a pressure of about 340,000 atm. This is a considerable gain over the pressure doubling which occurs in reflection at an aluminium surface.

Fig. 2 shows the arrangement which we used to generate two converging shock waves. The shocks were launched by the main cylindrical charges A and B, which were fired simultaneously from a semi-circular bridge of high explosive C, detonated at the mid-point of its circumference.[6] We found that with this arrangement the shocks could be synchronized to within 0·2 μsec, corresponding to an uncertainty of about 1 mm in the position of their collision.

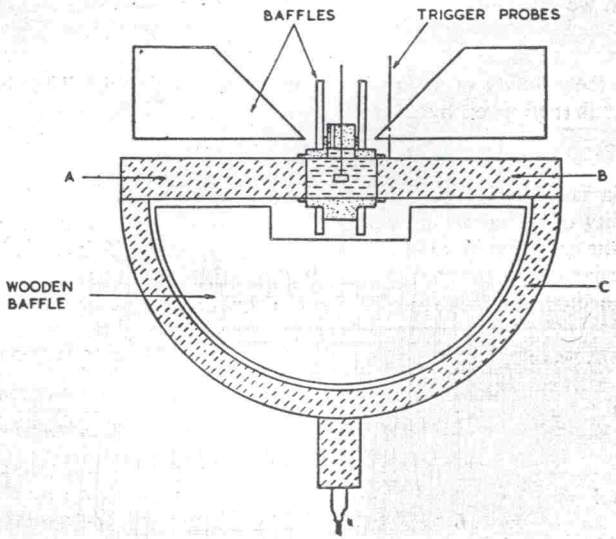

FIG. 2.—The arrangement used to produce the head-on collision of two shock waves.

The electrodes were rectangular plates of gold-plated brass (5 mm long × 2 mm wide × 0·2 mm thick), mounted parallel to the path of the shock waves and centrally between the explosive charges (fig. 1*c*). The external connections to the electrodes were heavily insulated and were shielded by baffles from the air shocks produced by the explosion.

MATERIALS

The liquids were purified chemically, and distilled. Their conductivities in Ω^{-1} cm^{-1} at 25°C and 1 atm were: water, $5{\cdot}0\times10^{-7}$; methyl alcohol, 4×10^{-7}; ethyl alcohol, $3{\cdot}5\times10^{-8}$; acetic acid, $2{\cdot}2\times10^{-8}$; propionic acid, $<10^{-9}$; glycerol, *ca.* 10^{-6}; acetone, 8×10^{-8}.

The main explosive charges were cylinders of cast 65/35 RDX/TNT, similar to the ones used in our earlier work. This exlosive is quite soluble in some of the organic liquids but we find that we could prevent it from dissolving by coating it with a very thin film of paraffin wax. The semi-circular charges used in method (*c*) were made of cast 60/40 RDX/TNT.

PROCEDURE

The measurements were made by an oscillographic method which we have already described in some detail.[1] We modified the original arrangement slightly by using a motor-driven rotary switch to synchronize the events before the explosion. This ensured that the detonator was fired no later than 0·02 sec after the e.m.f. had been applied to the conductance cell.

Some of the reflected and colliding shocks produced rather high conductivities and in these cases we reduced the load resistance from 10 Ω to 1 Ω and made the connections in the RC circuit as short as possible, to minimize their inductance. We also measured, and allowed for, the internal resistance of the condenser to microsecond pulses.