stronger in oxygen than in air. They are more effective than ethylene but weaker than propylene, whilst nitrogen dioxide, previously investigated, is about ten times as efficient as either. The results could be represented by the equation already used for nitrogen dioxide, namely, $p = k/(a + x)$, where x is pressure of halogen/pressure of oxygen; p is the maximum pressure of the glow, and a and k are constants. Dry gases were used. The effect can be explained on the assumption that chlorine breaks reaction chains by forming chlorine monoxide with atomic oxygen.

Deterioration of Structures in Sea Water.—The Committee of the Institution of Civil Engineers which is investigating the deterioration of structures of metal, timber, and concrete in sea water, began its work in 1916 and published its first report in 1920. Interim Reports have been issued annually since then, and the twelfth of the series reviews the work done in 1930–31 (London: H.M. Stationery Office, 6*d*. net). The specimens under observation are exposed in many parts of the world—Nova Scotia, Ceylon, Australia, New Zealand, Kenya Colony, the Gold Coast, etc.—and the materials exposed include many varieties of iron and steel, many kinds of timber, and specimens of ferroconcrete. Of the various irons and steels under observation, those with the highest percentage of nickel and chromium appear to give the best results. The investigations of the Committee on methods of protecting timber against marine borers have been continued with the assistance of Profs. G. Barger and S. M. Dixon, and in his report Prof. Barger gives the results obtained through impregnating timber with creosote, fuel oil, arsenical poisons, naphthalene, or tar acids. Prof. Dixon, in a further report, gives some interesting figures showing the effects of incising timber before impregnation. A block of Oregon pine (Douglas fir), 10 in. × 6 in. × 2 ft., with incisions spaced ½ in. apart in rows round the periphery absorbed two to three times as much creosote as a similar unincised block.

Breaking Circuits and Clearing Faults on Large Networks.—The modern methods of linking together isolated electric distribution networks has given rise to problems in mathematics and physics, partial solutions of which are now being obtained. All the component networks are linked into a single network, every part of which responds to changes in every other part. The large amount of generating plant working in parallel distributed over a wide area, and its haphazard distribution, have introduced problems which do not occur in small networks. In a paper read to the Institution of Electrical Engineers on March 17, R. O. Kapp and C. G. Carrothers discuss from the mathematical point of view the design of systems to protect the network when a fault occurs. It is suggested that the fluctuations in the currents caused by a fault might be used to work the relays employed for the automatic isolation of a faulty portion of the network. At the same meeting H. Pearce and T. T. Evans read a paper on the design and performance of oil circuit-breakers, that is, switches which break the electric circuit under oil. The irregularity in the performance of these devices is generally considered to be due to the erratic movement of the oil. For the higher voltages, quick-break apparatus is considered advantageous. By suitably designing the two contacts with a shroud, improved and consistent results are obtained. The importance of short circuit testing is emphasised, and a plea is made for facilities for testing on the site. A description is given of the oscillograph equipment necessary for testing on the site, and reports of recent tests carried out on oil circuit-breakers fitted with a new type of shrouded contact are added.

Astronomical Topics

Parallaxes of Faint Stars.—Study of pairs of photographs taken at intervals of several years have revealed many examples of very faint stars with fairly rapid proper motions. *Mount Wilson Contributions*, No. 435, contains a paper by A. Van Maanen on an investigation of the parallaxes of some of these stars from photographs taken with the 100-inch and 60-inch reflectors. The largest parallax on the list is that of B.D.43°4305, for which the value 0·209″ was found. That star had, however, already been measured elsewhere. Another large parallax is that of Ross 41, mag. 13·4, parallax 0·110″. Altogether there are 15 stars on the published list that have absolute magnitude fainter than 10·0. The faintest is a star lately found by Hubble to have a proper motion of more than 1″; its absolute magnitude is 14·0. The fact that such a large number of extreme dwarfs are found comparatively near the sun shows that this type of star must really be very common in space, but they are too faint for observation unless their distance is small.

Astronomical Notes for May.—Venus continues to be a brilliant object, reaching its greatest brilliance on May 22; the illuminated fraction of the disc diminishes during the month from ⅘ to ⅕; it is near the moon at 5 P.M. on May 9.

Jupiter passes quadrature with the sun, and is still observable for half the night. Satellites I and II and their shadows are both on the disc on the evening of May 5; I and IV are simultaneously in eclipse late on the evening of May 20; there is a partial eclipse of III by the shadow of II on May 4 from 11.16 to 11.38 P.M.

Saturn can be observed late in the night, but its south declination of 19° renders the conditions difficult.

i Virginis is occulted by the moon at 8.5 P.M. on May 17; it is the only occultation visible in London before midnight.

Two comets may be visible with moderate telescopes; the following ephemeris of Houghton's comet for 0^h is by Drs. Cunningham and Whipple; an ephemeris given earlier proved to be erroneous:

	R.A.	Decl.
May 1 . .	12^h 42^m 48^s	S. 15° 20′
,, 5 . .	12 42 19	8 3
,, 9 . .	12 42 30	S. 2 2
,, 13 . .	12 43 13	N. 2 51
,, 17 . .	12 44 25	N. 6 47

The following ephemeris of comet Grigg-Skjellerup is from *B.A.A. Circular* 113:

	R.A.	N. Decl.
May 15 . .	7^h 54^m 12^s	20° 23′
,, 20 . .	8 20 20	26 0
,, 25 . .	8 53 28	32 32
,, 30 . .	9 37 24	39 39

Ephemerides of three other periodic comets, Neujmin (2), Kopff, and Borrelly, are given in the B.A.A. Handbook for 1932; all are likely to be near the tabular positions; the search for them will be most conveniently made by photography.

The times given above are Greenwich Mean Time; 1 hr. should be added to give Summer Time.