

THE MARKET: 1940-1990

As *IDR* celebrates its 50th anniversary, it is an opportune time to 'look back' on the changes that have occurred during that period within the industrial diamond market. **James Martin** reflects on the past and looks towards the future.

THE requirements of war industry have forced the choicest gems, deservedly known for their beauty and durability, to give pride of place to less prepossessing relatives, once despised as industrials and rubbish. The stones which the sorters once rejected, demonstrate day by day in grinding, turning, wire-drawing and countless other engineering operations, adamant durability and steadfastness.

The above, rather grandiose words were penned at about the same time that *IDR* was first published, by a certain Mr. A. E. Lee, the then Assistant Secretary, Raw Materials, in the British Government's Ministry of Supply. They were part of a foreword to a poem entitled 'The Brilliant Armament' by Reginald Turnor. The poem, written in the early days of World War II, described how diamond was at that particular time being considered more valuable for its use in industry than it was as a gemstone.

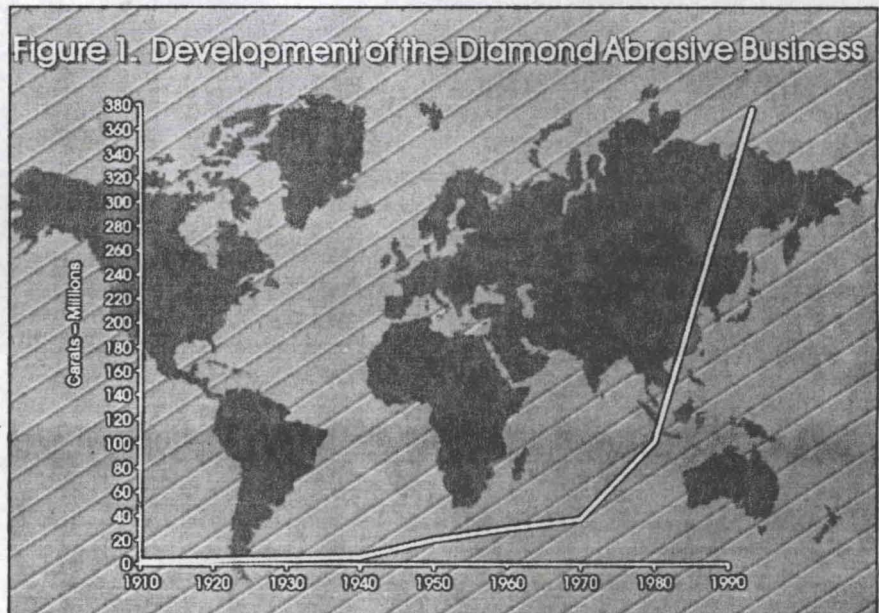
Lee's foreword and the poem itself give a fascinating insight into the role and perception of industrial diamonds 50 years ago compared with today. During that period, the annual consumption has increased from around 5 million carats of wholly natural diamond, to a figure now approaching 400 million carats.

Fig 1 charts the rise in consumption of industrial diamonds in the twentieth century. Growth has been affected by major world-wide events, but the greatest impact has come from an event that had no real significance outside the diamond industry itself—diamond synthesis. And this not only affected the diamond grit market, but

diamond and CBN blanks are becoming increasingly important. This is demonstrated by their current 1990 market size in the market economy countries. The value of the diamond and CBN grit market is approximately US\$500 million, whereas polycrystalline blanks now constitute around \$100 million worth of business annually.

Development of the diamond abrasive business

Fifty years ago global consumption of diamond abrasive, all of it natural, is believed to have been in the order of 5 million carats per annum. It was the advent of synthetic diamond in the 1960s that really provided the stimulus for the industrial diamond market to



also laid the foundations for expansion into polycrystalline diamond and CBN, two areas which are now an integral part of the diamond business.

The situation today

Diamond and CBN abrasives are vital process materials used by about one thousand manufacturers of diamond tools, based in 30 to 40 countries. There are additionally a large, but unknown, number of users of fine diamond in polishing and lapping applications over a variety of industries.

This 50th anniversary year for the *IDR*, 1990, will see total diamond and CBN grit consumption of between 70 and 80 tonnes, or 350 million to 400 million carats, in what used to be called the non-communist world.

Synthetic products account for roughly 90% of the grit total, in addition to which, polycrystalline

grow at a fast pace.

It is worthwhile, therefore, to look in detail at the advances made in the last 20 years (see Fig 2).

Back in 1970 the synthetic component of the total diamond abrasive market was approximately 60-70%. By the end of the 1970s, the share held by synthetic had grown to approximately 90%, a level at which it has subsequently stabilised. CBN grit is included with diamond abrasive in the above. It was first introduced to industry in 1969 and today consumption exceeds 25 million carats per annum with demand increasing in excess of 20% p.a.

In the late '60s diamond abrasive was largely unknown to world industry. However, 10 years later, it was being increasingly specified by the users of grinding wheels, circular saws and similar products. Today it is accepted that diamond technology has