ture of 50° C. has been found preferable. No damage to specimens has been observed on embedding or dissolution. The plastic cube must not be placed in cold acetone, however, as it makes deep fissures in the plastic and may spoil the oospore. The whole procedure of embedding, polymerization and cooling-down takes about twenty minutes.

One advantage of the method described is that on account of the high light transmission of the plastic the faint sculpture is visible. Further, the difficulty is avoided of handling small strongly polar objects which must be inspected or photographed in a certain view, for example, a needle-shaped specimen from the apex. The method can be used for various small objects, where sculpture is essential and orientation difficult.

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## A New Electron Multiplication Process

IF electrons move through a gas in an electric field, their number can increase if they ionize gas molecules by collision—the well-known Townsend avalanche. Recently, it has been shown[1] that in high-frequency electric fields at very low pressures the number of electrons increases, due to the impinging of electrons on the walls of the vessel and the release of secondary electrons. This is a 'wall multiplication' process which can lead to breakdown.

We have investigated the high-frequency breakdown of neon in cylindrical glass vessels with external electrodes. At pressures greater than 50 mm. mercury and frequencies less than, or equal to, $10^7$ c./s., the peak value of the starting field was found to be surprisingly low, corresponding to $X/p = 0{\cdot}6$ V./cm. per mm. mercury[2]. The energy an electron can acquire is then so small that electron multiplication by collision is negligible. Thus we propose the following mechanism: the first electron which is accelerated by the field will have a much greater number of exciting than ionizing collisions, the more so the lower is $X/p$. Normal excited atoms (emitting resonance quanta within approximately $10^{-8}$ sec.) and metastable atoms will be produced. Only a few of the latter will reach the walls, because they are destroyed by collisions in the gas and also emit resonance quanta. These strike the ends of the vessel either directly or after being absorbed and re-emitted by other atoms. There they release photoelectrons which will be accelerated, etc. We have here what could be termed a 'quantum avalanche), which releases photoelectrons from the wall in increasing numbers.

In order that an initial electron may be multiplied, it must produce such a number of quanta that more than one electron is released from the wall. Calculations using the meagre data of excitation probabilities[3] and the estimated photoelectric yields[4] make the suggested mechanism likely to occur from $10^7$ to 50 c./s.

After this initial process, once the number of electrons is large, gas ionization can occur by electron collision in stages; that is, fast electrons ($> 17$ eV.) strike neon atoms to produce excited or metastable atoms, and slow electrons ($> 5$ eV.) strike metastable atoms to ionize them. With traces of argon a metastable neon atom can ionize an argon atom by a collision of the second kind.

The new avalanche is distinct from multiplication processes in which ionization by electron collision in the gas is accompanied by electron emission at the cathode by ions and quanta, as has been suggested to explain the breakdown of krypton and xenon[5] and recently of atmospheric air and nitrogen[6].

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## Crystal Structure of Barium–Strontium–Calcium Triple Carbonate

IT has already been found that calcium carbonate exists in one stable form, β-$CaCO_3$ (calcite), and two unstable forms, λ-$CaCO_3$ (aragonite) and μ-$CaCO_3$ (or vaterite), in the ordinary temperature range. Aragonite is formed if precipitation is carried out at a temperature approaching the boiling point of water (higher than 85° C.), whereas when precipitation is carried out at room temperature only calcite results. The third form of calcium carbonate, μ-$CaCO_3$, is formed by precipitation at 60° C.[1].

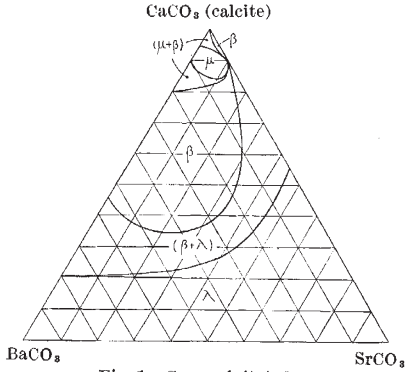


Fig. 1. Co-precipitated at 25–30° C.

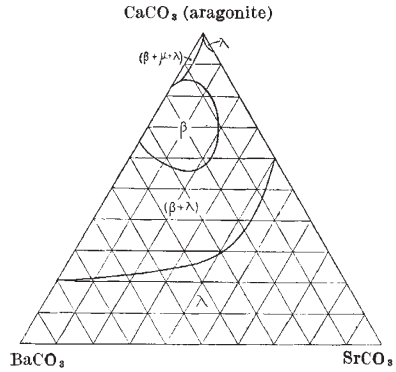


Fig. 2. Co-precipitated at 90–105° C.