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Concrete Research

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Editorial comment

A VAST AMOUNT OF RESEARCH has been carried out on the various materials which together constitute a concrete structure, and our store of knowledge of these materials both separately and when combined in the structure is being added to day by day. Concrete mixes are now truly designed for the job they have to do, and their physical characteristics can be forecast with a surprising degree of accuracy. The development of concrete of high strength—together with the development of high-tensile steels with low creep characteristics—has led to the idea of prestressing concrete becoming a practical reality. And although the discussion contained in this issue of the *Magazine* might give the impression that much remains vague in the design of the simplest of beams, it will be found that it is the finer points of detail that are being brought under the microscope.

Not that there is room for any complacency, as much remains still to be learnt.

Much research into problems confronting the civil engineering and building industries is being done in our universities and the various research establishments—indeed, the volume of research in this field has grown considerably during the last decade, and with the increasing emphasis now being laid on technological education this volume will no doubt continue to increase, perhaps even more rapidly than hitherto. The results of such research are usually either published in one of the technical journals or are presented at conferences, and appear in the proceedings thereof. This is not the end of the road, however—or perhaps it would be more accurate to say that this *should not* be the end of the road. The laboratory work is only one stage in the process; it is usually preceded by a study of the results of other workers, and is always based on a considerable amount of scientific data, both experimental and theoretical. The next stage is the responsibility of the practising engineer, whose job is to design or construct. He it is who takes over where the laboratory scientist leaves off, and tries out new ideas in the field—or perhaps on the drawing-board. New techniques may be perfectly satisfactory in the laboratory, but will they work on the site? Will a new piece of equipment stand up to the handling it will get in the field, where it is away from the tender care of those who designed and built the prototype? Will the calculations based on tests on small-scale models really apply to a full-size structure? These questions and many more can only be answered after extensive work in the field, probably involving many trials and modifications. This operational research is one of the vital links in the chain from the fundamental scientist to the practical man on the job; without this vital link the whole process breaks down, and the research work loses its point.

Much work of this type is indeed done, and an interesting example is provided by the paper appearing in this issue of the *Magazine* on the problem of friction in

prestressing tendons. It is comparatively rare, however, that such field research by consulting engineers or contractors appears in print, although in fact it is this last link in the chain which is of most direct use to others faced with similar problems. A look through the six previous issues of the *Magazine of Concrete Research* will reveal that of 32 papers published, 11 originated from Universities, 18 from research laboratories excluding Universities, and only 3 from within industry. This certainly does not reflect the true state of affairs; the volume of knowledge and experience gained within industry is certainly far greater than the above proportions would suggest. The sharing of such knowledge is essential, however, if modern developments are to become widely accepted in the civil engineering world. No doubt the atmosphere of a University or a research laboratory is more conducive to the writing of papers, but those responsible for the publication of this *Magazine* would welcome an increase in the papers submitted from those engaged in field work. A great service would be performed to the industry as a whole if those engaged in operational research—and this means everyone trying out something new, whether on the drawing-board or on the site—would take the extra trouble of publishing their findings. This *Magazine* would welcome an increase in the papers submitted by practising engineers; it aims to be of value to the industry, and this aim would be considerably furthered by such co-operation from the industry itself.