

in primary and secondary schools, universities and industrial training establishments as well as the printing and publishing industries. Again, some of the work is done already. The Federation of Master Printers, for example, has produced a booklet on going metric with the printing industry.

Dr F. Lincoln Ralphs of the Metrication Board will chair this committee. His colleagues will be Professor M. L. McGlashan of the University of Exeter; Sir William Alexander, Secretary of the Association of Education Committees; Miss E. E. Biggs, HM Inspector; Mr J. Brosgall, Training Adviser of Unilever, Ltd; Mr G. B. R. Feilden of the British Standards Institution; Mr F. W. Kellaway, Principal of Letchworth Training College; Mr S. McClure, editor of the *Times Educational Supplement*; Miss Rosemary Part of the Construction Industry Training Board; Mr R. Sibson, HM Inspector; Dame Muriel Stewart, headmistress of a girls' secondary school; and Mr M. Moss of the Metrication Board. While at work, both committees are ready to consider observations or memoranda from organizations or individuals concerned with the work for which they are responsible.

ACOUSTICS

No More Echo

SPLENDID sounds echo no more around the heights of London's Royal Albert Hall, but go straight to each listener clearly and unambiguously—and just once. Since the installation of glass fibre diffusers at the beginning of the year (see *Nature*, 221, 7; 1969), audiences and performers have been impressed by the great improvement in its acoustics, and further modifications completed by June 14 have at last made the hall into a setting fit for the wide variety of music presented in the summer season of promenade concerts.

Investigations by Mr Kenneth Shearer of Acoustical Investigation and Research Organization Ltd, had revealed three separate troubles. There was the notorious echo, caused by the shape of the dome; the sound produced by an orchestra was too reverberant; and some areas of the hall suffered particularly from a bad distribution of sound from the concert platform in front of the organ. The diffusers, hanging from the dome, eliminated the echo almost completely, and also gave a better sound perspective to the gallery by projecting grazing incidence reflexions from the orchestra beneath in the right direction. 2,000 square feet of glass wool arranged on top of the diffusers absorbed enough sound to reduce the reverberation time to an acceptable value. What remained was poor projection of the music to the rear of the arena, opposite the platform.

A reflector above the orchestra apparently did little but throw sound straight down again—this is invaluable for the players to hear what is going on, but the need was for a new reflector which combined this property with a better outward projection. This has been achieved with an installation which looks like a surrealist distortion of the rear seat of a car but has in fact succeeded in lifting an acoustic image of the orchestra to a height from which those at the back of the hall can "see" it. It was made from a four foot segment of the mould used to build the twelve foot diameter diffusers. These elements were bolted together

side by side to form three reflectors about sixty feet in length, and the resulting triple assembly was suspended from the roof. Because it is made from the same material as the diffusers, it is much lighter than the old wooden reflector (just over a ton instead of nearly two, in spite of its much greater size) and so has the further advantage that it can easily be winched up to roof level when the hall is used for conferences.

At the same time, further diffusers were put in, including eleven at the opposite end to the orchestra purely for the purpose of capturing the sound of the bass drum, which from its usual place in the orchestra was lost to all but the back two rows. One slight difficulty has not yet been overcome, and this concerns the trombones. At the moment the "raspberry" element of their sound is reflected from the front of the boxes, while the note itself comes direct to the listener, giving a slightly schizoid effect in some seats at the rear. It seems, however, that any alteration to the box fronts would entail an undesirable deadening of the overall sound, and this—not to mention the possible outcry from addicts of Victoriana—justifies leaving things the way they are. Perhaps the best thing now would be to invite designs for a trombone with a built-in diffuser.

BUILDING

Information Service Fails

THE attempt to set up an information agency for the whole of the British construction industry through the Construction Industry Research and Information Association (CIRIA) came to an end last Thursday, July 31, when the annual general meeting of the association agreed to hive off its information services to the Building Research Station. This follows from a recommendation on July 25 by the National Consultative Council of the Ministry of Public Building and Works, which runs the Building Research Station and which—together with the Ministry of Technology—lays out much of the financial support for CIRIA. Precisely how the Building Research Station will administer the service is still being decided, but it is expected that a start will be made early next year with a regional advisory service centred in Birmingham. A full scale service should be in operation by June next year. What will happen to the sixteen people at CIRIA involved in information work has not been settled. The obstacle to a transfer to the Building Research Station is that the salaries of the information staff at CIRIA are generally higher than comparable people at the Building Research Station, who are on Civil Service scales.

The Building Research Station is already running an information service, chiefly to protect the staff of the station from interruptions to their normal work which enquiries had been causing. At present, the information section has a staff of eight, handling 13,000 enquiries by telephone and 7,000 by letter each year. Unless the enquiry requires more than half a day's work, or a visit by a staff member, the service is free. This week, the Building Research Station was uncertain how much the service is costing, but it seems to be considerably less than the £100,000 a year which CIRIA is spending to handle a smaller rate of enquiries, about eighty each week, most of which are said to be rather mundane.