M. Eng. Electrical

Ernest Starkey Kelsey

THE TRANSMISSION OF TRANSIENT DISTURBANCES THROUGH LINEAR ELECTRICAL NETWORKS.

Chapter 1 discusses the nature of transient disturbances and describes the Fourier-integral and the operational methods of representing them mathematically.

Chapter II gives the more important network theorems applicable to transient conditions and includes a theorem (believed new) for deriving an equivalent network in which the concealed meshes are eliminated.

Chapter III deals with the relations between the currents and voltages at the sending and receiving ends of a passive transmission network. The problem of determining the voltage and current at the receiving end, when either the voltage or current at the sending end is known, is solved in terms of the terminal impedances and certain parameters of the network. A series of identical networks in tandem is considered and a difference equation is shown to hold for a number of functions of the network.

Chapter IV applies the formulae previously derived to the filter and the transmission line.

Appendix 1 lists a few mathematical formulae.

Appendix 2 derives a modified form of Heaviside's expansion theorem.

Appendix 3 gives a method of analyzing a transient wave form into exponentially decaying components.

M. Eng. Mining

W. L. G. Muir

EFFICIENCY IN THE VENTILATION OF METAL MINES BY MECHANICAL MEANS.

1. Mechanical ventilation notably increases human efficiency and safety.

2. Causes of loss of energy in centrifugal fans, and methods of reducing these losses, are described.

3. Centrifugal fans with blades curved backwards are more suitable for mine ventilation than centrifugal fans with blades curved forward.

4. Where the fire-danger is great, main fans should be on the surface. Air-lock troubles and leakage can be reduced by having main fans underground.

5. Various types of electric motors for driving fans are compared. Motors should be variable speed ones.

6. The efficiency of centrifugal fans is reduced by changes in mine resistance. Causes of changes in mine resistance are described.

7. Losses of energy due to bends, changes of area, and obstruction of airways are discussed.

8. The total costs of various types of ventilating shaft are compared.

9. Losses of energy in the air-circuit, and methods of reducing them, are discussed.

10. Various types of auxiliary ventilating equipment are compared.

M. Eng. Mechanical

Victor Lloyd Richards

THE RE-DESIGN OF AN IRON FOUNDRY.

This thesis is the report of a survey of the iron foundries of a company which manufactures chilled cast-iron car wheels, brake shoes, and grey iron castings.

The first part includes:—

(1) An analysis of the markets for the products of this plant, including a forecast of the probable developments of the immediate future, and

(2) An examination of the influence of drastic fluctuations in business activity on policies concerning the installation of capital equipment.

The second part is a detailed investigation into the present equipment and capacity of the foundries. Plans for expansion are worked out where this is shown to be desirable. Emphasis is placed on the