

DR Gerald Stanhill has recently come to the conclusion that his Biblical and post-Biblical ancestors showed remarkable powers of scientific observation and analysis. Dr Stanhill, who heads the Division of Agricultural Meteorology in Israel's Agricultural Research Organisation, points out that the traditional Jewish prayers for rain, codified almost two thousand years ago, are most frequent and most intensive at precisely those times of year when additional moisture will do most to raise wheat yields in the Holy Land.

Scientific studies carried out over the past 20 years indicate that above average rainfall in the early winter immediately after sowing increases yields, as does bountiful precipitation after the wheat has flowered. In contrast, rainfall at the beginning of the season (before sowing has taken place) and in midwinter (between tillering and booting) depresses yields. And, indeed, prayers for rain become most frequent and high pitched just after sowing (which took place in Biblical times, and takes place now, in November). If rain does not fall in spite of the prayers, a series of fasts is prescribed: at first only for the sages, then for the entire public from dawn to dusk and finally, if the dry spell continues, 24 hour fasts are to take place twice each week.

Both religious practices and archaeological digs indicate that Jewish farmers of the Biblical period were growing wheat primarily in the southern part of the country (where rainfall is both scarce and uncertain) or in the hilly regions (where the soil is thin and does not absorb a great deal of moisture at one time). Today's most prosperous agricultural areas, where rain can be counted upon, were not cultivated for the most part by the Israelites. Interior lowlands, like the Huleh and Jezre'el Valleys, were soggy swamps, and remained so until they were drained a few decades ago.

• While the draining of the swamps increased the supply of fertile farmland and contributed to the elimination of malaria, it has not always proved an unmixed blessing. As a result of the elimination of the Huleh Swamp, for example, the Sea of Galilee is facing a pollution threat.

The peat of the former swampland is heavily impregnated with nitrogen, and when water flows through the Huleh and into the Sea of Galilee, some 15 km to the south, it carries with it large quantities of nitrogen. This influx, many scientists believe, increases the growth of aquatic vegetation in the water, thus contributing to the pollution of Israel's central fresh water reservoir.

A number of researchers have suggested that the problem be solved by planting crops in the Huleh Valley which would consume the excess nitrogen. Dr Avraham Hartzook of the Agricultural Research Organisation, for example, has in mind a plant known as Kenaf (*Hibiscus cannabinus*), which would not only deal with the nitrogen question, but might also reduce the country's dependence

fering with their vital role as marine self-purifying agents. Following the discovery that motile marine bacteria are chemotactic to many of their food sources, Mitchell demonstrated that sub-lethal concentrations of oil inhibit this chemotactic process so that the rate of substrate decay is retarded.

Mitchell is concerned not only by oil seepage, but also by the possibility of a major oil spill from one of the big tankers that wend their way to Eilat.

• Israel's mathematics teachers have established their own emergency group to fight a Ministry of Education ruling that mathematics will no longer be a compulsory matriculation subject for secondary school students.

Cutting the teaching of mathematics, they argue with great vehemence, would undermine secondary schools and hamstring universities, forcing the latter to disregard matriculation certificates and devise a battery of entrance examinations. Even worse, according to the teachers, the Army would find itself short of men with the kind of mathematical background required to handle increasingly sophisticated modern weapons.

The controversy can only be understood against the background of Israel's educational system, which differs considerably, for example, from that in the UK. Students are not given an 11-plus examination, and when they finish elementary school, a great majority continue on to a secondary modern school.

The last two years of secondary school do bring a measure of specialisation similar to that at A-level in Britain. But, even so, students concentrating on mathematics and science have thus far had to pass courses in history and literature, while those interested in the humanities have had to prove their abilities in science and mathematics in order to obtain a matriculation certificate.

Though there had long been complaints about the burden these requirements imposed on students, demands for a change only came to a head several years ago when the Education Ministry revealed that 40% of the humanities students were failing matriculation mathematics.

As an interim measure, the examination was made easier, thus allowing a much larger percentage of examinees to slip under the wire, but this only disguised the problem without solving it. So the ministry decided on more drastic action: students in the last two years of secondary school, it announced, could choose to study maths at various levels (the higher the level, the more points towards a matriculation certificate), or not study maths at all.

Letter from Israel

from Nechemia Meyers



on increasingly expensive and scarce wood pulp for the production of paper.

Some time ago Hartzook helped to introduce Kenaf to Tanzania, where he spent two years as an Israeli agricultural expert. Now a successful cash crop in that country, its fibres primarily serve as a substitute for jute, but they have also been used, albeit on a small scale, as a substitute for wood pulp by the paper industry. Dr Hartzook sees a considerable potential for Kenaf in Israel, which has little wood of its own and might therefore be ready to exploit the plant earlier than other, more richly endowed countries.

• Pollution problems in the Gulf of Eilat are, if anything, more serious than those in the Sea of Galilee according to Professor Ralph Mitchell, now on a working visit to the Weizmann Institute from Harvard University.

Mitchell, who has done extensive studies of the Gulf under the sponsorship of the United States Office of Naval Research, says that if pollution, particularly oil seepage, continues unchecked, the beautiful coral reefs of the area will be eaten away in 25 years.

Mitchell has also done studies on how oil affects the biological behaviour of inter-tidal snails. Some stop bunching together (to keep from being washed away), and others simply stop eating.

Oil likewise affects the ability of bacteria to detect their food, thus inter-