

Cladding: A Critical Review

Barry Josey of Bickerdike Allen Partners looks at some of the problems to be found in the British cladding/window industry in a cautionary tale, before describing a draft standard for curtain-walling produced by the British Curtain Wall Group, and catching up with the rapidly changing company moves and product developments.

When preparing refurbishment works to a medium-sized office building Bickerdike Allen Partners recommended the nomination of an appropriate, well-known British firm for the manufacture, supply and installation of aluminium alloy window systems. There was nothing out of the ordinary about the requirements, the design of the finally selected windows was technically satisfactory and the sub contractor had been manufacturing and installing the same window system for some dozen or more years.

Despite the fact that the system had been tested many times in the past, both independently and in the works, Bickerdike Allen advised the client that testing of certain assemblies would be prudent. Test procedures were laid down in the specification and the sub-

contractor included the cost of testing in his tender. However, the sub-contractor forgot the need to test, until reminded; by which time full-scale production of windows was underway. Indeed, for one reason or another, the date of the test was postponed until some three and a half months into the site works; various excuses were

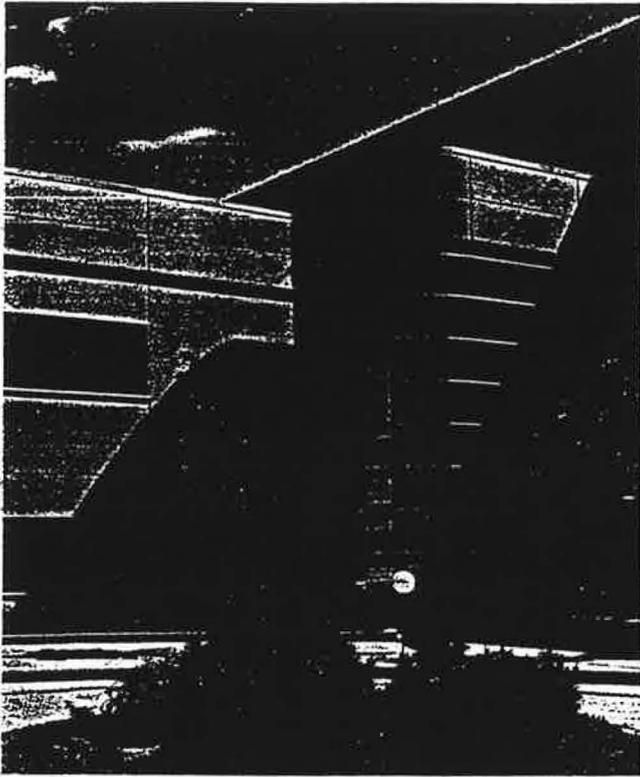
Above, aluminium rainscreen cladding was supplied and fixed by Baco Contracts Ltd for the City Technology College at Kingshurst. The architects Ellis Williams Partnership designed the glazing and cladding in the corporate livery of the college.

made, extending from 'you don't really need a test' to 'we can't install the sample in our rig'.

With installation underway Bickerdike Allen noted that the prescribed glazing procedures were not being followed and so registered complaints with the contractors. Work continued without improvement, and further complaints were made. Bickerdike Allen insisted that the glaziers and the site supervisors be issued with the correct glazing procedure. This was done, but the glaziers refused to implement it because, either it was not the way they were used to doing it (their excuse), or they had priced for a cheaper alternative (my theory).

At this point it came to light that the nominated subcontractor's domestic installation subcontractor had subcontracted the glazing, without con-

Below, the new manufacturing facility for Compaq Computer Corporation in Erskine, Scotland has been clad in Formawall 1000 architectural wall panel and ribbon glazing. The panels were manufactured by H.H. Robertson (UK) Ltd of Ellesmere Port.



Above, curtain walling by Briggs Amasco was used in the St. Enoch Square retail development in Glasgow, designed by architects GMW Partnership and Reiach and Hall. The extensive glazed roof is the Barrier Skywall system supplied by Mellows PPG.

sent, to others. Following a series of frank discussions between the various parties, culminating in meetings with the nominated subcontractor's managing director, the removal of the glaziers and the loss of employment of at least one person, glazing recommenced.

In the meantime the test sample leaked. It was opened up and found to have been glazed using the sub-sub-subcontractor's incorrect glazing procedure. The nominated subcontractor organised a re-test, only this time the correct glazing procedure was adopted, and the windows passed with flying colours. Indeed, they were water-tested to a differential pressure of 800 Pa before gross leakage occurred, recorded by the testing authority as a matter of a half dozen tear drops.

A final straw, no doubt intended to break the camel's back, was the question of setting blocks for the

double-glazing units. Initially, distance pieces were used and complaints were registered; 18 mm-wide purpose-made blocks were substituted. Bickerdike Allen complained that if 18 mm blocks were used, one pane of a 24 mm wide double-glazing unit would be left unsupported. They were informed, in writing, that wider ones were unobtainable, and that the 18 mm ones would be positioned centrally in the rebate so as to support both panes. While the letter was yet in the mail, a bag of 5,000 appropriately dimensioned, bright-red, pre-formed, mass-produced blocks was delivered to site.

This British company, manufacturing a thoroughly sound product, allowed itself to be let down by failures of communication between one internal department and another, and by a failure to supervise the work done on its behalf by others. Indeed, it failed to

believe that its domestic subcontractors were misbehaving until the matter was brought home forcibly by the failure of the windows at test. These failures were the result of complacency and inertia, and they raise the question as to how many other incorrectly glazed windows of this type have already been installed throughout the country.

Many of us can relate similar or worse tales of woe, but I used this one to illustrate how the industry is able to undermine its own foundations, even with the foreign competition standing astride the Thames. With a performance such as that just related, one is forced to ask how it is that the indigenous British cladding/window industry survives. The answer probably lies in the fact that the foreign competition is not yet sufficiently interested in the medium-sized stan-



Above, the dome and barrel vault of the Clayton Square shopping arcade, Liverpool uses Pilkington's Planar structural glazing system with toughened double-glazed units. Architects were the Seymour Harris Partnership.



Below, the façade of Highland House in Glasgow was reclad with aluminium-framed cladding and curtain-walling systems from Don Reynolds Ltd. Architects were the Cunningham Glass Partnership.

standard system type of project, but the indications are that this is changing. I am aware of at least one medium-sized development incorporating a Schüco curtain-wall, made-up and installed by a Continental fabricator, in preference to a British one.

Draft European standard

However, it does seem that the British industry is trying to do something to reverse the trend. Under the aegis of the Aluminium Window Association, the British Curtain Wall Group, founded some 18 months ago by a number of the country's leading manufacturers with a view to improving standards and halting the inroads of the foreign competition, has produced a draft specification for curtain-walling for submission to the European CEN Standards Secretariat for consideration as the basis of a Euro-standard. It is in two parts, the first

defines the construction methods for curtain-walling, establishes performance criteria and defines test procedures related to these criteria, and the second discusses design, construction and materials.

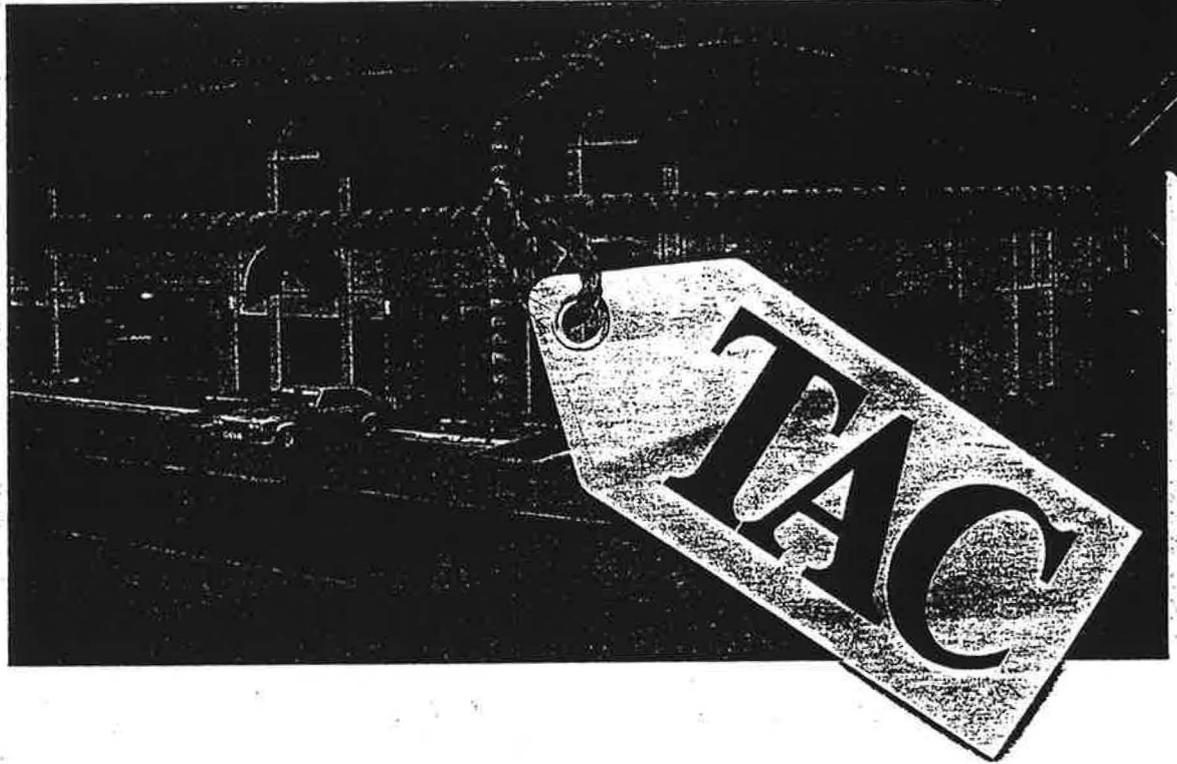
The production of a standard is to be welcomed because, currently, none of the member states of the European Community has such a standard, except for Germany, which produced a DIN standard in the 1960s covering some aspects of the 'window wall'. A standard of the type described could be of considerable benefit, it could reduce the need for complicated and over-blown specifications, currently prevalent as the design team's knee-jerk reaction to the scale of curtain walls now required, and the recollection of past failures.

However, the standard must not be set too low. A lowest common denominator standard, which leaves manufac-

turers complacently pottering along as they have done for years, would discredit the efforts of the British Curtain Wall Group and have no practical effect. Indeed, it could cause architects, not knowledgeable in the field, to rely upon it, rather than investigate the processes and procedures thoroughly, and so bring disaster on themselves and their clients. Standards produced as the result of the labours of a single vested interest group may be open to question, therefore, if the standard is to have any credibility it must address itself to the best possible practice, not the average.

Company developments

Standards to one side, some companies are endeavouring to improve their organisational capabilities and their image. On 30 April, Crittall Windows was due to celebrate its centenary by



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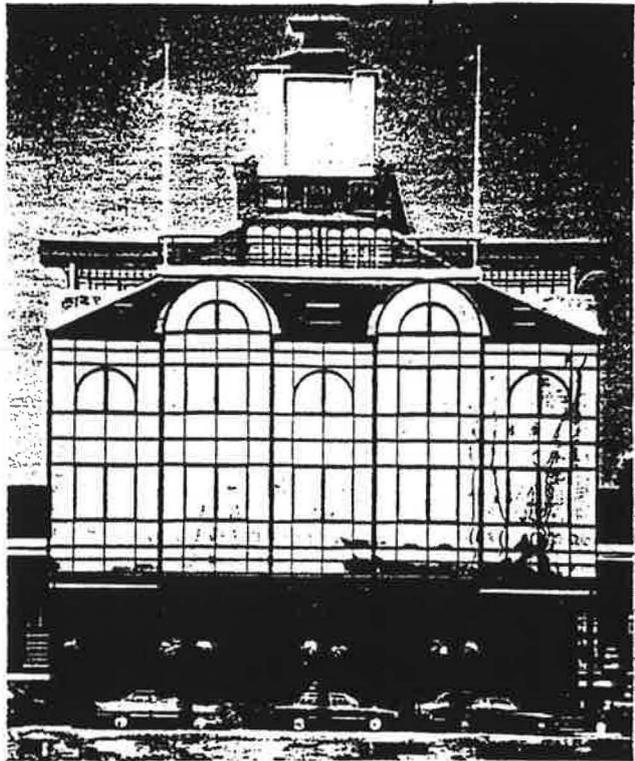
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Below, Glostal 312 50 mm curtain-walling and grey antisen double-glazed units were specified by architects Faulks Perry Culley and Rech for the new offices for Carters Soft Drinks at Kegworth, Leicestershire.



Above, Solaglas AGP supplied Permasave sealed insulating glass units, with Solascrene reflective silver coating, in Schüco's FW 60 glazing systems for a refurbished Victorian warehouse in Ipswich docks. The architects were Feilden and Mawson.

holding a charity gala and laying the inauguration stone of its new headquarter's building, located in Springwood Drive, Braintree. The company, part of the Norcross Group, was constrained in its activities by inter-group rules, in particular it was not permitted to become a serious contender in the field of curtain-walling: that was the preserve of former group member, Crittall Construction.

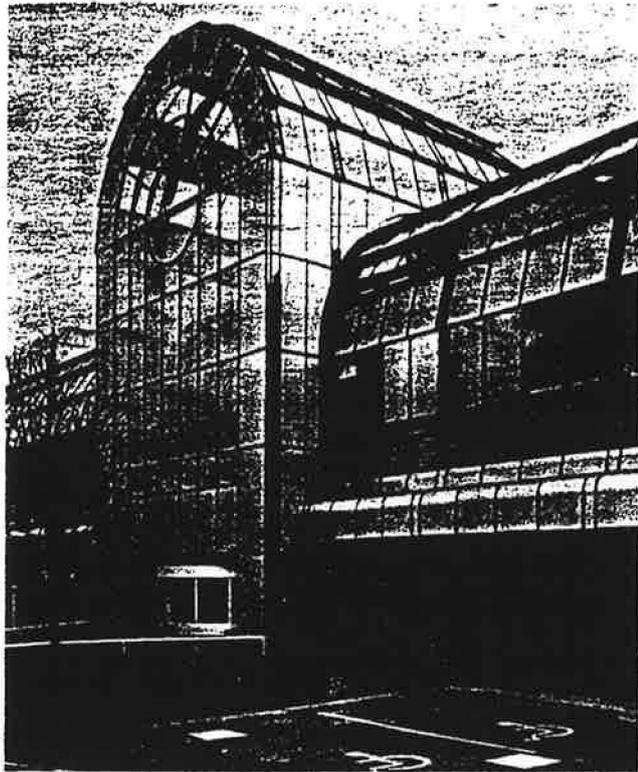
However, with the acquisition of Construction, and its transformation into Tectonic Architectural Systems, by Briggs Amasco, the agreements lapsed and I understand that Crittall is finalising a new curtain-wall design for launch into the market place. Designed in conjunction with a firm of United States based consultants, it is intended as a major competitor in the high-performance, high-quality systems world. With a projected turnover for the current

financial year of some £40 million, made up of sales of windows, Rainscreen cladding and Gridwall, Crittall could become a formidable player in the European curtain-wall market.

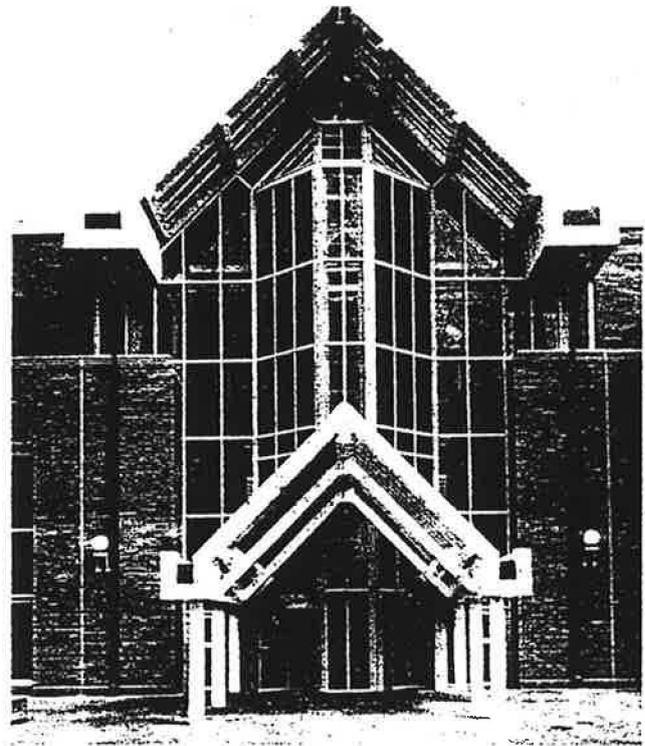
Another company seeking to broaden the scope of its activities and make itself a contender for some of the major projects now mushrooming out of the ground, throughout the country, is E. D. Hinchliffe & Sons Ltd. The company, part of Triplex Lloyd PLC, was founded in 1961; its core product being the Bonaire curtain-wall system. Development and modification of the system over the years has turned it into a drained and ventilated, thermally-broken stick system, incorporating silicone gasketry, both inside and out. The system has a claimed ability to resist gross leakage at a differential test pressure in excess of 600 Pa, 300 Pa being the differential pressure usually

quoted as equating to severe exposure. Adaptions of the system have been used for the atria roofing in such developments as Crutched Friars, London and Spring Gardens, Manchester.

Wishing to participate more fully in the current construction boom, while recognising that the industry's reputation had suffered in the past as a result of companies over-reaching themselves, and not wishing to fall into that trap, Hinchliffe has entered into a joint venture with Flour City Architectural Metals of the USA. Flour City, a division of Cyclops Industries has manufacturing facilities in Minnesota, North Carolina and California and is capable of handling contracts of £25 million and upwards, and, in its more recent history, has clad buildings by SOM, I.M. Pei and Edward Larabee Barnes. The joint venture is currently tendering for several major contracts.



Above, Chapman Taylor Partners' new Sainsburys Savacentre in Merton High Street, Wimbledon makes extensive use of Transplastix's glazed cladding and roofing. Double-skin toughened glass is fixed on to curved steel arches.



Below, Multiclad, a new spandrel panel from insulating glass unit manufacturers Multiglass has been specified by the John Brunton Partnership for the Asda headquarters in Leeds.

A further rationalisation within the industry is imminent: I understand that PPG, of Mellows PPG, is to close its East London works and transfer itself and its production to the newer, but under-utilised premises of Archital Luxfer Ltd at Cosham, Portsmouth. Archital and Mellows PPG are both members of the RTZ Group, as are Indal Wall of the United States with whom Mellows has been developing a unitised form of curtain wall. This new system, produced in the Birmingham works and named Barrier Unitised Curtain Wall, comprises factory-assembled, storey-height, thermally-broken, pressure-equalised, fully glazed, interlocking panels, which are hoisted into position and attached to pre-located fixing brackets. The first use of the system in the UK was in cladding the 17-storey Forum Hotel at the Scottish Exhibition Centre, this

being followed by Richmond Hill in Bournemouth. Mellows' other first was the use of its Barrier Skywall system on the recently completed St Enoch's Square glass roof.

In addition to the PPG/Archital link, it should be noted that the Tarmac Group has acquired the Ruberoid Group, with the consequence that Ruberoid's patent-glazing division is being merged into the Briggs Amasco Curtain Wall Division. Almost a year ago Briggs introduced the Frontier Curtain Wall, from its Tectonic Architectural Systems works. At first glance the system is of similar appearance to many others, but it has one important difference, the inner gasket. Made of EPDM rubber, the gasket extends around the entire nosing section and glazing rebate of the framing. It provides not only the back seal between infill and framing, but also a continuous

thermal break. With its factory-moulded, fully vulcanised corners, the gasket protects the metal-to-metal joints between mullions and transoms, which otherwise might be vulnerable to water which penetrates through the initial, outer seal. It is intended to be a pressure-equalised, drained curtain wall, and the same basic extrusions can be adapted for use in situations requiring sloping glazing.

Stoakes Systems' Astrawall continues to find favour with many new clients: the primary use of silicone gaskets in combinations of colour providing a considerable attraction. The company's new brochure illustrates the adaptability of the product and its uses, but it is perhaps unfortunate that the technical content contained in the earlier publication has been dropped. I understand it has something to do with the fact that technical content does not



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Right, Mellows PPG designed, supplied and installed the Barrier Skywall system for the Princes Square development in Glasgow. Architects for the project were Hugh Martin and Partners.



sell curtain walls nearly as effectively as glossy pictures – a shame.

Rainscreen cladding guide

1988 saw the publication by CIRIA, in conjunction with Butterworths, of *Rainscreen Cladding, a guide to design, principles and practice*, by J.M. Anderson and J.R. Gill, a not untimely event. Crittall Windows continues to have success with its Rainscreen system and

Baco Contracts Ltd pushes rapidly ahead with its Retroclad range of rainscreen cladding. Baco, offering a total design, test, manufacture, supply and installation package appears to be the market leader in the field. The company has recently been awarded a further contract for cladding to the new British Library and another contract for refurbishing the City Technology College in Kingshurst, the first of the

Government's new secondary schools. However, many of us in London are conscious of a new presence on the scene, Brenta AB Construction Ltd and its overcladding works to three tower blocks for Camden Council.

Product innovations

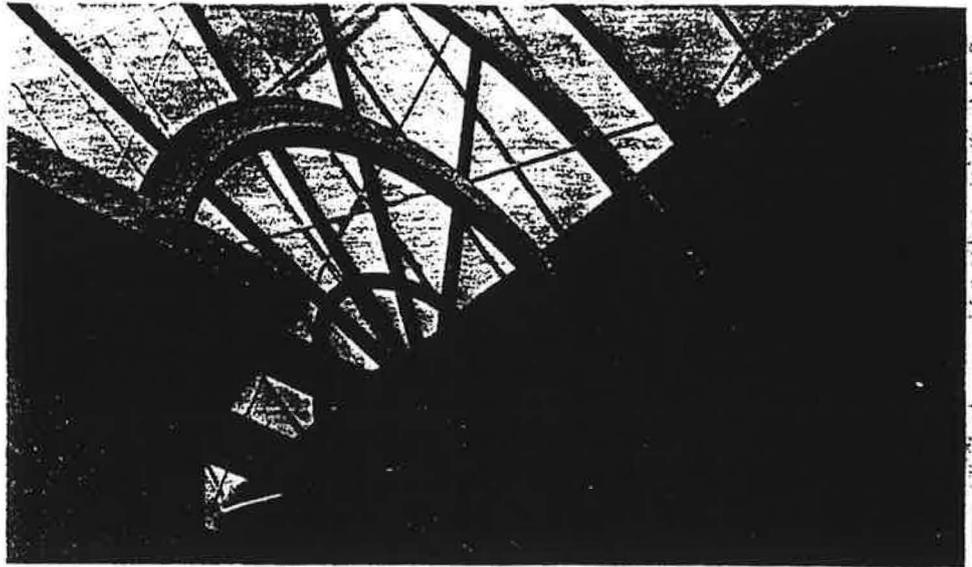
Innovations in the cladding world continue apace. Pilkington Glass has announced the full commercial availabil-

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Right, Tectonic's patent glazing at the new shopping and leisure complex at Merryhill in the West Midlands. The £250 million project by BDP is due to be completed in September. Tectonic Architectural Systems is part of the Briggs Amasco Curtain Wall Division.



ity of its hard-coat, low-emissivity glass, called Pilkington K Glass. It is practically indistinguishable from untreated glass and it provides a U-value of 1.9 watts per sq.m deg.K when used in a double-glazing unit. Pilkington claims that the glass can be toughened or laminated without loss of performance and is intended to establish low emissivity as a standard feature of any good quality window.

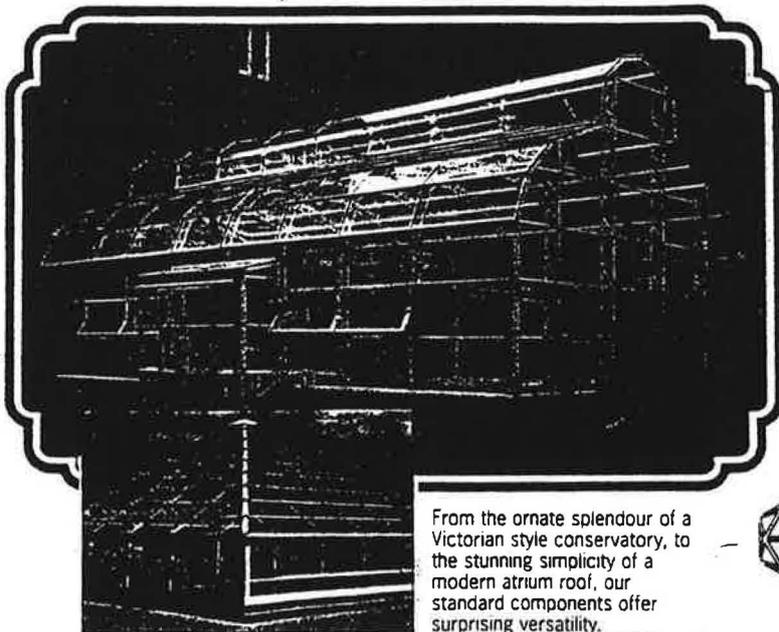
A further development, known about for some while, but not seen frequently in this country, is thin stone panelling as installed on the Merry Hill Development outside Birmingham. Pearce and Cutler Aluminium Systems laminated thin sheets of marble on to aluminium honeycomb and supported them from a lightweight curtain wall, reducing the potential overall weight of the cladding by a factor of four. Kawneer has

introduced a change to its 1200 Slimline curtain wall, simple modifications to the face caps which snap on to the pressure plates provide faceted or radiused designs; an option that seems to be open to most manufacturers.

There are many problems still within the British industry of organisation, performance and care for the end product, but at least some companies are putting their houses in order. □

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