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ECOLOGY AND HEALTH

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ECOLOGY AND HEALTH*

There is a general tendency to consider health in any of its definitions as an achievement with definite goals which have universal values. For example, international western medical language defines a healthy inhabitant as a person who has a hemoglobin level of 15 grams per 100 milliliters of blood, whose feces do not contain parasites and whose intestinal flora does not exceed the limits appearing in an international textbook, etc. In the psychological sphere, this so-called healthy man is expected to have a western sense of humor and not act depressed. This Olympian definition of health automatically categorizes most of the world's inhabitants as being ill. Thus, it is logical that this concept of health be accompanied by tremendous efforts to reach the so-called satisfactory levels of health. Such efforts are completely divorced from the environment, life styles, socioeconomic reality, historic stage of development, etc.

Contrary to this universal concept of health, we believe that health should be defined in terms of ecological reality, not only in the biotic aspects but also in cultural aspects. Thus, just as a biologist is used to thinking in terms of ecological niches and knows that the success of one species is closely related to its niche, a professional in the health field should also have a clear idea of the human ecological niche. The health professional should also define a satisfactory state of health by

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considering all of the variables, including cultural variables, which exist in this specific niche. The most optimistic people try to "improve" the niche until it resembles an ideal which usually appears in a textbook. Unfortunately, the ideal niche is not a definite nor a permanent state and possibilities for changing it are minimal in most of the countries of the world. Textbooks are usually written in the big cities whose ecological drawbacks are known to everyone.

This ecological concept of health does not mean perpetuating a natural system without attempting to improve it. There is a desire to improve the system, but within its own reality. Attempts are made to optimize the system without necessarily achieving international goals that may turn out to be unnecessary, undesirable, or utopian. For example, the national sport is a source or permanent recreation for a community. Winning or losing in the Olympic championships does not lessen the value of the national sport as a recreational and educational element.

Some examples of the complex Latin American situation serve to illustrate the problems mentioned above. Medical students learn that the normal hemoglobin level is 15 gr./100 ml. In a tropical petroleum zone, companies require that their workers have medical examinations. One company physician has established the figure 22 gr./100 ml. as the normal minimum level for his area since he himself does not exceed this level. The workers have learned to give themselves iron intravenously in order to raise their hemoglobin level, which is almost always below the minimum, and thus pass the examination. The opposite occurs when other workers in the very high altitude Andean regions request the removal of up to one-and-a-half liters of blood in order to relieve the symptoms of chronic altitude sickness and
lower their hemoglobin to the level required by the company physician. We ask ourselves, who is healthy? who is sick? who enjoys a satisfactory state of health in such complex conditions? It is evident that medical texts do not consider conditions affecting the inhabitant's life within his ecological reality.

If we accept this ecological concept of health, we should ask ourselves how we can begin to define a satisfactory health level for the ecological niche under study and how we can undertake to reach this level. It is evident that neither the physician, the sanitary engineer, nor the professional in the health field can be trained for this task. A multi-disciplinary team is imperative in this undertaking. Sociologists, anthropologists, health professionals and political and religious authorities, etc., should form a team for defining and directing health operations within a certain community as defined in ecological terms.

Although we are convinced of the need for establishing multidisciplinary teams to define, guide and operate health benefits, we don't feel that these teams should begin operation without a prior research program. A multi-disciplinary team is one which has a common philosophical basis, one which is accustomed to intercommunication and one which has the opportunity to work in a restricted environmental area. It is obvious that only the universities can provide these teams, at least for the Latin American situation.

As a specific step towards research in the problem of health vis-a-vis ecological reality, we are presenting a model which we feel is suitable and feasible for use in the Andean Region. We have chosen the special field of the mining population of the high Andes because we feel that this is especially important for the health and well-being of the people of the Andean Region.
1. Identification of the Problem

Andean mining is the most important economic resource of Bolivia, Peru, and Chile. The regions in which mining is carried out constitute an invasion of the ecological niches and are not a part of the natural, ancestral habitat of the inhabitants of mining regions. This niche presents two serious invasions of the environment: mining per se, and the high altitude, a basic factor which is linked to the purely mining factor.

Environmental invasion is accepted as an extremely important factor in the health of Andean miners.

2. General Goals of the Study

- To find out to what degree the High Andean environmental factor affects the well-being and health of the Andean mining population.
- To establish the necessary standards of living and corrective medical activities for achieving an optimum state of health for the population under study.

3. Identification of Centers in the Andean Region that can organize multidisciplinary teams which are ready to work in the health sector. It is not necessary to reach the optimum level of numbers and quality in the beginning. The basis should be to depend on a nucleus of people operating in a suitable environment.

4. Economic support for the group in order to achieve sufficient dedication to the assigned task.
5. Advisory services directed by PAHO/WHO including the difficult problem of evaluation of results and programming.

6. Future meeting of groups at the end of preliminary operations.

7. Extension of the results to other Centers with bigger budgets to be based on local aid.

8. Depending on the degree of success obtained and as the final step of the operation, attempts would be made to establish the system on the level of the Health Ministry.

We believe that an indispensable factor is the participation of the Center for Ecology and Human Health (ECO) and the Pan American Center for Sanitary Engineering and Environmental Science (CEPIS). The infrastructure and operation of these two centers are directly related to environmental health, the main topic of this meeting. We propose that the formative and normative aspects and the evaluation of research projects be done in close cooperation with ECO. CEPIS will have the important duty of offering advisory services and planning human resource as part of the technical work for environmental sanitation, which obviously has a high priority in relation to environmental health. It will then be necessary to calculate future investment in environmental health research in terms of the savings implied by efficient utilization of the two above-mentioned centers. At the same time, budgetary allotments must be considered so that the Centers will have scientific-technological research facilities.
In spite of the difficulties, we are convinced that health is a concept which must be understood vis-a-vis the environment, life style, and philosophy of life. Once these factors are established, the professional health worker will be able to carry out his activities secure in the knowledge that they will contribute to improving society, and not just satisfy universal goals which are not always suitable or which are impossible to achieve.

It is also satisfying to note that in spite of the complexity and the differences between ecosystems, efforts in the field of environmental health have resulted in the adoption of general measures such as, for example, the Ten-Year Health Plan for the Americas. The comment on this plan made by Vincent M. Witt state literally, "They emphasized the need to approach problems in a practical manner during the new decade and they pointed out the importance of establishing goals that come as close as possible to reality by analyzing the need for an infrastructure and the need for planning available material, financial and human resources as well as planning for those resources needed to reach the goals. They also considered new development trends and emphasized the need to approach and attack social and political problems in conjunction with plans for economic growth." Obviously, only multidisciplinary teams can serve as the advisors for governments that wish to implement this ambitious Ten-Year Plan.

Lastly, we believe that although it is indeed true that ecological problems are felt intensely in the Andean Region, this problem is a general one. Therefore, the model presented here should not be restricted to use in certain zones of the Americas; rather health and the environment should be considered inseparable in any milieu inhabited by mankind.