Practical farm drainage. Why, when, and how to tile drain

Elliott Charles Gleason
PRACTICAL

FARM DRAINAGE.

WHY, WHEN, AND HOW TO TILE DRAIN.

C. G. ELLIOTT,

DRainAGE ENGINEER.

NEW YORK:
JOHN WILEY & SONS.
LONDON: CHAPMAN & HALL, LIMITED.
1903.
PREFACE.

The following pages are presented to those who are interested in the subject of farm drainage. So short has been the time since the introduction of tile drainage in the prairie States, that farmers have scarcely taken time to acquire the requisite knowledge of the subject before they have begun actual operations. The drainage practice of the Eastern States must be adapted to western soil and surroundings. This requires time and close observation. The object of these few pages is to give, in a concise and plain manner, that which the farmer should know, if he contemplates draining his farm. It is not the intention of the author to say all there is to be said upon the subject, but to say enough to give the farmer an elementary knowledge of why, when, where and how to drain his farm. The practical methods described in these pages have been well tested, and are now in constant use by practical men. It is hoped that the language is sufficiently clear to be understood by all.

C. G. Elliott,

Tonia, Illinois, Civil Engineer.

September, 1882.
CONTENTS.

CHAPTER I.
SOILS AND THE RELATION OF DRAINAGE TO THEM.
Introduction—Kinds of Land Requiring Drainage—Sources of Water—Mechanical Difference Between a Wet and Dry Soil (Illustrated). The Relation of the Contour of the Surface and Subsoil to Drainage—Kinds of Drains—Open Drains—Tile Drains.

CHAPTER II.
ACTION OF DRAINS UPON THE SOIL.
How Tile Drains Affect the Soil—Temperature—Chemical Changes—Drought—Questions to be Considered Before Commenc ing to Drain.

CHAPTER III.
LEVELING AND LOCATING DRAINS.
The Outlet—Leveling—Level Notes—Leveling Instruments—Location of Drains—Staking and Leveling for Drains—Field Notes of Main Drains—Computing Grade and Depth—Determining and Adjusting Grades.

CHAPTER IV.
DEPTH AND SIZES OF DRAINS.
Silt Basins—Depth and Distance Apart of Drains—Sizes of Tile—Concrete Tile.
CONTENTS.

CHAPTER V.

PRACTICAL DETAILS OF THE WORK.

Mapping Drains—Grading the Bottom Outlet—Laying Tile—
Difficulties in Constructing Drains—Obstruction of Drains—
Junctions.

CHAPTER VI.

DITCHING MACHINES.

Difficulties Involved—Principles—The Johnson Tile Ditcher—
The Blickensderfer Tile Drain Ditcher.

CHAPTER VII.

COST AND PROFIT.

Cost of Drainage—Cost of Mains—Profits of Drainage.

CHAPTER VIII.

ROAD DRAINAGE.

Improvement of Roads—Surface Drainage—Under-Drainage—
Effect of Tile Drains upon Roads—Care of Drained Roads.