

of this latter method, but as the load at 500 volts is remarkably steady, the variation in pressure is unobserved in the lights. The only serious objection to the running of the machine as in Fig. 3 is, that one of the poles on the light system is grounded. This in itself is harmless, provided all the rest of the system is free of grounds.

By again referring to the special bus of Fig. 1, it will be observed that any pressure from 125 to 1600 volts can be obtained.

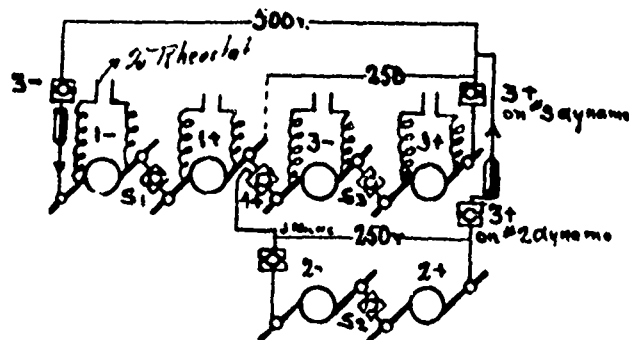


FIG. 2.

By simply opening the switches marked S6, S7, S8, S9, and closing 4- and 4+ on all machines, the latter pressure can be obtained. As we have had no occasion so far to run at this pressure, I cannot say how same would operate, but judging from the excellent results obtained by the method described already, I don't think that any difficulty would be experienced whatever. It may appear to the reader that the method in operating the 500 volt circuit is rather complicated, but when you take into consideration that any two pairs of machines can be started up and cut in on the 500 volt circuit in three minutes, without any undue hurry, it shows very clearly that any complications that might appear on paper do not affect the practical

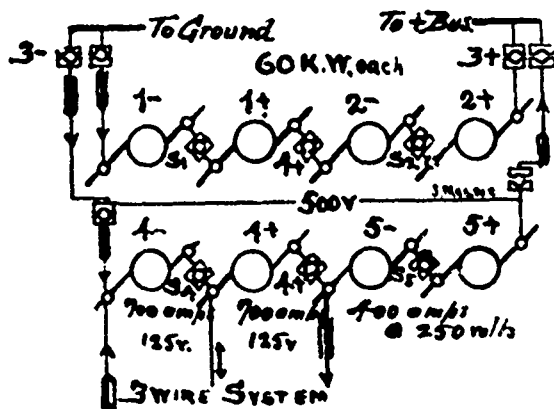


FIG. 3.

working whatever. The machines running on the 500 volt circuit can be cut in on the three wire in less than  $\frac{1}{4}$  of a minute.

The writer has no knowledge of any other plant except the above being operated as per the sketch outlined, and I suppose there are very few even in the world where the same would be required.

#### LECTURES ON ELECTRICITY AT MCGILL UNIVERSITY.

Following is an outline of a course of twelve evening lectures on Electricity to be delivered by Prof. Cox, at McGill University Montreal, for the benefit of persons whose circumstances are such as to prevent them from taking a regular course of study in the electrical department of the University:—

1. Introductory. Elementary Properties of Magnets. Identity of Frictional and Current Electricity. Production of Currents by Batteries and Thermopiles. Effects of the Current. Storage Batteries.
2. Measurement of Laws of Flow Current. Potential and Electromotive Force. Resistance. Practical Units and Instruments. Law of the Development of Heat by flow of Currents through Resistance.
3. Induction of Currents in Neighboring Circuits. Self-induction. Faraday's Conception of Lines of Force.
4. Applications to the Electric Telegraph and Telephone.
5. The Dynamo Conversion of Mechanical into Electric Energy. Reconversion of Electric into Mechanical Energy by the Motor. The Transformer.
6. The Electrical Transmission of Power.
7. Theories and Modern Views of Magnetism.
8. The Electric magnet and its Applications. Designs of Electromagnets for Special Purposes.
9. Thunderstorms and the protection of buildings from Lightning. Change of views in recent years.
10. The relation between Electricity and Light. Radiant Electricity. Maxwell's Theory and Hertz's Experimental Proof, that both are conveyed by the medium—the Ether.

11. Electricity as a Revealer. Crook's and the "Fourth State" of Matter.

12. Modern Views of the Structure and Functions of the Ether in relation to Light, Electricity, and the constitution of Matter. Through the kindness of the Governors these lectures will be held in the Physics' Building, at McGill, and will be continued every Friday evening, beginning January 26th.

Tickets for the course. To members, \$1.00: Non-members, \$2.00.

The issue of tickets is limited to 200, on account of the size of lecture room.

#### CONSTITUTION OF THE MONTREAL ELECTRIC CLUB.

1. This society shall be called the "Montreal Electric Club."
2. The object of the club shall be, primarily, the advancement of members' knowledge in electrical science.
3. The officers to be president, vice-president, secretary and treasurer, also a committee of management composed of officers of the club and three members to be elected yearly. This committee shall not be considered a quorum of the club; the assent of the majority of the committee to be necessary to transact its business.
4. Members to be notified of all club meetings one week in advance.
5. The annual fees of both members and associates, to be three dollars, payable in advance, in instalments of one dollar each, on the following dates; 1st January, 1st April, 1st September; and must be paid within the month. Members two months in arrears to forfeit their membership, but may be reinstated by application to the committee and by payment of all arrears.
6. Names and addresses of candidates for membership are to be handed to the secretary in writing, showing the proposer, seconder, and qualifications of said candidates, they to be balloted for at next regular meeting of the club. Three black balls shall disqualify a candidate.
7. The club to meet once every fortnight at 8 o'clock.
8. The order of the proceedings at meetings to consist of
  - a. Minutes of last meeting read by secretary.
  - b. Report of committees.
  - c. Balloting for members.
  - d. Questions and suggestions by members.
  - e. Exhibition of apparatus, etc.
  - f. Reading of papers.
  - g. Discussion of papers.
9. Members of the press may be admitted to meetings, whose notes of proceedings are subject to revision by the chairman at his discretion.
10. Seven members shall form a quorum to transact business of the club.
11. Any member shall have the privilege of introducing a guest to the club meetings, who shall have the privilege of hearing and discussing papers.
12. Election of officers shall be by ballot, to take place at the annual meeting, of which notice shall be given.
13. Qualifications necessary for membership.
 

**Members.**—Those actively engaged in any branch of the electrical profession, and students in electricity equal to third and fourth years at McGill University.

**Associates.**—Business managers of electrical firms, and members of other branches of the engineering profession. Associates to have full club privileges, with the exception of holding office.
14. A candidate elected during any quarter shall pay the full dues for that quarter.

At the forty-seventh annual meeting of the Montreal Telegraph Company, held in Montreal during the past month, the annual statement showed the following satisfactory condition of the company's financial affairs:

ASSETS.	
Telegraph lines.....	\$1,625,890 00
Telegraph cables.....	33,487 39
Offices and equipment.....	212,500 00
Real estate in Montreal, Quebec, Ottawa and Toronto.....	279,946 46
Cash, accounts, receivable stock, etc.....	97,376 96
Total.....	\$2,249,200 81
LIABILITIES.	
Shareholders' capital.....	\$2,000,000 00
Dividend No. 118, payable 15th January.....	40,000 00
Unclaimed dividends, etc.....	1,288 40
Total.....	\$2,041,288 40
Surplus of property over shareholders' capital.....	151,823 85
Contingent fund.....	56 088 56
Total.....	\$2,249,200 81

The company's only liability is to the shareholders (1) for their capital stock, (2) for dividend No. 118, payable on the 15th instant, and (3) for unclaimed dividends, as shown in the foregoing statement. The extensive property of the company remains free from debt or encumbrance of any kind, and its continued maintenance and repair by the Great North Western Telegraph Company is provided for under clause 2, and guaranteed by the Western Union Telegraph Company in the last two paragraphs of the agreement between the companies. The old board of directors was elected as follows: Messrs. Andrew Allan, president, Hector Mackenzie, Jesse Joseph, William Wainwright, Henry Archibald, William Rae, Henry Yates, whilst Mr. D. Ross was re-elected secretary-treasurer.