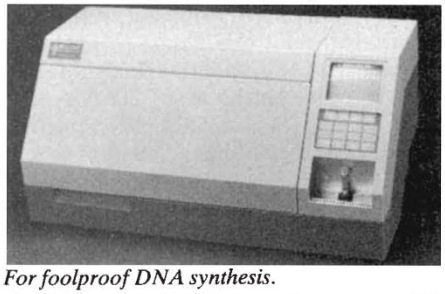
elution profile as a permanent record of product purity. Prices for the service range from $604 (US) for a 12-mer to $1,360 (US) for a 60-mer, and are calculated per nucleotide.

Fisher Scientific's booths, numbers 19 and 20, will be filled to the brim with the Fisherbiotech line of **biochemicals, reagents and laboratory apparatus** (Reader Service No. 104). Items on display will include restriction endonucleases, DNA synthesis reagents, post-blotting apparatus, and hybridization membranes. For the cell biologist, Fisher Scientific will be exhibiting its prepared media, serum-free media, microcarriers, enzymes, and a disposable bioreactor.

Biosearch's new **DNA synthesizer,** Cyclone, will be whirling in booths 6 and 7 (Reader Service No. 105). Using the proven beta-cyanoethyl phosphoramidite



For foolproof DNA synthesis.

chemistry as well as the new H-phosphonate synthesis protocols, the $18,900 (US) Cyclone employs preprogrammed memory cartridges, and can be adapted for new chemistries as they become available. Short fragments as well as sequences in excess of 100 bases can be prepared, with cycle times of 60 min for a 10 bp sequence. Conveniences of the Cyclone include a CRT display, prepackaged reagents for direct use without any necessary preparation, and a small benchtop footprint.

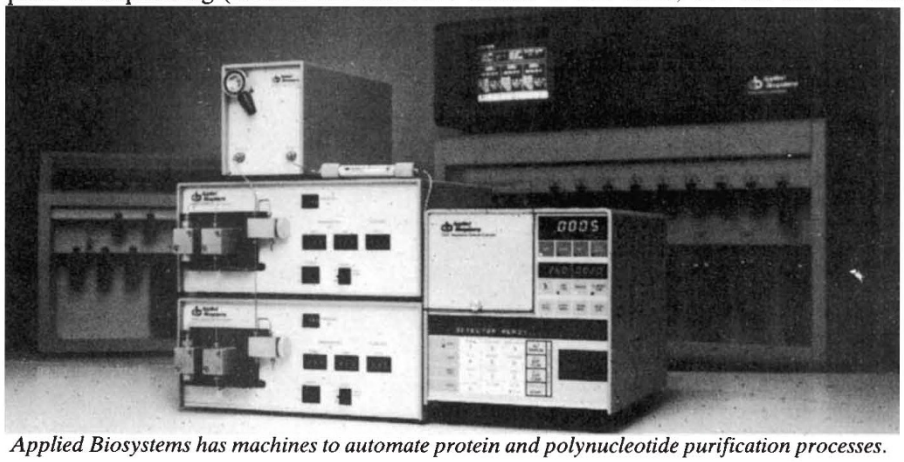
Du Pont, in booths 22 and 23, will have news of its new line of **peptide synthesizers** (Reader Service No. 106). The Coupler 2100 model has as its core Integrated Synthesis Logic, an artificial intelligence system that controls the preparation of 0.5 to 2.0 mmoles of peptide. The $70,000 (US) Coupler 2100 provides continually updated systems status reports, as a built-in printer records the synthesis directions and parameters for each operational step. Using both BOC and FMOC protocols, the Du Pont peptide synthesizer's reagents come in convenient pre-measured Coupler-Paks that can be loaded up to 49 at a time in any order in the carrier. At the appropriate time according to the programmed amino acid sequence, bar codes on the Coupler-Paks are read by a robotic arm, and the reagents are reconstituted with solvent and drawn into the instrument. For large-scale peptide synthesis, the $99,500 (US) Coupler 296 produces up to 500 g of peptide in a single run, according to Du Pont.

Electroelution of compounds separated on a gel improves the level of recovery. International Biotechnologies, in booth 24, has developed a Unidirectional Electroeluter that includes both protein and oligonucleotide purification (Reader Service No. 107). The $475 (US) Model UEA works by using electrophoresis to drive the sample out of the gel matrix and into a high-salt cushion resting in a V-shaped channel. Once the DNA reaches the high-salt layer, it is trapped there in a small volume and can be directly ethanol-precipitated. International Biotechnologies reports oligonucleotide recoveries in excess of 90 per cent using the Model UEA, thus eliminating the need for dialysis tubing, phenol extraction or column purification in the DNA fragment preparation process.

Boehringer Mannheim Biochemicals, in booths 25 and 26, has a plethora of **reagents, enzymes, and kits** for the molecular biologist (Reader Service No. 108). The list includes two new restriction endonucleases, *Fok*I and *Spe*I, a set of restriction enzyme buffers, and a T_4-DNA polymerase with 5′→3′ polymerase, and 3′→5′ exonuclease activity. For purifying labelled DNA and RNA, Boehringer Mannheim sells prepacked, preswollen, prespun columns that it claims achieve 90 per cent recovery of labelled DNA, and 80 per cent recovery of labelled RNA, each in a 6 min, 2-step procedure. A kit for labelling DNA using random oligonucleotide primers is also available, that performs 50 labelling reactions containing 0.01-2 μg DNA, using either radioactively or chemically modified nucleotides.

Booths 31 and 32 will be filled with Applied Biosystems' range of instruments for **automated molecular biology.** Among the choices presented will be four separation systems for the isolation and purification of proteins, peptides and polynucleotides prior to sequencing (Reader Service No. 109). The $36,000 (US) Model 130A protein purification system performs sample preparation and analysis for low picomole levels of proteins and peptides, using microbore (1 mm i.d.) cartridge columns to achieve elution volumes of less than 50 μl. For cases where the amount of protein or peptide under study is not limited, the $19,000 (US) Model 150A protein separation system uses standard bore pumping to provide speed and resolution equivalent to the Model 130A, at a much lower cost. Post-synthesis purification problems are cleaned up using the $21,700 (US) Model 151A for synthetic peptides, and the $20,800 (US) Model 152A for synthetic polynucleotides.

Haake Buchler Instruments also has a new **DNA sequencer**, that can be seen along with its other Ephortec wares for molecular biology in booth number 28 (Reader Service No. 111). Haake Buchler's gel electrophoretic DNA sequencer comes in two sizes, 100 cm and 45 cm.



Applied Biosystems has machines to automate protein and polynucleotide purification processes.

Forensic biotechnology

BioTechnica Ltd, the Cardiff-based biotechnology company, has thought up a unique way to harness the information storage capability of DNA. It has developed a labelling system, using DNA fragments, to protect companies against illicit marketing and counterfeiting of their products (Reader Service No. 110). BioTechnica's BIO-TAG system consists of randomly synthesized sequences of DNA, whose code is known only to the manufacturer, afixed to a tag. When the authenticity of the item needs to be confirmed, the DNA fragment is sequenced. BIO-TAG can be applied to a variety of materials and has the ability to accommodate varying security levels, and the coded DNA tag can be made invisible, if necessary. In addition to protecting against counterfeits, BioTechnica sees a market for its product in tracking the flow of documents to be held within a secure system, and in tracing identity documents or other valuable items such as passports, bank bearer bonds, security certificates or works of art.