correspondence

Egypt's needs

SIR,—Egypt's population, as Salah Galal writes (December 18, page 564), may be expected to reach 220 million by the year 2100, and to satisfy the country's water and power needs in the future would call for two Aswan High Dams a year and the equivalent of two extra Nile Rivers. Sea water desalination is looked to as offering the obvious means of supplying the country's water needs.

This presentation of the situation leads me to ask the following questions:

●Does not the projected vast demand for power and water indicate an unreasonable population growth? Perhaps the problem is not so much how to supply the rapidly increasing population as how to keep the population within suppliable limits.

●The product value of 1 m^3 of irrigation water in Egypt is about 3 cents (US). The cost of producing 1 m^3 of desalinated water by nuclear energy is at least 25 cents. Thus the Egyptian economy will lose 22 cents on every cubic metre of water desalted for use in irrigation, which means a total annual cost of some $4,000 million for the projected water consumption in the year 2000. Rather than dismaying Egypt's agricultural economists, does this prospect not indicate that a solution to the country's water problem should be sought through other avenues?

As I see it, the most practical answer lies in the more efficient use of the waters of the Nile. It is a fact that a few hundred kilometres east of the Nile Delta, in Israel's northern Negev, the productivity of irrigation water is six times more than in Egypt; the product value per cubic metre of water in that area is 18 cents. Based on this, it may be concluded that the unused potential of the Nile River is itself worth several Niles; and although in order to fully exploit this potential a considerable capital investment might be required, this investment would still be far less than that required for water desalination.

Should it be decided to approach the problem of future resources first and foremost by stepping up the productivity of present resources, I would like to suggest one practical way of contributing towards a solution which would not involve Egypt in inordinate expense: that some of the water draining from irrigated lands into the sea in the Delta area be sold to Israel.

Every year approximately 10,000 million cubic metres of Egypt's used irrigation water flows through drainage canals out to sea. This water is by Israeli standards still suitable for irrigation. About a tenth of the estimated discharge—equal to the output of dozens of desalting plants—could be absorbed economically in the Israeli Negev and transported there inexpensively by a canal built along the coastal strip of the Sinai Desert. The conveyance of this water to Israel for sale means Egypt's recovery of water that would otherwise be lost.

Egypt's benefits from the transaction would, among other things, be:

●payment for water which at present brings in no economic returns, and

●a guaranteed amount of food production (in the area in question, with modern irrigation methods, one cubic metre of water produces 10 kilograms of potatoes).

The political climate in the region at present might not appear conducive to the implementation of a project of this nature and, for the time being, the idea put forward here may seem fanciful (although perhaps less fanciful than the projected annual 18,000 million cubic metres of desalinated water by the end of the century). However, even at this stage it might be worth examining the economic advantages of such an undertaking for both participants, since perhaps the very consideration of such a scheme could contribute towards the improvement of the political conditions and help to bring closer a time when such a project might become practicable.

Yours faithfully,

E. KALLY

Photochemical smog

SIR,—I wish to call attention to a potential hazard in controlling photochemical smog by reducing hydrocarbon (HC) emissions without a corresponding reduction in the emissions of the oxides of nitrogen (NO_x). If HC concentrations are reduced to keep hourly oxidant levels below the EPA ambient air quality standard of 80 p.p.b., and if NO_x concentrations are not correspondingly reduced, then on many days all the NO will not be oxidized. In the presence of NO, ozone levels are always considerably below the normal background level of 25 p.p.b., because of the rapid reaction between NO and O_3. Thus on the days that NO is not completely oxidised, ozone levels will be considerably below background levels. If many such days should occur in succession, the bacteria count might increase, and this might enhance the incidence of disease (for example, streptococcus salivarius shows 90% mortality when exposed to 0.025 p.p.m. O_3 at 60–80% relative humidity for 30 minutes).

In many communities automobiles account for a greater percentage of the photochemically active HC than of the NO_x. (In Los Angeles it is about 90% for photochemically active HC, as against 70% for NO_x.) However the control devices presently being installed on cars are designed to control 80% of the HC and 40% of the NO_x. As a result the percentage reduction in photochemically active HC should be about 2–3 times as great as the percentage reduction in NO_x. This may not be a policy of wisdom.

Yours faithfully,

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Turkish poppy industry

SIR,—A footnote to Peter Collin's article (January 15, page 73): when the Government of Turkey forbade farmers to grow poppies, it became essential to collect substantial seed samples of populations of the many types of poppies grown in the country, both to conserve genetic diversity for future use and to ensure that sufficient seed would be available if it were once again to be required. This was successfully organised by the Crop Research and Introduction Centre at Menemen, Izmir, which was established in 1964 by the Government of Turkey with the cooperation of UNDP and FAO, and whose purposes have always included the conservation and study of the vast resources of genetic diversity in the economic plants of Turkey and their wild relatives (see *Nature*, **258**, 278–279; 1975).

Yours faithfully,

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