WATER SUPPLIES-A GROWING PROBLEM

Our need for water is constantly increasing. There is an automatic increase due to population growth, while the overall improvement of living standards, the fight against hunger through the irrigation of more land for food growing, and the creation and expansion of new industries, all foretell the need for even greater water supplies throughout the world. Though it is difficult to calculate the exact amount, it is safe to say that in 20 years' time the demand for water will be roughly double. Faced with such a situation it is obvious that we should search as widely as possible and with every available means for sources of fresh water that seem to be the least costly. But where do these sources exist? Only a sustained and co-ordinated programme of scientific observation and research in hydrology will tell us the answer. This is the purpose of the International Hydrological Decade, 1965-1975.

Underground water reserves are much larger than those on the surface, but as they are unseen we tend to underestimate them. It is vitally important that we make use of these underground reserves, but never haphazardly. For example, where where does the water come from which we find in one or another of the underground water-bearing layers ('aquifers')? How does it move? How is it renewed? And if this water is used, what effect will it have on the discharge and future level of the water table? What are the laws of hydrogeology? Despite the immense progress of recent years, all these questions have still not been fully answered.

A similar need for scientific research exists in the branch of hydrology that deals with the quality of water. In nature, there is no water like the pure water defined by chemists, made up of only hydrogen and oxygen. River water, ground-water, and even rainwater always contain other dissolved or suspended elements, and these, even when present in small quantities, play an important role. In the case of irrigation farming, for instance, every drop of water brings with it a little salt: the water evaporates, but the salt remains and gradually poisons the soil and plants. In general, we now know how to remedy the problem of salinity with the help of leaching and drainage. But many questions remain unanswered regarding the effect of irrigation and drainage on the quality of ground water, and the possibility of maintaining the ground water level below the zone of the plant roots while bringing to the surface the water necessary for irrigation.

What happens exactly in this thin layer of soil which preserves the moisture necessary to plant life? What form— liquid or vapour— does the water take in the zone? What forces act on the water, depending on the kind of soil present? How long will this life-giving moisture last?

Evaporation from the soil and transpiration from vegetation are responsible for the direct return to the atmosphere of more than half the water which falls on the land. How exactly do these phenomena, which represent an enormous loss of resources, occur? What part does a forest play in the water balance-sheet of a given area? Does it act merely as a water-consuming mechanism operating through the absorption and transpiration of the trees—thereby reducing the quantity of runoff which reaches the rivers—or, on the contrary, does it result in a slow seepage into the earth which can later be recovered in the form of ground-water, while at the same time preventing erosion?

These are the kinds of problems which still have to be resolved: the answers will only be found through a vast programme of scientific research.

Assignments

1. This extract is an example of a growing type of literature with which scientists all over the world have to deal, i.e. translations from a foreign language (in this case, French) into English. These may be done by individuals—in which case they may be very imperfect and may present actual

misinformation for the inattentive reader— or by commercial firms or the specialized Translation Sections of the main international organizations, as in the present extract.

Imagine that a translation, for an international journal, is required of a short summary describing EITHER some of the scientific work being, done at the institution you are studying at, OR a national problem connected with the science you are studying.

Ask one of your specialist teachers to write about 100 words in the vernacular on one of the above alternatives (or do it yourself if you have enough knowledge), and then produce the translation required.

2. You will notice that the passage contains a large number of questions:
   (a) Imagine that you are attending an international seminar for science students on 'Planning Research Projects': you have been asked to give suggestions on how to plan an investigation into any one of the questions raised in the passage. Give these in English.
   (b) Formulate similar questions 'still not fully answered' regarding the discipline you are studying yourself.

1. Comprehensein

A. What question is raised in the first paragraph?
B. What is put forward to answer this?
C. Suggest a suitable topic for the second paragraph?
D. Define 'aquifers'.
E. What is opinion of the writer about underground water?
F. Summarize the views given in the third paragraph.
G. What might be the reason for a series of questions in the fifth paragraph?
H. What type of writing do you encounter in this passage?

2. Short questions

A. What questions are to be answered in order to solve growing problems of water supplies.
B. Link this problem in context of Nepal and write a paragraph.

3. Long/ Discussion questions

A. Imagine that you are asked to plan water supply system in the city of Nepal. How would you plan in storage and make use of its result in distribution?
B. Should utilization of ground water in any ways like boring digging well etc. liable to any tax. Relate it to Nepal and discuss.
C. Formulate similar questions as in this text still not fully answered 'regarding the discipline you are studying yourself.