

## Kibbutz biotechnology

# Farming today

### Rehovot

The traditional view of the Israeli kibbutz — hard work in the fields under a blazing sun — may have to be changed. For the future of many kibbutzim may lie with small science-based industry using the techniques that are already spawning new biotechnology industries in the United States and Europe.

The kibbutz at Beit Haemek is typical of the trend from farming village to light manufacturing to science-based industry. In the mid-1970s, Beit Haemek was looking for a way of supplementing its income from the cultivation of avocados and the raising of cows. And when it failed in an attempt to balance its budget by building and selling pipe organs, the kibbutz decided to establish a company that would use advanced tissue culture techniques to propagate ornamental, specific pathogen-free plants. This move made sense as the kibbutz had several members with degrees in agriculture and microbiology, and others with scientific training and laboratory experience.

Further expansion of the enterprise, now called Biological Industries, was facilitated by the arrival of a new American member in what had been a predominantly British settlement. He is Dr Robert Levin, previously a research associate at Stanford University Medical School.

The kibbutz can do only a limited amount of research on its own, and so Levin works closely with Professor Jonathan Gressel and his group at the Weizmann Institute of Science. One result of this collaboration has been the exploitation at Beit Haemek of a new Weizmann Institute system to use plant tissue culture methods for rapid and inexpensive prescreening of potential herbicides. And in cooperation with scientists at other Israeli research centres, Levin and his colleagues are now utilizing such methods to develop plant varieties resistant to herbicides, diseases and other environmental hazards.

Each successful new project has brought an expansion of Biological Industries and so now Beit Haemek has caused some surprise in Israel by placing advertisements in the newspapers inviting biologists with PhDs to join the kibbutz and applicants are now being screened. The introduction of such specialists would be quite a change in traditional kibbutz practice. On the one hand, it will be necessary for veteran members of the kibbutz to accept the fact that the newcomers will not be available, as kibbutz tradition decrees, to do any job necessary; they will expect to work in their professions. On the other hand, the new members themselves will have to come to terms with a society where there are no material rewards for their degrees or for their specific contributions.

Yet the egalitarian economic set-up of a kibbutz does seem to be consistent with making a success of a sophisticated science-based industry. Beit Haemek's enterprise expects a \$1 million turnover this year, with 65 per cent of its tissue-culture-derived products being exported, mainly to the Netherlands and West Germany.

The kibbutzniks see themselves as a production arm of Israeli academics, in the words of Beit Haemek's general manager Mike Landis, "as a conduit between Israeli research centres and the world market".

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Robert Levin of Beit Haemek sees a great deal of similarity between the science-based industries on kibbutzim and the new biotechnology companies in the United States, "which are", he says, "really cooperatives created by a few talented scientists. The only difference is that kibbutz scientists in Israel share modest living quarters while capitalistic scientists in the States share enormous profits".

**Nechemia Meyers**

## Nature in Poland

Many readers will have been moved to ask how they can help by last week's report of the difficulties encountered by Polish scientists in acquiring scientific journals from abroad (see *Nature* 27 May, p.259). The chronic shortage of hard currency, which has apparently worsened since the introduction of martial law last December, has made the purchase of journals virtually impossible.

In the belief that many scientists outside Poland may wish to help colleagues thus deprived, *Nature* is introducing a scheme whereby scientists outside Poland may purchase a year's subscription to *Nature* in Poland at roughly half the usual price.

Those wishing to buy a subscription for a Polish colleague should write to *Nature* in either London or New York (the addresses are given opposite page 349), enclosing a cheque made payable to *Nature* for £50, or the equivalent in any currency, together with their full name and address and those of the intended recipient. Telephone orders may be charged to international credit cards. *Nature* will meet the extra cost of despatching the journal to Poland.

Immediately on receipt of an order, the intended recipient will receive a letter from the Editor describing the arrangement that has been made and identifying the donor. As soon as the order has been processed, copies of *Nature* should arrive in Poland within a week of publication. This offer will remain open at least until 1 August.

## Grenoble neutron beam reactor

# Working again

Europe's high flux neutron beam reactor, the Institut Laue-Langevin (ILL) at Grenoble, is likely to re-start in June with an unrepaired hole in its primary cooling circuit.

Admittedly, the hole is inside the heavy water primary cooling circuit, and is not considered dangerous, but careful experiments and calculations are being made to make sure that the reactor will work safely despite the fault.

The broken part is a section of perforated aluminium alloy, designed to break up the flow of the cooling water before it turns a corner in the piping. A 250 cm<sup>2</sup> section broke away, and parts of this interfered with the operation of a cooling pump. As soon as the fault was discovered, the reactor was shut down, and already nearly a month's experiments have been lost — a lot of work at ILL, which services dozens of visiting groups working simultaneously. The groups use the neutrons, often for only a few days, but the data so taken provide much more work on data analysis back at the group's home institutions.

Dr Brian Fender, ILL's British deputy director, said last week that he expected to be able to save the 1982 experimental programme by putting off a scheduled development period, due in November, until next February. Ultimately, some two months' experimental time at ILL will have been lost; but it will be somewhat less painful if the loss is taken next year, since 1983 experiments are still only in the planning stage.

The aluminium part broke because of ten years' cycling in turbulent water flow, ILL engineers believe. Well away from the reactor's fuel rod, it did not suffer significant radiation damage. Almost all the pieces have now been recovered. Reassembly of the jigsaw has shown a piece a centimetre across still to be missing, presumed lodged in the cooling circuits, but it is not expected to do more damage when the reactor is restarted.

Flow through the cooling circuit has been tested, using a dummy fuel element, and despite the hole in the aluminium section, no increased turbulence or vibration has been observed. The broken part has also been inspected by TV camera, from a distance of one or two metres, and seems firm enough. It is conceivable that the French licensing authorities would not allow ILL to restart without replacing the part, but, says Fender, "we work very closely together", and he does not expect any trouble from that quarter.

Why could the broken part not simply be replaced? Because it is awkward to reach, requiring the dismantling of most of the reactor, an exercise which could cost many more months than the present delay.

**Robert Walgate**