and laid the foundations of the ASDIC ('Anti-Submarine Division-ics') techniques, initiated by Langevin in France.

When peacetime returned, WHB was named President of the Royal Institution and brought it back from the decline in which he found it to its present fame: 'RI has produced more fundamental breakthroughs per square foot than any other establishment in the world'.* Eight Nobel laureates have been professors there. With the years, the crystallographer WHB became a 'national figure representing science'. President of the Royal Society from 1935, he had firm views on all aspects of science and education and when World War II came he expressed his views in strong words: 'the authoritarian state tends to decision without enquiry; the democracy tends to enquiry without decision' and Winston Churchill accepted his idea of the SAC (Science Advisory Committee to the government during wartime).

The book fairly reflects the quasi-religious sense of responsibility of WHB proven throughout his whole life. 'He is a great man of science and he is also a very great man.'†

The only criticism addressed by this reviewer to the lucidly written and well documented book on WHB, which G. M. Caroe dedicated to the memory of her brother WLB, is that while the reader is quite happy to see pictures of WHB, of his wife and also of WLB, there are no pictures of the author's other brother, Robert Charles, killed during World War I at Gallipoli (1915) . . . or herself. But this might be the reaction of a French temperament.

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* Sir George Porter, present director.

† Rutherford in a discussion with the anatomist Arthur Keith about who should become President of the Royal Institution.

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Molecular and crystal structure models. By ANNE WALTON. Pp. 201. Chichester, England: Ellis Horwood, 1978 (distributed by John Wiley). Price: $19.95, £9·00.

This is a timely book on model construction in chemistry by a highly experienced author. This little book, which reflects the author's enthusiasm for model building, offers considerably more than a consumer guide although this is clearly one of its principal aims. It brings some necessary order into the profusion of new types of models, many of which differ solely in some detail which can be readily overlooked. (As an afterthought, though, one cannot help wondering how the same ideas have been reinvented time and again.) The advantages as well as the limitations of a great variety of currently available models and model parts are thoroughly reviewed. These models range from simple demonstration equipment for schools and inexpensive student sets to expensive high-precision models used at research level.

The book opens with a brief survey and a chapter on space-filling models dealing with Stuart–Briegleb and related models in considerable detail. The remaining chapters (making up over two thirds of the volume) are for the most part devoted to crystal structure models. A chapter on sphere packing is followed by a full account of ball-and-spoke models. The next chapter on skeletal models is also quite comprehensive whereas the subsequent chapter on polyhedral assemblages is rather more limited in scope. Models depicting atomic and molecular orbitals (used in teaching) and dynamic models are also dealt with in subsequent chapters. Somewhat brief chapters on construction devices and two-dimensional aids complete the text part of the book.

Apart from omissions, which are naturally unavoidable in a book like this, there are relatively few shortcomings. Among the more serious omissions are universal orienting drills for accurate crystal structure models and other aids used in crystallographic model design. With respect to sphere packing it should be noted that a small amount of a suitable solvent for joining plastic spheres (such as ethylene dichloride in the case of acrylic resins) is in most cases preferable to the use of glue or adhesives like 'Blu-Tack'. This little recognized fact would merit mention as it gives by far the best results in the least time and, if desirable, models made on this basis can also be readily disassembled without serious damage to the spheres. Not much space is devoted to models assembled from solid polyhedra and more representative examples than those presented would no doubt include shear or Wadsley-type structures and intermetallics (*e.g.* assemblages of icosahedra).

This well produced book also contains numerous references and an extensive list giving names and addresses of suppliers of models and model parts. Crystallographers and chemists pursuing various activities in different fields will find this book a great asset.

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Molecular structure and bonding: the qualitative molecular orbital approach. By B. M. GIMARC. Pp. x + 224. New York: Academic Press, 1979. Price: US $18.00.

This book is a very useful survey of the applications of the qualitative molecular orbital approach to relatively simple molecules. In the first chapter there is a brief summary of MO 'rules'; these are well illustrated by reference to the bonding and antibonding σ orbitals of H_2. Chapter 2 gives a short account of H_3 and H_4 activated complexes and the role they may play in gas-phase reactions of the type $H + H_2 \rightarrow H_2 + H$. This chapter is slightly out of place at this point perhaps, since the book is concerned primarily with molecular shape.

The bulk of the book (Chapters 3–7) deals with specific classes of compounds, namely hydrides (AH_2, AH_3 and AH_4), non-transition-metal complexes (AB_4, AB_5 and AB_6), molecules of the HAB type that are either linear or bent about atom A, symmetrical molecules containing A–A