earth through the connection exceeds one-thousandth part of the maximum supply current of the circuit, steps shall be immediately taken to improve the insulation of the system. A record shall be kept of all such tests.

In the case of three-phase distribution at high or extra-high pressure, the neutral point thereof shall be earthed at one point only—namely, at the generating station, sub-station, or transformer—and the insulation of the circuit shall be efficiently maintained at all other parts.

Where one of the main conductors of the system is bare and uninsulated, such as a bare return of the concentric system, no switch, fuse, or circuit-breaker shall be placed in that conductor, or in any conductor connected thereto, and the said conductor shall be earthed at one point only—namely, at the generating station, substation, or transformer.

The neutral points of three-phase star-connected high or extra-high pressure transmission-line circuits may be connected with earth or may be insulated. If connected with earth through a resistance, that resistance shall be sufficiently low to ensure that the fuse or automatic circuit-breaker in the mains shall act.

If the neutral point is not connected with earth, means shall be provided in each circuit for indicating faulty insulation in any part of the circuit; and if the indications show that the insulation of any circuit is faulty, immediate steps shall be taken to restore the insulation.

4. Conditions of Supply.

(*a.*) *Lighting and Power.*—For purposes of supplying lighting to consumers the declared pressure shall not exceed 230 volts at the consumers' terminals, and for supplying low-pressure energy to motors the declared pressure shall not exceed 460 volts at the consumers' terminals, except where such supply comes under the provisions of clause 2, subclause (*g*).

Supply for power may be given to consumers at high or extra-high pressure not exceeding 11,000 volts either for transforming or for direct supply to motors; provided that the premises containing the apparatus shall be inaccessible except to authorized persons.

(*b.*) *Street-lighting.*—Series street-lighting for pressures up to but not exceeding 3,000 volts may be used.

Where supply is obtained from a tramway circuit for street-lighting purposes a single-pole fuse cutout shall be inserted in the positive conductor and arranged to operate with an overload of 100 per cent. above the rated full load of the circuit. Such fuse cutout shall be placed in a suitable locked or sealed receptacle of fireproof construction, fixed at a convenient height on the pole nearest the point where the positive conductor leaves the trolly-wire or feeder. At the distributing-point the circuit shall be controlled by means of a single-pole switch, and a fuse arranged to operate with an overload of 50 per cent. above the rated full load of such circuit shall be inserted in the positive conductor at the distribution-box. The negative conductor shall be continuous throughout its length from the lamps to the tramway-rail, to which it shall be effectively bonded.

5. Switchboards.

All switchboards shall be made of and mounted on material that is not inflammable; and the maximum permissible current and temperature in any conductor mounted thereon or leading thereto shall not exceed the values permitted under the rules of the Institution of Electrical Engineers of Great Britain. No conductor at a pressure above 650 volts shall be exposed on the front of any switchboard; and the back of any switchboard carrying conductors at a pressure over 650 volts shall be screened off, and accessible only to authorized persons.

All power-house and substation switchboards controlling high-pressure or extra-high-pressure circuits shall be provided with two efficient and independent earth-connections, connected in parallel, to which all frames, instrument-cases, and other metal parts thereof shall be connected. Means shall be provided for testing the resistance between these two connections through the earth. Such tests shall be made at least once a month, and be recorded.

Every switch intended to be used for breaking a circuit, and every circuit-breaker, shall be so constructed or arranged that it cannot with proper care be left in partial contact or accidentally fall or move into contact when left out of contact.

All switchboard circuits shall be so arranged that the course of any main conductor may be readily identified.

Adequate means of access, free from danger, shall be provided for every switchboard passage-way; and the following provisions shall apply to all switchboard working-platforms and passage-ways, unless the bare conductors, whether overhead or at the sides of the passage-ways, are otherwise adequately protected against danger by divisions or screens or other suitable means:—

(*a.*) Passage-ways constructed for low-pressure switchboards shall have an overhead clearance of 7 ft. between the conductors and the floor, and a clear width measured from bare conductor of not less than 3 ft.

(*b.*) Passage-ways constructed for high-pressure and extra-high-pressure switchboards, other than operating desks or panels working solely at low pressure, shall have an overhead clearance of not less than 8 ft., and a clear width measured from bare conductor of not less than 3 ft. 6 in.

(*c.*) Bare conductors shall not be exposed on both sides of the switchboard passage-way unless either (1) the clear width of the passage is, in the case of low pressure, not less than 4 ft. 6 in., and, in the case of high pressure, not less than 8 ft., in each case measured between bare conductors, or (2) the conductors on one side are so guarded that they cannot accidentally be touched.

Suitable means, such as rubber mats and gloves, shall be provided and used when necessary adequately to prevent danger.

6. Circuit-breakers.

All outgoing feeders and distributors from any power-house or substation shall be provided with automatic circuit-breakers or fuses set to open at 100 per cent. excess current over the rated full load of such feeder or distributor, with a time-limit not exceeding ten seconds:

Provided that it shall not be incumbent on the licensee to provide circuit-breakers or fuses for the outer conductor of a concentric cable which is, with the approval of the Minister, effectively connected with earth.

7. Fuses.

Every fuse shall be either of such construction or so protected by a switch that the fusible metal may be readily renewed without danger.

8. Frequency.

The frequency of alternating current, either single-phase or three-phase, shall be fifty complete cycles per second, unless otherwise approved by the Minister, and shall be maintained subject to a variation not exceeding 2½ per cent. above or below the declared frequency.

9. Regulation of Pressure.

The pressure shall be maintained within 4 per cent. above or below the declared pressure at the consumer's terminals; and on complaint by any consumer that the variations in voltage exceed these limits, or on the instructions of the Inspecting Engineer, the licensee shall connect a recording voltmeter, to be provided and maintained by the licensee, to record the pressure between the service lines. If the variations thus recorded exceed the above limits the licensee shall take immediate steps to comply with this regulation. If the accuracy of the licensee's recording voltmeter is questioned by the consumer, a standard instrument shall be supplied by the Inspecting Engineer, the readings of which shall be accepted as final.

10. Distribution.

The distribution may be carried out either by underground or overhead conductors; provided that if at any time it is deemed by the Minister to be detrimental to the public safety for the conductors or any particular class of conductors to be overhead, such conductors shall, on receipt of notification to that effect from the Minister, and within such time as the Minister thinks fit, be laid underground, and all consequent and necessary alterations made by and at the cost of the licensee.

11. Overhead Electric Lines.

The diameter of any conductor in any electric line laid or erected for the supply of electrical energy shall not be less than 0·104 in. diameter (No. 12 S.W.G. or 7/20 S.W.G.); provided that No. 14 S.W.G. may be used for service connections in spans not exceeding 66 ft. If the material of the conductor is aluminium the conductor shall be stranded.

12. Stresses in Overhead Lines

The stress in overhead conductors shall not exceed the following limits: 25,000 lb. per square inch for hard-drawn copper, 12,500 lb. per square inch for hard-drawn aluminium, 34,000 lb. per square inch for steel, and 22,500 lb. per square inch for iron in the event of a minimum temperature specified in the license and a wind-pressure of 18 lb. per square foot of diametral plane occurring simultaneously in the case of lines erected outside borough and township limits, and 12 lb. per square foot of diametral plane in the case of lines erected within borough and township limits. The span between supports and the sag shall be determined to conform to the above limiting stresses.

13. Clearances for Overhead Lines.

Overhead lines at low pressure shall not in any part thereof be at a less height than 18 ft. from the ground.

Overhead lines at high pressure shall not in any part thereof be at a less height than 20 ft. from the ground.