almost in half between 1952 and 1963.

The chewing of coca leaves has been a long-established practice among the men of the community, initially serving in each case as a *rite de passage* between the statuses of adolescence and manhood. The use of coca is most frequent during work breaks, since the Vicosinos believe

that it gives them strength and deadens the sense of hunger that they experience when working between meals. Most recently, however, Vicosinos hired as laborers in the new forestation program have been prohibited the use of coca during working hours, and its consumption generally appears to have declined among the younger men of the community.

In the early years of the Project, pilferage of livestock, crops, and other items of property was rather high in the community, especially when the harvest was poor. This has declined considerably with the improvement of the economy and with the introduction of the practice of livestock-branding by the Project.

Mutual assault was also commonly associated with accusations of pilferage and has declined for the same reasons. However, the incidence of assaults in connection with disputes over land ownership has apparently risen.

Suicide, homicide, and infanticide has occurred and still does occur in the community, but generally not frequently enough to have warranted the collection of systematic data on the incidence of these crimes.

Perspectives on Development

Since its inception, the Cornell Peru Project has explicitly sought to improve the health standards of Vicos and has therefore given special attention to the health problems of the Vicosinos.¹⁴ In addition to the school lunch program, already mentioned, starting in 1952 arrangements were made for weekly visits by a doctor and nurse under the auspices of UNICEF, and in 1957 a clinic was constructed in the community. After 1961 this program had to be discontinued when the medical team was shifted elsewhere by the Peruvian government, but it was resumed to some degree by the assignment to Vicos of a practical nurse by the United States Peace Corps from October, 1962, to June, 1964. Despite these efforts, there have been four epidemics in the community since 1952, with the last occurring early in 1964.¹⁵ The disease agents in the most recent case were whooping cough and measles, which caused the death of about 70 children, mostly under one year of age.

It should be noted that medical personnel are in very scarce supply throughout the Peruvian highlands, especially in the rural areas. This is due to the relatively poor financial rewards and living conditions available to doctors practicing outside of Lima—where the vast majority of them are concentrated—and to their simple unwillingness to minister to Indians. The imbalance is much the same with respect to medical equipment and facilities. The principal hospital in Huaraz, the capital city of the Department of Ancash, did not have a microscope in 1963.

Although the Vicosinos are now better clothed, better housed, and better fed, when the incidence of epidemics is combined with the evidence of parasitic infestation and retarded physical development it would appear that the achievements of the Cornell Peru Project in the field of health have lagged behind the major successes attained in the fields of educational and economic development. This is perhaps most concisely summed up in the fact that

there was an increase in the death rate between 1952 and 1963.

But there is another side to this picture. Between 1940 and 1952, prior to Project intervention, the population of Vicos had been increasing at the rate of about three per cent per year. Since 1952, the death rate has risen in the community, but the birth rate has gone up at an even faster pace, so that the rate of natural increase has resulted in a net addition to the population of the community. But the *rate* of growth of the population declined to approximately two per cent per year between 1952 and 1963. The importance of this development can be appreciated from the fact that as early as 1952 there were already 284 persons per square mile of arable land on the estate. The decline in the rate of growth is accounted for almost entirely by the rise in the death rate and by a net loss to the community through migration. The latter loss was achieved by lifting the barriers to migration that had been imposed by the former hacienda system and was most pronounced up to 1956.¹⁶ In that year, however, Vicos became self-governing and many of the migrant Vicosinos began to return to their developing community. This has contributed to the increasing pressure of the population on the land. Some of the more recent immigrants have also begun to return for the purpose of convalescing from illnesses, thus contributing to a decline in the general health standards of the community.

Even at the current rate of growth of about two per cent per year, by 1975 there will be approximately 429 Vicosinos per square mile of arable land on the estate. But the evidence indicates that the rate of growth will *increase* in the near future, thus threatening the gains that have been achieved with the help of the Cornell Peru Project over the past 13 years. Should the health standards of the community be considerably improved and the effects of the recurrent epidemics be strongly mitigated, this would be a foregone conclusion.

Good health is like motherhood: No one is against it. But at what cost is it to be achieved? Almost everyone would like the Vicosinos to be healthy, wealthy, and wise, but the enjoyment of such a state is a rare achievement in human society. A population that is healthy to the point of overcrowding is one that threatens its wealth and its wisdom by straining the capacity of its economic and educational systems. To circumvent this paradox, four basic strategies may be followed:

The first is to develop the economy and the educational system so rapidly that the rate of population growth pales by comparison and can be ignored. As shown by the case of Vicos, this can be an effective short-run option, but it is one that can hardly be sustained over the long range in the modern world.

The second is to encourage out-migration and discourage returnees. This strategy is a two-edged sword in that it shifts the problem elsewhere and, through the loss of its younger and more forward-looking members, deprives the community of an important part of its human resources for development. The return of an *optimum* num-

ber of healthy migrants over the years would stimulate the process of development through the application of the talents and attitudes that they have gained by their experience in more developed areas. Too few out-migrants (or too many returnees) will increase population pressure and the rate of growth; too many out-migrants (with few returnees) will deprive the community of talents that could well be used at home.

A third strategy is to lower the birth rate. This option was not available in Vicos, as it is not in many areas of the world, but it is ultimately a disservice to bow to the demand for reducing deaths without being allowed the concomitant opportunity of reducing births.

Fourth, and generally not as well recognized, is the strategy of placing the major available resources into the development of education and the economy while allocating to the lowest priority those health improvements that tend to lower the death rate. Though not by design, this is in effect what has occurred in Vicos.

The achievements of the Cornell Peru Project in education, economics, and health were attained in the first instance by the exercise of its political power within the community, where the most progressive Vicosinos were encouraged to assume positions of leadership, and also by the persistent application of its political influence at the highest levels of the Peruvian national government. The prospects for an accelerated rate of future development in Vicos would be greatly enhanced if the Vicosinos themselves were able to employ the same methods. In order to do this, however, they would have to develop their literacy rate to the point where they would become an effective voting bloc and their wealth to the point where they could afford to organize themselves and similar Peruvian communities into pressure groups with the resources to carry out effective lobbying activities, locally and nationally.

To achieve this the first need is for the development of politically productive educational and economic means—if necessary, at the expense of immediate consumption in the form of health improvements. It cannot be achieved if the people of Vicos increase at a rate such that they compromise the educational and economic means of their future political effectiveness.

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