

Chapter 1

ACTIVITY 1.2: Role of the Geologist

Objective: To summarize the magazine article "Role of Geologists in Wise Use of Earth."

Materials: Article "Role of Geologists in Wise Use of Earth," writing instrument, and ACTIVITY 1.2 form.

Procedure: One of the first problems you may encounter in any course is reading the text material, not because it is difficult reading but because you do not stop to realize what you have read. An easy method to overcome this is to stop a moment after reading each paragraph and try to summarize the general idea of the paragraph in a few words. For practice, carefully read "Role of Geologists in Wise Use of Earth." Then, in the blanks numbered for each consecutive paragraph in the article, write in a few words what you feel is the main idea of each paragraph.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____

Below, in two or three sentences, give the general idea of the whole article.

Role of Geologists in Wise Use of Earth

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The science of geology is becoming more important to mankind as demands increase for more natural resources and less environmental hazards. Therefore, more people should have a better understanding of this subject and its applications and limitations in solving important human problems. And more geologists must be trained to further study and apply this science for the benefit of man.

Geologists are becoming more and more indispensable as six principal problems of mankind become more and more pressing. These problems can be expressed as follows: 1) population is increasing whereas mineral resources are becoming depleted, 2) conflict is increasing between the "haves" and the "have-nots", 3) conflict is increasing between man and other forms of life, 4) competition for the use of land and water areas is intensifying, 5) pollution of air, water and land is, in places becoming intolerable, and 6) natural catastrophes are taking an increasing toll of life and property.

Apollo missions have dramatically confirmed the isolation of life on our "blue planet". The Moon's anhydrous and chemically unaltered igneous rocks prove that it has no concentrations of mineral deposits or fossil fuels for our exploitation.

The Earth's population of 3.8 billion, perhaps going to 12 billion by the year 2020, places excessive pressure on the finite supply of material resources. The essential minerals of the Earth are nonrenewable because, for example, it takes thousands to millions of years to make petroleum or copper ore, whereas people, like weeds, can replenish and multiply themselves from seeds. Furthermore, fossil fuels are not even recyclable, and substitutes for most purposes are unknown or quantitatively insignificant. Geologists are the ones who know and are learning about the habitats of minerals resources, therefore more geologists are required in an effort to find these resources for both the short-term and long-term benefits of mankind.

The affluent people of the world continue to strive for more and more "goodies", while poor people are striving even harder to get their share. This conflict means that as the population expands both the "haves" and the "have-nots" of this world, except for a few people under special circumstances, will have to get along on less and less of the material wealth of the world. However, the rate of the inevitable deterioration in living standards can be retarded by successful exploration geologists.

Much is known about endangered species and ecologic balance, but who knows the relative importance of man or natural selection in causing faunal and floral extinctions? It has been estimated that 98% of all species known to have existed during the history of the Earth have become extinct. Geologists, paleontologists and biologists can contribute to providing the proper balance between man and his activities with other forms of life on this planet.

With competition for the use of land intensifying, including increased pressures to use less desirable and inappropriate terrains, choices need to be made for single or multiple purposes versus preservation of the natural state. Geologists are the ones who know and are learning about the stability of ground under various geologic conditions and can give important advice on the best use of specific lands for specific purposes.

Pollution of air, water and land increases as the wastes resulting from the activities of people, especially the affluent, increase on this finite globe. Some of the pollutants, such as mercury and lead in organic tissues, are cumulative and nonreversible. Geologists can contribute their share of good science and technology to minimize the sources of pollution.

Disasters such as those resulting from earthquakes, volcanic eruptions and landslides become greater as more and more people congregate in areas which are especially vulnerable to geologic hazards. Geologists are the ones who know and are learning to cope with such natural catastrophes. (In the case of earthquakes, geologists can attempt to locate potential and significant earthquake-generating faults for the possible protection of life and property. Too often, however, their partly subjective and qualitative conclusions are translated into unjustified legislation and quantitative engineering.)

All in all, with the population increasing and non-renewable resources decreasing, the long-term future of mankind appears dismal. The economic and environmental costs of required materials, perhaps especially the fossil fuels, will gradually become too great; man will be rationed and probably forced to exist under one-world dictatorship; and, if he lasts that long, he may evolve into a one-race, barely surviving, with dwindling population preceding eventual species extinction.

However, this pessimistic long-term view of the future should be accepted as a challenge by optimistic people, especially geologists, to help postpone what seems inevitable as long as possible. They must try to balance: 1) supplies of minerals with the needs of people, 2) living conditions between the "haves" and "have-nots", 3) man's ecology with that of other life forms, 4) uses of land with conservation of nature, 5) essential activities of man with tolerable environmental pollution, and 6) geologic hazards with the protection of life and property.

In short, geologists are indispensable in attacking the principal problems of mankind on our isolated "blue planet", because they are the ones who, by training and experience, can provide some of the best advice on the wise use of the Earth for present and future generations.

There is a challenge to educational institutions to provide more and better geologists. It is even more important to educate the general public about the subject and its applications so that the democratic process will be more effective in solving these critical problems. This probably requires some revised educational approaches in order to expose more elementary and high school students to geology. Surely these exposures will kindle the interest of many in the fascinating problems and important applications of this subject. Thus, the desire to study geology at the university level could be increased in order to provide a more knowledgeable electorate.