PROGRESS IN BUILDING RESEARCH

PROGRESS towards the solution of many building problems is recorded in the annual report for 1938 of the Building Research Board recently issued by the Department of Scientific and Industrial Research (London: H.M. Stationery Office. 3*s*. 6*d*. net). One of those pressing most urgently for investigation is that of sound transmission in buildings, and in this sphere of activity the report claims that the position of these inquiries has been very much advanced during the past year. It has been made clear that in buildings with a normal continuous rigid construction it is virtually impossible to obtain a higher degree of sound insulation between two neighbouring rooms greater than that obtainable with 9-inch brick walls on a concrete floor resting on sound insulators. Reviewing, therefore, the results of experiments in the small steel frame building at the Research Station, in which various types of construction can be tested, it is claimed that practical suggestions for construction to cut down sound transmission can now be advanced.

Special interest is attached to the work done in the preparation of artificial pozzolanas. The value of the European natural pozzolanas has long been known, the name being derived from the volcanic dust from the region of Pozzuole which the Romans used in their mortars. These natural earths or volcanic tuffs have the ability to combine with lime and thereby to produce a hydraulic set which gave to the ancients a cementing material suitable for sea-walls, aqueducts and the like. A more important development is their use with Portland cement which, when used in soils containing sulphate salts, suffers serious deterioration from chemical attack. The work of the Research Station has provided the method whereby artificial pozzolanas have been produced from certain clays and from refuse from the Scottish shale oil industry. Used with cement mortar these materials greatly increase its resistance to sulphate attack, but somewhat diminish its early strength. Both natural and artificial pozzolanas have been included in tests on the corrosion of steel reinforcement in concrete piles exposed to sea-water, which are being carried out in conjunction with the Sea Action Committee of the Institution of Civil Engineers. The report notes that the manufacture of these materials is now beginning to be undertaken by the cement makers.

The spray method of cleaning buildings has been applied with success and its efficacy in particular circumstances has been the subject of experimental investigations. Most noteworthy among the latter is the cleaning of the Admiralty Screen in Whitehall, a Portland stone structure about 150 years old and the work of John Adams. Being almost completely soot-blackened it offered a severe test of the efficacy of the treatment.

A new branch of the work deals with ventilation problems, which are especially worthy of study in the interests of health and comfort. It is a subject which has received little attention and not much is known as to the distribution of air in buildings provided with the different mechanical ventilation or air-conditioning methods of to-day. The relative degree of purity of air supplied by upward or by downward ventilation is of considerable importance. The work in hand is primarily directed to the development of methods of testing the efficiency of different types of air filter, for with an inefficient filter there may, when air is re-circulated, be an accumulation of impurities in the building affected. The extension of the work in this section is commended to the interest and backing of the organizations concerned. With the help of the British Electrical and Allied Industries' Research Association experiments were made possible on the ventilation in a room when warmed by different methods.

Among the new apparatus described in the report is a rain gauge, used for experiments on damp penetration, which records the amount of rain received from different points of the compass. There are also described a machine for comparing the slipperiness of different types of floor and an apparatus for measuring the efficiencies of various treatments for minimizing the condensation of water on walls.

RADIO-TELEGRAPHY AND RADIO-TELEPHONY

IN the *Proceedings* of the Wireless Section of the Institution of Electrical Engineers of June there is a review of the progress made in radio-telegraphy and telephony during the last few years by C. E. Rickard of Marconi's Wireless Co., Ltd. As this period has been notable for steady advance rather than outstanding invention, he was faced with two main problems (1) where to start and where to finish in relating this progress, and (2) what relative importance to attach to the numerous branches and ramifications which together make up the science, art and practice which provide the subject-matter of such a review. Progress in the science of radio covers advances of knowledge in theory and technique, but progress in the art, although dependent on progress in the science, also depends largely upon the commercial application of such improvements as may have been made in the past. In addition, the commercial aspect of progress in the art of radio, although mainly controlled by economics, is also governed by the application of international regulations in the practice of radio communication. Seeing that a new international agreement has recently been reached at Cairo, the occasion to discuss the effects of the 1938 convention is opportune.

The recent plenary International Conference to review the Telecommunications Convention, and General Regulations made at Madrid in 1932 was