
Contents

1	Introduction.	1
1.1	Early History.	2
1.2	On Petrolipalynology	3
1.2.1	Objectives and Purposes.	4
1.2.2	Principles and Methods	4
1.2.3	Review and Outlook	5
	References	7
2	Geological Background.	11
2.1	Introduction	11
2.2	Geological Conditions for Oil–Gas Field Formation	11
2.2.1	Complex of Source Rock, Reservoir Rock, and Seal Rock	11
2.2.2	Generation, Migration, and Accumulation of Petroleum.	12
2.2.3	Petroleum Deposit and Its Classification.	13
2.3	Inland Petroliferous Basins	13
2.3.1	The Tarim Basin	13
2.3.2	The Junggar Basin.	23
2.3.3	The Turpan-Hami Basin	28
2.3.4	The Qaidam Basin.	31
2.3.5	The West Jiuquan Basin.	33
2.4	Coastal Shelf Petroliferous Basins	35
2.4.1	The Liaohe Basin	35
2.4.2	The Beibu Gulf Basin	37
2.4.3	The Zhujiang Mouth Basin.	39
	References	41
3	Fossil Spores and Pollen in Crude Oils	43
3.1	Materials and Methods	43
3.1.1	Materials	43
3.1.2	Methods.	44
3.2	Tarim Basin	44
3.2.1	North Tarim Upheaval	44
3.2.2	Kuqa Depression.	51
3.2.3	Southwest Tarim Depression.	53

3.3	Junggar Basin	57
3.3.1	East Junggar Depression.	57
3.3.2	South Junggar Depression	66
3.4	Turpan Basin.	70
3.4.1	Qiktim Oil Field	70
3.4.2	Shengjinkou Oil Field	73
3.5	Qaidam Basin	75
3.5.1	North Border Block-fault Zone	75
3.5.2	Mangnai Depression	78
3.6	West Jiuquan Basin	82
3.6.1	Laojunmiao Anticlinal Zone	82
3.6.2	Baiyanghe Monoclinical Zone.	82
3.7	Liaohe Basin of Bohai Gulf	83
3.8	Shelf Basins of South China Sea	85
3.8.1	Beibu Gulf Basin	85
3.8.2	Zhujiang Mouth Basin	87
	References	89
4	Petroleum Sporo-pollen Assemblages and Petroleum	
	Source Rocks	95
4.1	Definition and Classification of Petroleum	
	Sporo-pollen Assemblages	96
4.1.1	Definition.	96
4.1.2	Classification and Character	96
4.2	Tarim Basin	96
4.2.1	North Tarim Upheaval	96
4.2.2	Kuqa Depression.	100
4.2.3	Southwest Tarim Depression.	103
4.3	Junggar Basin	105
4.3.1	East Junggar Depression.	105
4.3.2	South Junggar Depression	109
4.4	Turpan Basin.	110
4.4.1	Qiktim Petroliferous Region	110
4.4.2	Shengjinkou Petroliferous Region	112
4.5	Qaidam Basin	112
4.5.1	North Border Block-fault Zone	112
4.5.2	Mangnai Depression	114
4.6	West Jiuquan Basin	114
4.6.1	Laojunmiao Anticlinal Zone	114
4.6.2	Baiyanghe Monoclinical Zone.	116
4.7	Liaohe Basin.	117
4.8	Beibu Gulf Basin.	117
4.9	Zhujiang Mouth Basin	117
	References	120

5 Spore/Pollen Fossil Coloration and Petroleum	
Source Rock Quality	123
5.1 Spores/Pollen Fossil Coloration and Maturity of Organic Material	123
5.2 Organic Material Type and Maturity with Hydrocarbon Generation Potential	126
References	127
6 Palynological Evidence for Organic Petroleum	
Origin Theory	129
6.1 Sporopollenin and Petroleum Origin.	130
6.2 Fossil Spores and Pollen in Crude Oils from Sedimentary Rock Petroleum Reservoirs	131
6.3 Fossil Spores and Pollen in Crude Oils from Igneous Rock Petroleum Pools	132
References	133
7 Environment for the Formation of Petroleum	
Source Rocks	135
7.1 Botanical Relationship of Dispersed Spores and Pollen	135
7.2 Paleocology and Paleoclimate	140
7.3 Paleocology and Paleogeography	144
7.4 Sedimentary Environment and Petroleum Source	147
References	150
8 Mechanisms of Petroleum Migration	153
8.1 Introduction	154
8.2 Primary Migration	154
8.2.1 Passageways for Primary Migration	154
8.2.2 Phase States of Primary Migration	155
8.3 Secondary Migration	155
8.3.1 Passageways for Secondary Migration	156
8.3.2 Phase States and Flow Types of Secondary Migration	156
8.3.3 Directions, Routes, and Distances of Secondary Migration	157
8.4 Period of Petroleum Deposit Formation	158
References	158
9 Geochronic and Geographic Distribution of Nonmarine Petroleum Source Rocks	159
9.1 Inland Petroliferous Basins	160
9.2 Coastal Shelf Petroliferous Basins	161
References	162
Concluding Remarks	163
Explanation of Plates and Plates	167

Petrolipalynology

Jiang, D.; Robbins, E.I.; Wang, Y.; Yang, H.

2016, XIX, 263 p., Hardcover

ISBN: 978-3-662-47945-2