

TABLE OF CONTENTS

PREFACE	vii
LIST OF ILLUSTRATIONS	xiii
INTRODUCTION	1

GENERAL PART

CHAPTER I. Soil and Salt	5
1. Soils Generally	5
a. Origins and Age	5
b. Sodium and Salt in Watertable	5
c. Deposition in Upper Soil Layers	6
d. Effects	6
e. Resultant Soil Types	7
f. Prevention and Cure	7
2. Saline Soil in Antiquity	8
a. Terminology	8
b. Proto-imperial Period (<i>ca.</i> 2400 B.C.)	8
c. Agade Period (<i>ca.</i> 2300 B.C.)	9
d. Ur III Period (<i>ca.</i> 2100 B.C.)	9
e. Cassite and Middle-Babylonian Periods (<i>ca.</i> 1900-1000 B.C.)	10
f. Assyrian Period (<i>ca.</i> 700-600 B.C.)	11
g. Neo-Babylonian Period (<i>ca.</i> 500 B.C.)	12
h. Later Periods	12
i. Summation	12

CHAPTER II. Crops and Crop Preferences in Antiquity	14
1. Field Crops in Antiquity	14
2. Crop Preferences in Antiquity	15
Appendix 1A. Carbonized Material	18
Appendix 1B. Carbonized Material North	19
Appendix 2. Carbonized Material South	20
Appendix 3. Preliminary Identifications of Qantara Deposit (<i>ca.</i> 900 A.D.)	21
Appendix 4. Imprints North	22
Appendix 5. Imprints South	23
Appendix 6. Major Field Crops Attested in Contemporary Documents	24
Appendix 7. Major Field Crops, Babylonia, Assyria	25
Appendix 8. Crop Preferences, Girsu (<i>ca.</i> 2400 B.C.)	26
Appendix 9. Crop Preferences, Girsu (<i>ca.</i> 2300 and 2100 B.C.)	28

Appendix 10. Crop Preferences, Gasur (<i>ca.</i> 2300 B.C.)	29
Appendix 11. Crop Preferences, Girsu (<i>ca.</i> 2100 B.C.)	30
Appendix 12. Crop Preferences, Nippur (<i>ca.</i> 1300 B.C.)	31
Appendix 13. Crop Preferences, Nippur (<i>ca.</i> 500 B.C.)	32
Appendix 14. Crop Preferences, Central and Southern Iraq (9th Cent. A.D.)	34
Appendix 15. Crop Preferences, Southern Iraq: Map (<i>ca.</i> 850 A.D.)	36
CHAPTER III. Fertility in Antiquity	38
1. Data on Yields in Antiquity	38
2. Summation of Data on Yields in Antiquity	39
Appendix 16. Yields, Girsu (<i>ca.</i> 2400 B.C.)	40
Appendix 17. Yields, Girsu (<i>ca.</i> 2100 B.C.)	42
Appendix 18. Yields, Larsa (<i>ca.</i> 1700 B.C.)	43
Appendix 19. Yields, Northern Babylonia (<i>ca.</i> 1900-1600 B.C.)	44
Appendix 20. Yield, Nippur (<i>ca.</i> 500 B.C.)	47
Appendix 21. Herodotus on Fertility	48
Appendix 22. Taxes paid by Central and Southern Iraq (Early 9th Cent. A.D.)	49
Appendix 23. Estimates of Yields on the Basis of Ibn Khurdadbeh's Tax Figures	50
CHAPTER IV. Evaluation of Evidence for Salinity in Antiquity	52
1. Correlation of Lines of Inquiry	52
2. Southern Babylonia	53
3. Middle and Northern Babylonia	54
4. Assyria	54
5. Differences in Vulnerability to Salt	55
6. Causes and Ways of Ascertaining Them	55
CHAPTER V. Agricultural Practices of Antiquity	57
1. The Cycle of Agricultural Works in the "Georgica"	57
a. Preparatory Irrigation	57
b. Weeding	58
c. Readyng the Ploughing Teams	58
d. Ploughing and Harrowing	58
e. Clod-breaking with Mattocks and Hoes	58
f. Sowing	59
g. Gathering of Clods	59
h. Irrigating	59
i. Reaping	59
j. Preparing the Threshing Floor and Bringing in the Harvest	60
k. Threshing	60
l. Winnowing	60
m. End of Instructions	60
2. Irrigation	60
a. Method, Number and Volume of Irrigations	60
b. Possibility of Sudden Increase in Supply	61
c. The Tigris Feeder of Entemenak	63

3. Seeding Rates	64
a. Southern Babylonia	64
b. Middle and Northern Babylonia	65
4. Drainage	66
5. Fallow	67
6. Summer Crops	67
7. Levelling	67
Appendix 24. Russel on Salinity	68
 SPECIFIC PART: Investigations in the Diyala Region	 69
 CHAPTER VI. Human Occupation in the Diyala Region in Antiquity	 71
1. Diyala Water: The Turan-Daban System	71
a. Ubaid to Agade (<i>ca.</i> 4200-2300 B.C.)	71
b. The Early-Dynastic/Agade Setback	72
c. Resumption, Ur III to Old Babylonian (<i>ca.</i> 2200-1600 B.C.)	75
d. Old-Babylonian/Cassite Abandonment	75
e. Resumption and Trailing Off. Cassite to Neo-Babylonian (<i>ca.</i> 1500-500)	76
2. Diyala Water: Gukha System (<i>ca.</i> 500 B.C.-550 A.D.)	77
a. Consolidation around Gukha Course (Achaemenid to <i>ca.</i> Middle Sassanian)	77
3. Diyala and Tigris Water: The Tamarra-Nahrawan System (<i>ca.</i> 550-1150 A.D.)	78
a. The Cut of Chosroes	78
b. The Sassanian Abandonment	80
c. Resumption. Umayyad and Early Abbasid Periods (<i>ca.</i> 650-950 A.D.)	80
d. The Breach of al-Kufi and the Samarran Abandonment	81
4. The Coming of the Salt	82
Appendix 25. Basis for Dating of Mounds from Surface Pottery	84
Appendix 26. Early Periods (map)	85
Appendix 27. Neo-Babylonian, Achaemenian, and Seleucid-Parthian Periods (map)	86
Appendix 28. Sassanian and Islamic Periods (map)	87
Appendix 29. Soils, Canals, and Abbasid Administrative Districts (map)	88
Appendix 30. Lower Nahrwan Irrigation and Settlement, Early Islamic and Samarran Periods (map)	89
Appendix 31. Lower Nahrwan Irrigation and Settlement, Post-Samarran Period (map)	90
 CHAPTER VII. Functional Aspects of the Nahrawan System	 91
1. The Vulnerability of Irrigation Agriculture	91
2. The Struggle for Command of the Land	92
3. Specific Investigations between Aberta and Smaka	93
a. Progress and Scope of Investigations	93
b. The Weir at Qantara	93
c. The Mosque at Smaka	97
d. Trenches at Smaka	98
e. The Palace at Smaka	99
f. Trenches at Aberta	100
Appendix 32. Table of Data in Sections	102

PLANS BY MOHAMMED ALI MUSTAPHA

A. Aberta	109
B. The Weir	110
C. The Weir, continued	111
D. Right Bank Regulator	112
E. Double Mouth Regulator	113
F. Sumaka (Uskaf-Bani-Junayd)	114

ILLUSTRATIONS after p. 114