The Electrical Equipment of Collieries

Duncan William Galloway

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Author: Duncan William Galloway

Exhibit 10/6

THE ELECTRICAL EQUIPMENT OF COLLIERIES

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OF COLLIERIES

BY

W. GALLOWAY DUNCAN

ELECTRICAL AND MECHANICAL ENGINEER
LATE LECTURER IN ELECTRICAL AND MECHANICAL ENGINEERING, FIFE MINING CLASSES
MEMBER OF THE INSTITUTION OF MINING ENGINEERS; AUTHOR OF "HANDBOOK FOR ENGINEERING STUDENTS," "GUIDE TO THE ENGINEERING PROFESSION," ETC.
HEAD OF THE GOVERNMENT SCHOOL OF ENGINEERING, DACCA, INDIA

AND

DAVID PENMAN

CERTIFICATED COLLIERY MANAGER
LECTURER IN MINING TO FIFE COUNTY COMMITTEE
MEMBER OF THE INSTITUTION OF MINING ENGINEERS
PREMIER PRIZE-WINNER, "SCIENCE AND ART OF MINING," NATIONAL COMPETITIONS, 1906–7

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PREFACE

THE importance of electricity as applied to mines has been so fully established that the authors of this work have taken little trouble to argue the necessity for its installation in all cases where the circumstances permit or justify its use.

Prejudice played its usual part during the early period of the advent of electricity into the region of mining. Insufficiency of precautions against failure, or actual ignorance of essential requirements, did much to set abroad a spirit of antagonism, with the consequence that the development of electricity in its application to mining was greatly retarded. Even at the present time, when so many collieries have adopted electricity for haulage, pumping, coal-cutting, lighting, and other purposes, occasional accidents directly traceable to failure in one form or another of the electrical plant give rise to adverse comment and wholesale condemnation of the electric current as a suitable form of power for colliery work. It is to be feared that the true explanation of such events could be traced to insufficiency of knowledge on the part of men whose position requires of them a fuller understanding of the nature and possibilities of the power under their control. However, be this as it may, the fact remains that electricity is far and away the most efficient and economical form of power as yet within our reach for transmission down the mine.

Sometimes a statement is made to the effect that the installation of electric plant means considerable additional initial expenditure, which would be avoided were direct steam transmission adopted. This of course is undeniable, but then the ultimate saving in working cost, the economy in power transmission, the greater flexibility of the electric power in the diversity of uses to which it can be applied, will very soon more than repay the extra first cost. Besides, apart from any electrical consideration whatever, it is obvious that in a steam-driven generator set, supplying power to the whole mine or even to a group of mines, the engines can be worked at a considerably

lower cost per horse-power hour than can a number of smaller steam plants working independently, and operating different gears direct. In the first case, the most modern type of engine may be employed, while, in the second case, that would probably be impracticable owing to the smallness of the power required.

In consequence of the vast and ever-increasing growth of electric power in mines, it is absolutely imperative that not only the colliery manager, the mining student, and the colliery electrician, but everyone who at any time has occasion to come into contact with electrical apparatus of any description, should possess a clear grasp of the fundamental principles underlying the generation, transmission and utilisation of the electric current. Apart, however, from the purely scientific aspect of the subject, there remains, in the application of electricity to mining operations, numerous problems which call for special consideration, and which in themselves form a study, all-important to the student of mining.

Having regard, therefore, to this twofold aspect of the subject, the authors of the present treatise have devoted their attention, firstly, to the inclusion of sufficient electrical teaching as may be presumed to be necessary for the training of a thoroughly practical and competent manager of a colliery; and secondly, to the description of every application of electric power to mining that has yet been successfully attempted.

In a work of this nature, in which the knowledge of the electrician must be linked to the experience of the mine manager, it will be readily granted that joint authorship is very desirable, if not altogether essential.

Throughout this book the special requirements of the student have been recognised. A feature of the book is the tables of cost and productive results, which are given in a special chapter and elsewhere. That the book will prove of use to those for whom it has been designed is the authors' earnest wish.

W. GALLOWAY DUNCAN.
DAVID PENMAN.

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