

we have already established cell cultures capable of plant regeneration.

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Plant biotechnology includes not only techniques related to recombinant DNA but also the many *in vitro* manipulations of plant cells, tissues and protoplasts which, together, is often referred to as genetic engineering. Crop improvement using genetic engineer-

ing requires the execution of several procedures that as yet are difficult to accomplish in the required sequence in any economic species. However, given the rapid advances that are being made, it is reasonable to expect that all the critical procedures will be accomplished in the foreseeable future. Plant protoplasts would undoubtedly play an important role in the rapidly emerging plant biotechnology for crop improvement.

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## NEWS

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### UK LAUNCHES SOLID STATE BATTERY PROGRAMME

London (LPS): A major programme to develop the materials and technology for all-solid-state rechargeable batteries has been launched at the UK Atomic Energy Authority's Harwell research laboratory.

The research and development programme is being sponsored by an industrial "Club" of battery users, manufacturers, and materials specialists. It will provide the basic technology for the manufacture of all-solid-state lithium batteries based on polymeric electrolytes. Rechargeable, all-solid-state, lithium systems constitute a radical new concept in battery technology. They will have major advantages over conventional battery systems and hold out exciting and new battery application areas.

Harwell's Applied Electrochemistry Centre has already demonstrated experimental cells. These in-

corporate thin-foil anode and current collectors, and thick-film polymer electrolyte and composite cathode components which may be produced by continuous casting. A complete cell is currently only 250 microns thick, and there are prospects for reducing this still further.

Using such fabrication techniques it should be possible to produce large area cells for configuration into batteries of any size or geometry. Batteries based on this technology will have a very high energy density as well as being rugged and safe. Major applications envisaged include consumer products, electronic systems and communications equipment and satellite power sources BIS. (Science and Technology News, British High Commission, Chanakyapuri, New Delhi 110 021.)