Grain gains

by Eleanor Lawrence

A PROTOTYPE British-built rice mill, costing £10,000, is on its way to Indonesia, where the government plans to tackle inefficiency in rice milling by introducing modern mills of a sufficiently small scale to suit the needs of the country's predominantly subsistence rural economy. At present Indonesia's crop is processed largely on a small scale, either by hand pounding or by milling in wasteful machines (the most widely used being a modification of the 19th century Engleberg coffee grinder, which only produces 500 kg of edible white rice—more than half of which is broken grain—from a tonne of paddy). However, official statistics rate milling efficiency at an inflated level of 60% probably because extrapolations from a few large, modern mills are applied to the total paddy crop, although, as a 1972 UNIDO survey pointed out, these mills only handle a small percentage of the Asian paddy harvest.

Rice constitutes the staple diet of more than a third of the world's population, in particular, of 90% of the low income families in the densely populated regions of tropical Asia. Discussions of rice production are sometimes obscured by the fact that—unlike the other staples, wheat and maize, with which rice is often bracketed—there is a substantial difference between the weight of the harvested, threshed and dried paddy, often called rice, and the final yield of edible milled rice. Avoidable mechanical damage during this milling process could be destroying 20–25% of the potential yield of edible rice from paddy, according to surveys carried out in Indonesia and the Philippines by British consulting engineers and agronomists, under the auspices of the British Agricultural Export Council and the Department of Trade and Industry.

In the milling process, the inedible outer hull, which makes up about 20% by weight of the harvested dried paddy, is removed, and the final yield of edible white rice, separated from the bran—which makes up a further 10% of the paddy weight—is, ideally, 70%. Milling efficiency in the various countries of tropical Asia is said to vary between 60% and 70%, but some British experts believe, on the basis of observations in Indonesia and the Philippines over the past few years, that the published figures for milling efficiency are over optimistic.

A large modern mill which deals with the paddy in several steps—hulling, separating the bran, and polishing the grain—can produce up to 700 kg of milled white rice per tonne but these large mills, capable of handling anything up to 100 tonnes of paddy an hour do not fit into the social pattern of a predominantly subsistence rural economy. The small farmer and his family, who in Indonesia, produce on average 1.5 tonnes of paddy from two crops on their half-hectare small-holding each year will eat the rice from about 1,200 kg of this, which will be milled locally or hand-pounded on the farm and will only send the surplus to the modern mills which are often far away and often inaccessible at certain times of the year.

The Indonesian government is now remedying this situation and has introduced a programme of small, more efficient local mills which can deal with the paddy at all stages from the initial threshing of wet paddy from the straw. The mechanically-dried paddy can be stored in silos until needed. These mills will incorporate a more efficient huller, which is being developed in Britain at the moment, and would be able to recover about 65% of the paddy as edible milled white rice of good quality, as well as conserving the oil and protein-rich bran for use as an animal feed and producing clean hulls which will be used to power the mechanical driers (specially converted from oil-burners). With traditional milling, either in the Engleberg mill or by hand pounding, an unusable melange of hulls, bran and powdered rice (20%, 10% and 20% respectively of the original paddy weight) is left either to smoulder or to be dumped in nearby marshy land. Each mill would serve about four square miles bringing it within easy reach of all the farmers in the area.

For Indonesia, with an annual paddy production of upwards of 23 million tonnes, a real milling efficiency of 65% covering the total paddy crop would provide an extra 3 million tonnes of edible milled rice. A preliminary survey in the Philippines has also indicated that milling efficiency over the total paddy crop is much lower than officially assumed. If the situation in Indonesia and the Philippines is paralleled throughout tropical Asia, more than 16 million tonnes of edible milled rice are being lost each year in dust, several times the entire world exports of rice each year—a substantial contribution to the 'food crisis' endemic amongst the peoples of tropical Asia who need the rice only they can produce.

A little knowledge . . .

from Vera Rich, London

"EVERYONE has won", announced Mr Brezhnev at the end of the recent Helsinki talks on detente and arms limitation. According to the rules of Lewis Carroll's caucus race, everyone should therefore have prizes. But although the agenda of the conference included not only political and economic issues, but also human rights, the free flow of information between east and west, and the possibility for all citizens to travel freely, one group at least stands to gain no benefits from the Helsinki agreement—the ever-growing group of Soviet Jewish refusniks. Hardly was the ink dry on the agreement, when the Moscow cyberneticist Aleksandr Lerner was informed "officially" that Helsinki will mean "no change" in the rules governing the emigration of Soviet Jews.

The problems involved in visa applications are particularly acute for scientists, since it is easy for the authorities to claim that they have had access to classified information. With the new atmosphere of detente, this may lead to some curious anomalies. One such case is that of Aleksandr Druk, who was working on the electronics of the space programme before he applied for a visa and was subsequently dismissed some three years ago. Although he had never visited the Baikonur cosmodrome or even seen a spacecraft, he has been informed that the question of his emigration "will be decided only in 1980". Yet, as Druk himself has pointed out, the Apollo–Soyuz mission has led to the sharing of information of far more potential importance than any which he could divulge to the West.

In other fields, too, the clamp down on Soviet Jewish scientists continues. A number of them are at present under considerable pressure because of their connection with the *samizdat* journal *Jews in the USSR*. This journal, founded by Professor Aleksandr Voronel (the founder of the "Sunday Seminars" for refusniks), carried articles on historical, philosophical and religious topics, and was intended, according to Voronel, to explore the meaning of Jewish traditions and culture against the background of tacit discrimination in which Soviet Jews must live. A number of prominent scientists were connected with the journal; those under pressure at the moment include the physicists Aleksandr Lunts and Eitan Finkel'shtein and the cyberneticist Grigorii Rosenshtein. □