

# **THE EFFICIENCY OF PUMPS AND EJECTORS**

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The Efficiency of Pumps and Ejectors by E. C. Bowden-Smith

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# THE EFFICIENCY OF PUMPS AND EJECTORS

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'THE GREATEST POSSIBLE POWER FOR THE LEAST POSSIBLE WEIGHT,' ETC.



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## FOREWORD

RANKINE defined efficiency as the ratio of useful work to energy expended. No doubt he was particularly referring to the heat engine; but if we substitute f. s. d. for energy—that is, the cost of conversion and application—the definition is equally applicable to the subject under discussion. After all, the mechanical efficiency is simply the relative value of one power engine to that of another. The term is one of comparison, in whatever respect it is utilised. To regard with discriminating attention the means employed to perform a certain task is essential to progress, and the surest method of disposing of misconception and prejudice.

The object now in view is to throw some additional light on the most efficient method of raising crude sewage. What is well known will not be amplified, what is obscure will be analysed, and that which is open to question substantiated, with records and precise information as to how they were obtained.

At the same time, chapters have been given on the sinking of Ejector Tubings, faults and remedies in the erection and working of Ejector Systems, and suggestions as to how the efficiency may be improved. There has been no attempt to cover the whole ground, but to enumerate and discuss those points which tend to the economical raising of crude sewage, which are not to be found in the engineers' handbooks on city drainage.

A mere statement of original data on which results



## vi EFFICIENCY OF PUMPS AND EJECTORS

are based is neither convincing nor satisfactory, as the basis of calculation must be above contention. The efficiency of the motive power has been repeatedly determined, but the efficiency of the mechanical apparatus that does the work is often a matter of controversy. Especially is this the case in drawing comparisons between pumps and ejectors. The pump maker recommends his pump as the most efficient engine. The ejector maker recommends his ejector as the most efficient engine. And the purchaser, in nine cases out of ten, is left to decide on mechanical efficiencies obtained at a prearranged trial, and second-hand contradictory evidence applicable to those conditions of locality from which the information is derived.

E. C. B.-S.

LONDON, *January* 1920.

# CONTENTS

## CHAPTER I

### EFFICIENCIES AND RECIPROCATING PUMPS

	PAGE
Efficiency defined—Mechanical efficiency—Commercial efficiency—Sanitary efficiency—Raising sewage: various methods—Crude sewage defined—Pumps' analysis—Water: behaviour in motion and under pressure—Pumps: reciprocating—Pump suction—Suction wells—Air in pumps—Matter in pumps—Strainer for suction pipe—Foot valves—Air vessels—Pump valves—Multiple clear-way valves .	1

## CHAPTER II

### CENTRIFUGAL PUMPS AND EJECTORS

Centrifugal pumps—Centrifugal pumps with vertical shafts—Pneumatic ejectors in tubings—Subsidiary ejectors—Description of ejectors—Action of ejectors on sewage—Localities classified—Machinery: suitable conditions—Sectional systems: alternatives—Hydraulic system—Centrifugal pumps: multiple system—Sumps: dangers from gas—Sumps: dangers from explosion—Electric motors—Motors' reliability—Refuse in sewage . . .	24
---	----

## CHAPTER III

### MECHANICAL EFFICIENCY OF PUMPS AND EJECTORS

Mechanical efficiency—Efficiency diagram—Calibrating discharge—Ejectors: capacity and discharge—Calibrating ejectors—Discharge table—Calibrating ejectors by measurement—Calibrating ejectors by weight of water expelled—Ejector discharge compared with Venturi meter—Chemical test of Venturi meter—Pressure-gauge errors—Air mains: proportional loss—Air-main testing—Ejector trials: conditions—Ejector efficiency diagram—Ejector efficiency trials—Ejector trial: remarks—Ejector and pump trials compared—Reciprocating pump trial—Summary of efficiencies	43
---	----

## viii EFFICIENCY OF PUMPS AND EJECTORS

### CHAPTER IV

#### COMMERCIAL EFFICIENCY

	PAGE
Pumping installation: summary—Sump—Screening chamber—Auxiliaries—Rising main—Working of pump station—Pumping installations: advantages and merits—Ejector installations: summary—Ejector stations—Air mains—Sealed sewage mains—Working of ejector system: compressing air—Ejector installations: advantages and merits—Capital cost—Maintenance—Reports—Daily discharge—Maintenance tables: pumps—Maintenance costs of reciprocating and centrifugal pumps—Maintenance tables: ejectors—Maintenance costs of ejector system—Maintenance: difficulties of comparison—Commercial efficiency: table of pumps and ejectors . . . . .	65

### CHAPTER V

#### STAFF: SUPERVISING

Pumping-station staff—Ejector-system staff—Ejector-inspectors' duties—Quarters for staff—Inspection of ejectors—Selection of staff . . . . .	87
--	----

### CHAPTER VI

#### SINKING AND ERECTION OF CAST-IRON TUBBINGS

Cast-iron tubbings—Marking out tubing—Sinking tubing—Air lock for sinking tubing—Sinking under pressure—Tubbing floor: fixing in place—Setting ejectors in position—Ejector inlet pipe—Tubbing sinking by pump or grab—Brick chambers—Testing tubbings and brick chambers—Air, compressed, for sinking tubbings . . . . .	100
---	-----

### CHAPTER VII

#### EJECTOR AND AIR-MAIN FAULTS AND REMEDIES

Causes of ejectors stopping—Silencing chamber for exhaust—Blow through—Sand and stones in ejectors—Choking of ejectors—Floating matter—Leakage through slide-valve box—Examination of ejector valves—Stopping ejectors—	
---	--