PROGRAMMING LINGUISTICS

A Comparative Study of Programming Languages

By Bryan Higman. (Macdonald Computer Monographs.) Pp. v+164. (Macdonald: London, 1967.) 45*s*.

THIS is the first work in a welcome new series of computer monographs which are being published under the general editorship of Professor Stanley Gill; this particular monograph is about programming languages. An introductory chapter considers an Algol-like language which is used for illustrative purposes at various points in the text, and a set of criteria is then laid down which, hopefully, will be satisfied in a "good" computer language. The next chapter is entitled "Nature of Language in General", and its main sections deal with natural and artificial languages, syntax and semantics, communication of algorithms, nature of computation, and classification of languages. It ends with a brief discussion on the role of names in a programming language.

Chapters 3 and 4 are relatively short and respectively treat the topics of recursion and polish notation; they are followed by a chapter dealing with the theory of names, a decidedly non-trivial topic, and a rather lighter chapter on "Systems Aspects", followed by a chapter on "Formal Language Structure", which deals with formal grammar and formal semantics. Having assembled his theoretical concepts in the first seven chapters, the author then goes on to consider actual computer languages. A chapter is devoted to Strachey's general purpose macrogenerator—macrogenerators form an important topic which is frequently neglected in books on programming languages. The content of the next chapter is well exemplified by its title, "From Machine Code to Fortran", and this is followed by chapters on Cobol, Algol and list processing languages, the latter considering IPLV, LISP1.5, WISP, ALP, CPL and PL1.

A penultimate chapter on the thorny problem of input and output brings us almost to the end of the book; it contains some interesting comments about the IFIP and ACM input-output proposals in Algol. It seems to me unfortunate that these proposals have not been more widely used in teaching texts on Algol.

The last chapter treats various topics including new facilities in languages; for example, environmental enquiries, open ended enquiries and a final section on Ross's algorithmic theory of language. The book is written in a pleasing style and undoubtedly helps to fill a gap in the literature. Further titles in the series will be awaited with interest. E. B. SPRATT

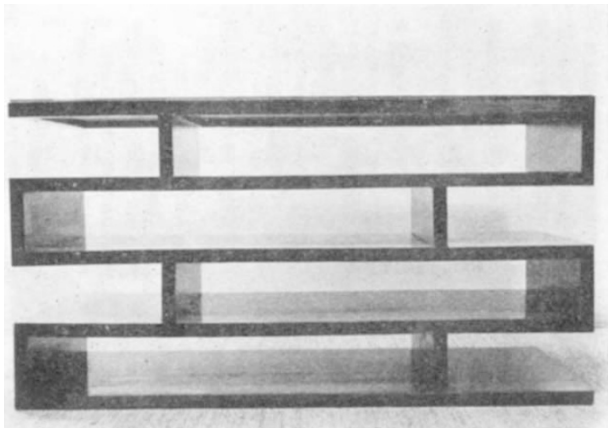
LONDON EXHIBITION

BLESSED BAUHAUS

50 Years Bauhaus. German exhibition at the Royal Academy of Arts, Burlington House, London W1, until October 27.

THE rapturous liberal who returned from Russia in the early thirties with the exclamation "I have seen the future and it works" should perhaps have waited a bit. But the phrase is a good one and can be applied, without a trace of irony, to the Bauhaus exhibition now at the Royal Academy. There one can see the future, fifty years old. It is a humbling experience to walk past the handiwork of a group of artists, architects and designers who gathered in Weimar, Dessau and Berlin for 14 years until the Nazis drove them out and to realize that the whole look of the modern western world—from skyscrapers to shopping bags, from factories to coffee pots—bears their stamp.

Bauhaus means building-house. The architect Walter Gropius gave it as a name to the school which he founded in Weimar in 1919 as an expression of his belief that "the complete building is the final aim of the visual arts". Yet Gropius had other fundamental beliefs—that art and industry should work together, that art itself is indivisible and not chopped up into watertight compartments of painting, sculpture and architecture, and that every artist is primarily a craftsman. Bauhaus might have been a cult, and in a way it was. The family of Bauhausler gathered around the Christmas table, with Papa Gropius handing each his gift, and there were debates over which was superior: triangle, square or circle.



A shelf designed by Gropius in 1923.

Yet Gropius and his laboratory, school or workshop, whatever one calls it, had a firm grasp on the realities of the modern industrial world. More than anything, Bauhaus contributed a method of teaching based on Gropius's belief that there is no essential difference between the artist and the craftsman. Although Gropius in 1919 was already a well established architect, he put no architects on the staff. (Architecture was not taught formally for about ten years.) There were painters in plenty, but they did not teach painting: Kandinsky gave classes in murals, Klee in weaving, and Moholy-Nagy in metal working. The Bauhaus method, which has set the direction for the teaching of architecture and art the world over, particularly in the United States, is the antithesis of the kind of professional caste consciousness which in Britain separates architects from builders, solicitors from barristers, and which produces scientists who do not know how to adapt or repair their laboratory equipment.

The exhibition at the Royal Academy is a great pleasure, although perhaps more intellectual than visual, apart from the superb paintings. A lot of space is given to explaining the Bauhaus courses, and much of what is good to look at stems from work done by members of the Bauhaus group after they had fled from Germany. The really moving works are, however, those which bear the stark, clean yet somehow unsophisticated mark of the early twenties—the austere teapots, the geometric and ballet costumes which reduce the human figure to simple geometric shapes, and the toys. It is all very impressive, especially the worn "modern" furniture. "Look how tatty it is," observes the sophisticated teenager who knows that you can get the same Breuer chair, with no scratches at all, in the King's Road. BRENDA MADDOX