

## BACK TO SAMPLES

### TO THE SECOND EDITION.

THE first edition of the Catechism of the Locomotive was written in 1873. Since then many changes and improvements have been made in the construction of locomotives, so that in preparing a second edition of the book the first one had to be thoroughly revised, and to a great extent rewritten, and a great deal of entirely new matter had to be added to bring it up to the present "state of the art" of locomotive engineering. Most of the illustrations are entirely new, and have been selected from the latest practice in this country. Additional chapters have been added on Force and Motion; Resolution of Motion and Forces; the Principles of the Lever; the Action of the Piston, Connecting-Rod and Crank; Action of the Pistons, Cranks and Driving-Wheels; the Westinghouse Air-Brake; the Care and Use of Air-Brakes; and the Eames Vacuum Driving Wheel Brake.

The difficulty has been to keep the book within the limits of size to which an elementary treatise should be confined. This limitation made it compulsory to omit much which ought to be discussed and described in any complete treatise. Among the omissions is a description of compound locomotives which are now attracting a great deal of attention in this country and in Europe. The development of compound locomotives is, however, to a great extent—especially in this country—still in an embryonic state, and no well established practice has yet been developed in their construction. Probably in a third edition of this book, this type of locomotive will demand distinct consideration and full description.