of the fact that the existence of a starter and an adder for a group of order $2n - 1$ ensures the existence of a Room design of order $2n$. Incidentally the Room design of Fig. 1 cannot be constructed by starter/adder method.

The Room design of order 8 which we have constructed in Fig. 3 has an additional interesting and relatively rare property (called 'embeddability'). If the Latin square of Fig. 4 is placed in juxtaposition to its own transpose, then all the non-diagonal entries of our Room design appear 'embedded' in their correct positions.

Further reading

1. J. Dénes and A. D. Keedwell, *Latin squares and their applications*. English Universities Press, London (1974).
2. W. D. Wallis, Solution of the Room squares existence problem, *J. Combinatorial Theory* (A) **17**, 379–383 (1974).
3. W. D. Wallis, A. P. Street and J. S. Wallis, *Combinatorics: Room squares, sum-free sets, Hadamard matrices*. Springer-Verlag, Berlin (1972).

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Obituaries

Maxwell H. A. Newman

From time to time the Mathematical Association invites a distinguished mathematician to be its president. It has rarely made a happier or a better-timed choice than in 1958, when Professor Max Newman accepted the nomination. His address to the conference at Southampton, with the title "What is mathematics? New answers to an old question" (printed in the *Gazette* for October 1959) marked a turning-point in the thinking of the Association: by putting forward so simply and persuasively the vision that mathematics needed to advance through abstraction to generality, he convinced many of his audience that teaching in school had to change if it was not to lose contact, not only with the trend of advanced mathematical research but also with the relevance of the subject to modern society. But, though his goal as a mathematician was the establishment of more fundamental mathematical structures, he rejected the view of his namesake, the late Professor Max Beberman, that the contemplation of axioms was a suitable activity for schoolchildren. Rather, he urged that "the meaning and interest of mathematics is to be sought in using it and seeing it in action", and that "as we ascend the skyscraper of modern mathematics . . . the pleasure and enlightenment to be obtained is all the greater if we are thoroughly at home on one floor before starting to move to the next". Coming as it did a few months before the Royaumont OEEC seminar, it was an important and authoritative counter-statement to that of Bourbakist extremism which was being propounded in other places.

Newman was already 62 when he gave that address, but he was a man who remained young in spirit, and who had continued to bring a refreshing originality to English mathematics. Before the war, in a Cambridge dominated by the great school of analysis associated with Hardy and Littlewood, he struck out on his own into combinatorial topology—a period which culminated, in 1939, in the publication of *Topology of plane sets of points*. Dr Frank Smithies, reviewing this in the *Gazette* (December 1939), asserted that "it is an excellent specimen of the English variety of textbook at its best", and expressed the hope that "as one result of its appearance, more attention will be paid to the subject of topology in the mathematics departments of British universities". But Newman's move to Bletchley Park during the war, in company with many other distinguished mathematicians, led to an involvement with electronic machines for cryptanalysis; and in consequence, the early research in digital computing became a major interest when in 1945 he moved to the University of Manchester as Fielden Professor. (An interesting account of these developments, and of Newman's part in them, is given by B. Randell, "The history of digital computers", in the *Bulletin of the IMA* for November/December 1976.)

Newman's connection with the Mathematical Association began in the 1950s, when he accepted the invitation of the Teaching Committee to be chairman of its sub-committee on the teaching of algebra in sixth forms. It was an important choice, for he brought to the discussions a clarity of purpose which few could have matched. His personal influence is seen most strongly in the sections of the report on polynomials and on axioms, but it was his hand which guided the whole enterprise.

But for those who worked with him, the predominant memory will not be of his formidable intellect or his capacity for organisation, but of his warm friendship, his kindly encouragement, and his delightful sense of fun. We are privileged to have enjoyed our share of these qualities.

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Allan W. Riley

Allan W. Riley who died on the 23rd November 1983, aged 82, was a Lancastrian. He graduated with BSc Honours in Mathematics from Manchester University. He taught in various schools before his appointment as Head of the Edward Shelley School in Walsall. From there, on the 1st October 1940, he was appointed Inspector of Schools for the County Borough of Wolverhampton when his predecessor in that post became the Director of Education. From that date up to the time of his retirement on the 31st August 1967 no-one exercised greater influence on the pattern and