

**AN ENGINEERING STUDENT'S  
NOTES,  
TECHNICAL, PHILOSOPHICAL  
AND OTHERWISE**

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An Engineering Student's Notes, Technical, Philosophical and Otherwise by J. Richards

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**J. RICHARDS**

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ENGINEERING STUDENT'S  
NOTES

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and Otherwise

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BY J. RICHARDS

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*"The true epic of our time is not arms and the man, but tools  
and the man, an infinitely wider kind of epic."—Carlyle.*



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## PREFACE.

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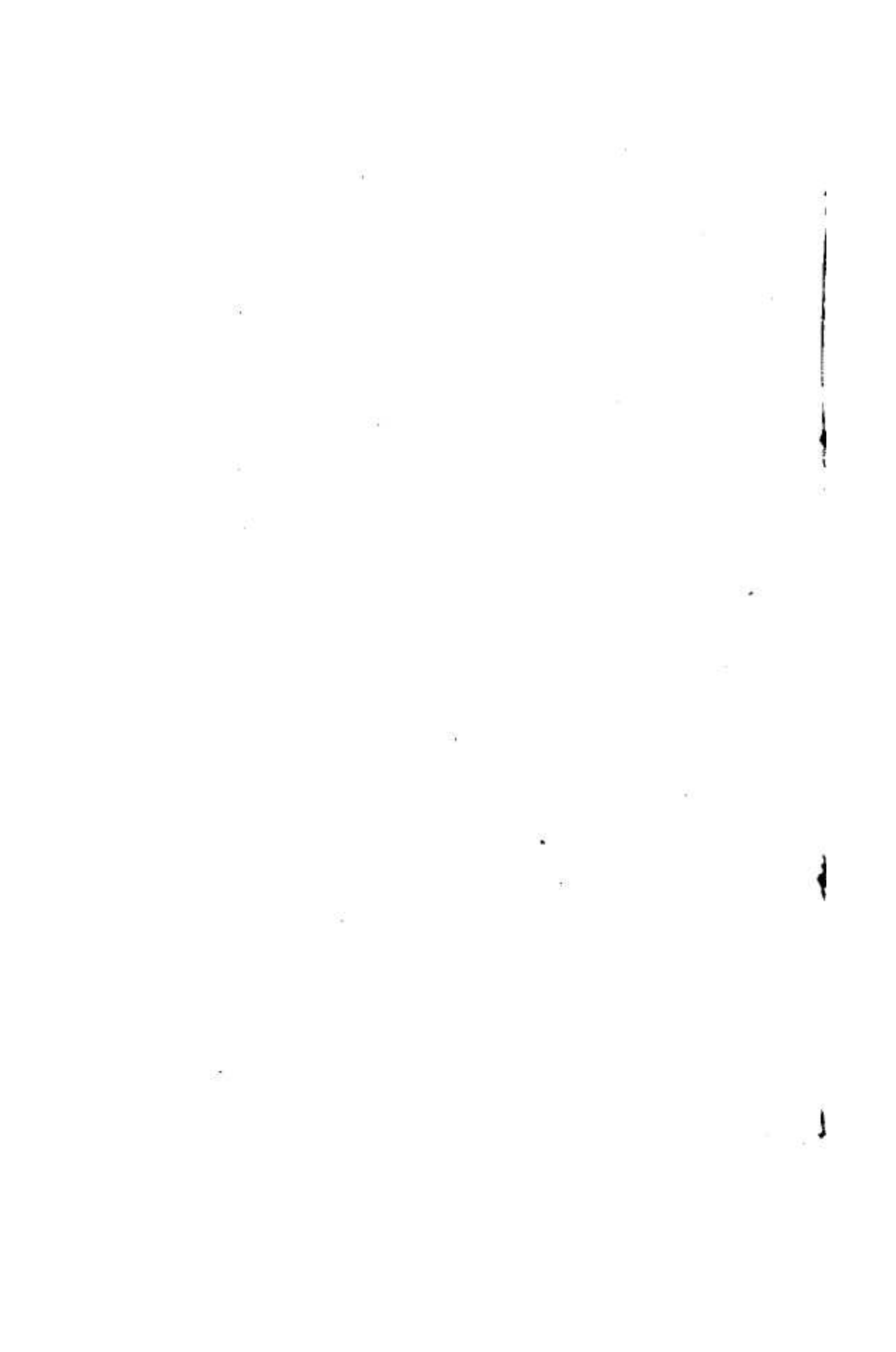
The subject matter that makes up most of the present book was written between the years 1890 and 1897, and published in the Magazine "*Industry*," of which publication the writer was the editor during that period.

The title assumed at that time was "EXTRACTS FROM A NOTE BOOK—BY TECHNO," began and for some time continued as a means of instructing students and apprentices in the processes of engineering work by a half-humorous treatment that would divest the subject of its usual formal and dry presentment in technical books.

The articles met with much commendation, but it was found after five or six chapters had been prepared that the field was too circumscribed, and that the "Extracts" must extend into the outer world and change their form, or cease. A new scheme was adopted in the sixth article, where the present revision begins, omitting, with a few exceptions, so much as would fail to have interest for non-technical readers.

J. R.

San Francisco, July, 1904.





## CONTENTS.

---

|  | PAGE  |
|--|-------|
| CHAPTER I . . . . .  | 5-11  |
| Corrugated Water—Getting Struck—Steam Steering Gear—A Case of Friction—Sea Sickness—The Copernican System.                         |       |
| CHAPTER II . . . . *   | 11-15 |
| Sea Engines—Essay on Boilers—A Versatile Scotchman—How to Raise an Obelisk—The Lost Arts—Barnacle Geese.                           |       |
| CHAPTER III . . . . .  | 15-21 |
| A Smell of Erin—Up in the Mail—At Inchicore—Axle Grease—New Names—Flattened Out—How to See a Channel Steamer—A Lecture on Ireland. |       |
| CHAPTER IV . . . . .   | 21-25 |
| Gang Awa' Till New York—The Effect of Two Turns a Minute—British Locomotives—New London.   |       |
| CHAPTER V . . . . .  | 25-29 |
| Penn and Maudslay—London Penny Boats—Shipbuilding on the Thames—Dry Loam.  |       |
| CHAPTER VI . . . . .   | 29-33 |
| A Steam Hammer for Gravity—A steamboat on a Hill—Explosives on the Pacific Coast—The Line of Least Resistance.                     |       |
| CHAPTER VII . . . . .  | 34-37 |
| Isle of Man—Manx Cats—Pickled at Sea—Kippers—Laxa Water Wheel—Pears' Soap.   |       |

CONTENTS

|   | PAGE   |
|---|--------|
| CHAPTER VIII . . . . .  | 38-41  |
| The Science of Wagons—Jams in Broadway<br>—London Drivers—Building Cities.  |        |
| CHAPTER IX . . . . .  | 42-61  |
| Docks at Millwall—Goths and Vandals—A<br>Scarcity of Soil—A Hotel Commander—The<br>Curious Kalkelung—A Fire to Last Twenty-<br>Four Hours—The Red Annex.        |        |
| CHAPTER X . . . . .   | 61-66  |
| Swedish Omnibuses—A Busy King Who<br>Earns His Salary—Horizontal Sunshine—A<br>London Steamboat Company—Tin-Pot<br>Steamers.                                    |        |
| CHAPTER XI . . . . .  | 66-71  |
| On Draughting—Swedish Methods—Euro-<br>pean Shop Practice—An English Plan For<br>Forging Sheets—How to Draw a Dump Car<br>—Swedish Ink Pallets—Lübeck Steamers. |        |
| CHAPTER XII . . . . .   | 71-75  |
| Navigating in 'a Meadow—Hanse Towns—<br>Old Churches and Relics—An Irreverent<br>View—Old Coins and Cabinet Ware—Hol-<br>land and the Dutch.                    |        |
| CHAPTER XIII . . . . .  | 75-80  |
| A Stubborn People—Francs and Florins—<br>Holland Taken by the Dutch—A Rational<br>Battle—Emigrants Need Not Apply.  |        |
| CHAPTER XIV . . . . .   | 81-96  |
| Little Belge—The Giant Antigonus—British<br>Fortifications—Mons Meg—Dog Traction—<br>A City Set on a Hill.  |        |
| CHAPTER XV . . . . .  | 96-102 |
| On a Domestic Tour—Knickerbocker Dutch<br>—The Member from Chatahooga—American<br>Railway Carriages—The Genesee.  |        |

CONTENTS

|   | PAGE    |
|---|---------|
| CHAPTER XVI . . . . .   | 102-110 |
| Deacon Barton—A Corporation with a Soul<br>—A Questionable Mill Site—Junius Judson<br>—A Race Problem—Electric Towing—<br>Schemes and Crimes.   |         |
| CHAPTER XVII . . . . .  | 110-117 |
| La Salle's Trip—Napoleon Annihilated—St.<br>Anthony's Falls—Catching Pickere!—A Fishy<br>Story—Acclimating Fruit—Other Things.  |         |
| CHAPTER XVIII . . . . .   | 117-125 |
| How a Steamboat Finds Its Way—The Tip-<br>pecanoe Estate—General Harrison on Ancient<br>Mounds—A Learned President—"When Dead<br>How Soon We Are Forgot."—A Toboggan<br>Feat.                               |         |
| CHAPTER XIX . . . . .   | 125-132 |
| Low-Pressure Steamboat Engines—Also<br>Compound Engines—An Old Water-Works<br>Engine—How Cities are Built—The First of<br>Steam-Moved Valves—An Astonishing Car-<br>pet Bag—Cincinnati as an Original Town. |         |
| CHAPTER XX . . . . .  | 132-138 |
| A Monologue on the Mississippi—How a<br>River Operates—What a Million is—What<br>One Gains by Observing—A Homily on<br>Human Effort.  |         |
| CHAPTER XXI . . . . .   | 138-145 |
| An Indian Massacre—A Queer Water Craft—<br>An Essay on "Bilers"—A Cast-Iron Doctor.   |         |
| CHAPTER XXII . . . . .  | 145-155 |
| A Saintly City—Six Miles of Steamboats—<br>A Fallen City—A Top Drainage System—A<br>Pavement for 200 Years—Carpet Baggers—<br>River Pirates—A Bridge 22 Miles Long—On<br>Flat Boats.                        |         |