9.4.	Proble	ms of Commercialization
9.5.	Regior	nal Events and Progress in Fuel-cell Manufacture
	9.5.1.	Japan
,	9.5.2.	North America
	9.3.3.	western Europe
9.6.	Implic	ations of Fuel Cells for Platinum Consumption
CHA	PTER	10. AN EXAMINATION OF FACTORS INFLUENCING THE FUTURE OF THE PGM
10.1.	The C	urrent World Politico-economic Scenario from the Consumer's Viewpoint
	10.1.1.	North America
	10.1.2.	Western Europe
	10.1.3.	Japan
	10.1.4.	China and Hong Kong
	10.1.5	. The Rest of the Western World
10.2.	Politic	co-economic Factors Likely to Affect Future Production
	10.2.1	South Africa
	10.2.2	. Kussia
10.3.	A Pro	gnosis on the Future Supply and Demand for Platinum, Palladium, and Rhodium
	10.3.1	Supply Predictions
10.4	10.3.2	. Demand Predictions
10.4.	Lesso	ns for the South African Producers
REFI	ERENC	CES
App	endiv	I. Symbols and units
App	endix	II. The world's main producers and traders in PGM commodities
··PP	chaix .	III. The most important physical properties of the PGM
		LIST OF TABLES
Table	e 2.1.	Estimates of strike din thickness and PCE and a facility March 1997 and 199
	C 2.1.	Estimates of strike, dip, thickness, and PGE grade for the Merensky reef and UG2 chromitite
Tabl	e 2.2.	layer in various sectors of the Bushveld Complex Outcrop farms utilized in this study for each sector of the western and eastern Bushveld
		Complex
Tabl	e 2.3.	Average available percentage distributions of the individual PGE in the Merensky reef for the
		various sectors of the Bushveld Complex
Tabl	e 2.4.	Average available percentage distributions of the individual PGE in the UG2 chromitite layer
		for various sectors of the Bushveld Complex
Tabl	e 2.5.	Calculated in-situ and millhead reserves of the PGE to a depth of 1200 m in various sectors of
DD -		the Bushveld Complex
Tabl	le 2.6.	Calculated in-situ and millhead reserves of the individual PGE in the area north of Potgietersru
Т-1-1		to an opencast mining depth of 250 m, kg
Tabl	le 2.7.	Calculated <i>in-situ</i> and millhead reserves of the individual PGE in the Bushveld Complex to a
Tal-1	1000	depth of 1200 m, t
	le 2.8.	PGE grades and distribution in chromitite layers of the Bushveld Complex below the UG2
iabl	le 2.9.	Analyses of the nickel-copper ores from the old mine workings at the Base of the Insizwa
Tabl	le 2 10	Complex
Tabl	le 2.10.	. Milled tonnages and grades of the Noril'sk-Talnakh ore junctions
		. Measured and estimated average details of the Noril'sk-Talnakh deposits
		Estimated and estimated average details of the Noril sk-fainakh deposits
		Percentage distribution of the PGE in the Finnish economic deposits, %
		. <i>In-situ</i> and millhead resources of the Finnish deposits to a depth of 1200 m, t
		Some important aspects of the Great Dyke of Zimbabwe
		Details of the strike, suboutcrop areas, and ore reserves of the subchambers of the Great Dyke
		Total PGE reserves of the Great Dyke of Zimbabwe
28		The stratigraphy of the Stillwater Complex
/		PGE reserves and provisional resources of the USA
		. Known and inferred mineralization of the Duluth Complex
24		In-situ and millhead reserves and provisional resources of Canada +

Table 2.23	. Average grades of the Jinchuang deposit	49
Table 2.24	. Total PGE reserves of the Jinchuang deposit of north-west China, kg	49
Table 2.25	. The distribution of the PGM in placer deposits of the world	52
	. Estimated average annual production of platinum and osmiridium from recent and fossil	
	placers, 1916–1934	53
Table 2.27	. Identified PGE resources of the world	58
	. Comparison of recent calculated world reserve bases	59
Table 3.1.		68
Table 3.2.	Estimates of South Africa's historical production of the PGM, 1926–1992	70
Table 3.3.	Estimates of Russia's historical production of the PGM, 1950–1992	72
Table 3.4.	Estimates of Canada's historical production of PGM, 1950–1992	75
Table 3.5.	Historical data on the winning of the PGM in the USA, 1981–1992	76
Table 3.6.	Historical industrial, Government, and private stocks of PGM in the USA, as well as imports	, 0
Table 5.6.	and exports	77
Table 3.7.	Estimates of world platinum production, 1981–1992	80
Table 3.8.	Estimates of world palladium production, 1981–1992	81
Table 3.9.	Estimates of world PGM production, 1981–1992	82
	Temporal percentage distribution of world PGM production by the supplying countries of the	02
Table 3.10.	world	83
Table 5.1	Average quantities of the PGM traded in the world, and the average annual percentage trends,	03
Table 5.1.	1985–1989	98
T-1-1- 5-2		90
Table 5.2.	Average quantities of PGM-bearing waste and scrap traded in the world, and their average	100
T 11 F 2	annual percentage trends, 1985–1989	117
Table 5.3.	Price correlation coefficients, 1952–1992	
Table 5.4.	Price correlation coefficients, January 1990–June 1993	117
Table 5.5.	Regional consumption (kg) of platinum, palladium, and rhodium in the Western World,	119
T.11 F.	1981–1992	120
Table 5.6.	Temporal percentage distribution of the platinum, palladium, and rhodium demand	120
Table 5.7.	Estimated net demand (kg) for platinum, and palladium by various Japanese industries,	121
T 11 5 0	1981–1992	121
Table 5.8.	Estimated net demand (kg) for platinum, and palladium by various North American industries,	122
T.11 F.0		122
Table 5.9.	Average five-year demand distribution (kg) for the PGM by various industrial sectors in the	122
E 1 1 E 10		123
lable 5.10.	Average five-year and ten-year percentage demand distribution for the PGM by various	124
	industrial sectors in the USA, 1981–1990	124
Table 5.11.	Estimated net demand (kg) for platinum by various industries in Europe and the rest of the	105
	1	125
Table 5.12.	Estimated net demand (kg) for palladium by various industries in Europe and the rest of the	100
		126
Гable 5.13.	Estimated net demand (kg) for platinum, and palladium by various industries of the world,	107
	****	127
		128
Гable 5.15.	Temporal percentage distribution in the demand for platinum metal by various industrial	
		129
fable 5.16.	Temporal percentage distribution in the demand for palladium metal by various industrial	
		130
	Temporal percentage distribution in the demand for rhodium metal by various industrial sectors	
		130
Table 5.18.	Percentage distribution based on the weight demand for platinum and palladium metals by	
	various industrial sectors in the Western countries of the world, 1981–1992	131
Table 6.1.	Development of legislative standards for noxious gases in vehicle exhaust emissions in various	
	countries of the world	139
Table 6.2.	Average total passenger vehicle populations in various regions of the world and the proportions	
i	fitted with autocatalysts	140
Table 6.3.	Average annual gross and net consumption of platinum, palladium, and rhodium by auto-	
(catalysts for various regions of the world, 1982–1993	141
		161
		181