

**A FEW USEFUL SHOP  
HINTS ON LOCOMOTIVE  
VALVE SETTING**

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A few useful shop hints on locomotive valve setting by Jack Britton

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**JACK BRITTON**

**A FEW USEFUL SHOP  
HINTS ON LOCOMOTIVE  
VALVE SETTING**



A Few  
Useful Shop Hints  
*on* Locomotive  
Valve Setting

*By*

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FIRST EDITION

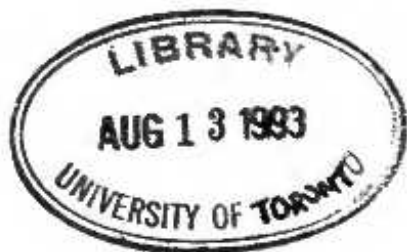
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1920

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BY

JACK BRITTON



## Preface

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SAY, BO—DEKKO THIS BIRD !

A real hunky bunch of practical shop stunts FOR a shop man, put up BY a shop man, raised AMONG shop men on the erecting shop pits.

Be a valve setter as well as a sledge hammer artist on frames, cylinders, etc.

You don't have to be a designer to understand these kinks.

Take what you want and forget the technicalities you don't need on the shop end of the game.

Certain unnecessary "dope" which often occurs in shop treatise is cut out from this little shot at a "boomer's" shop dream.

The author realizes what a green hand on the pits is up against in order to gain a living, let alone a thorough knowledge of the game ready for a show down.

This book is the first of a series in the endeavour to show how to crack many of the apparently hard nuts met with during the erection of a locomotive, from the preparation of the pit for main frames, to the finished engine ready for delivery to the round house, including trial trip.

The author, being a shop man, makes no apology for grammatical errors or shop slang.

If you like it, tell the other boys.

If you don't like it, tell me why. Shoot.

JACK BRITTON.

Montreal, November, 1920.

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## Introductory.

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**A** DESIGNER of Locomotive Valves and Valve Gears aims at the real thing in distribution of steam by way of the valves to the cylinders at each and every reverse lever position, with due regard to obtaining a smart engine, to the general construction of engine, to the service it is intended for and to the economy of fuel consumption.

There are, however, certain difficulties for the designer to contend with which compels him to make certain sacrifices in the lay out of the valve gear from his standpoint, which are more or less pronounced and in evidence when the engine is built and put into service, dependent on the skill of the designer to a great extent.

A valve setter, particularly one whose experience has been somewhat limited, is apt to get puzzled when, after squaring an engine to two given reverse lever positions, that same shows "out of square" in others.

The object of this work is to show clearly how to get the best results in valve setting with due respect to the designer, yet in such a way as to prevent any possible chance of the responsibility of a weakness in design to be passed on to the shoulders of a valve setter, to eliminate the tendency on the part of a certain few who would monopolize this class of work, and to present to the person who is seeking the information, an opportunity to get in on the game more rapidly.

Follow in detail the practice herein, apply same as case requires, leave the errors of motion, etc., to the designer, and you will be playing safe as a shop man.

You will also be gaining that knowledge which will enable you to go after any kind of valve rigging and set the valves satisfactorily with a degree of confidence worth while.

The author realizes that other methods of valve setting are employed, yet, if the green hand "works back" the dope herein he will find himself in a position to grasp and follow most of the stunts he may possibly run into.

The sketches are put up in skeleton form, more or less, particularly with a view to allow of an easy understanding to the beginner.

A designer could pick out many errors from same. We should worry. They suit the purpose for the shop man's benefit.

A beginner should "Get in" quickly on the proper way to keep and use small tools such as calipers, scale, scribes, etc. This should be unnecessary at this time, however, for the "Bohunk" who doesn't "know how" when he "blows" into the Erecting Shop, should get all that's coming to him.

The very elementary details are especially intended for the green hand.

The author gratefully acknowledges the courteous treatment received from "The Pilliod Company," and the privilege extended, granting the use of certain data and sketches of the "Baker Valve Gear."

## Chapter I.

### A CRUDE ENGINE

**A**S a rule one has to walk before catching on to the running stunt, likewise, let us "get in" on a crude one way engine. Get familiar with the names of the parts. Figure 1 shows them.

A Piston Valve is represented at "D" and when operating, distributes live boiler steam to both sides of the Piston "K" at the proper time. The valve also allows exhaust steam to escape from the cylinder from either side of the Piston, at the proper time.

#### INSIDE ADMISSION VALVE

When live steam passes the inner edges of the valve on its way to the cylinder, the valve is called an "Inside Admission Valve." See Figure 1.

#### OUTSIDE ADMISSION VALVE

When live steam passes the outer edges of the valve on its way to the cylinder, the valve is called an "Outside Admission Valve." See Figure 10.

Figure 1 shows a valve placed centrally with the steam ports and arranged to just cover them in this position. Note the position of Eccentric Sheave "A" with respect to the Main Pin "B."

#### INDIRECT MOTION

The arrows in Figure 1 indicate the direction in which this engine must operate. The Eccentric Rod "C" moves in an opposite direction to the valve "D" and the valve rod "E" at all times. For this reason the valve rigging is said to have "Indirect Motion."

This "Indirect Motion" is set up because an Indirect Rocker is used. "H" represents the Rocker Shaft, "H.F." the Upper Arm, "H.G." the Lower Arm.

#### DIRECT MOTION

When the Eccentric Rod and the Valve moves in the same direction at all times the Valve Rigging is said to have "Direct Motion." A Direct Rocker is used to effect same as shown in Figure 9.