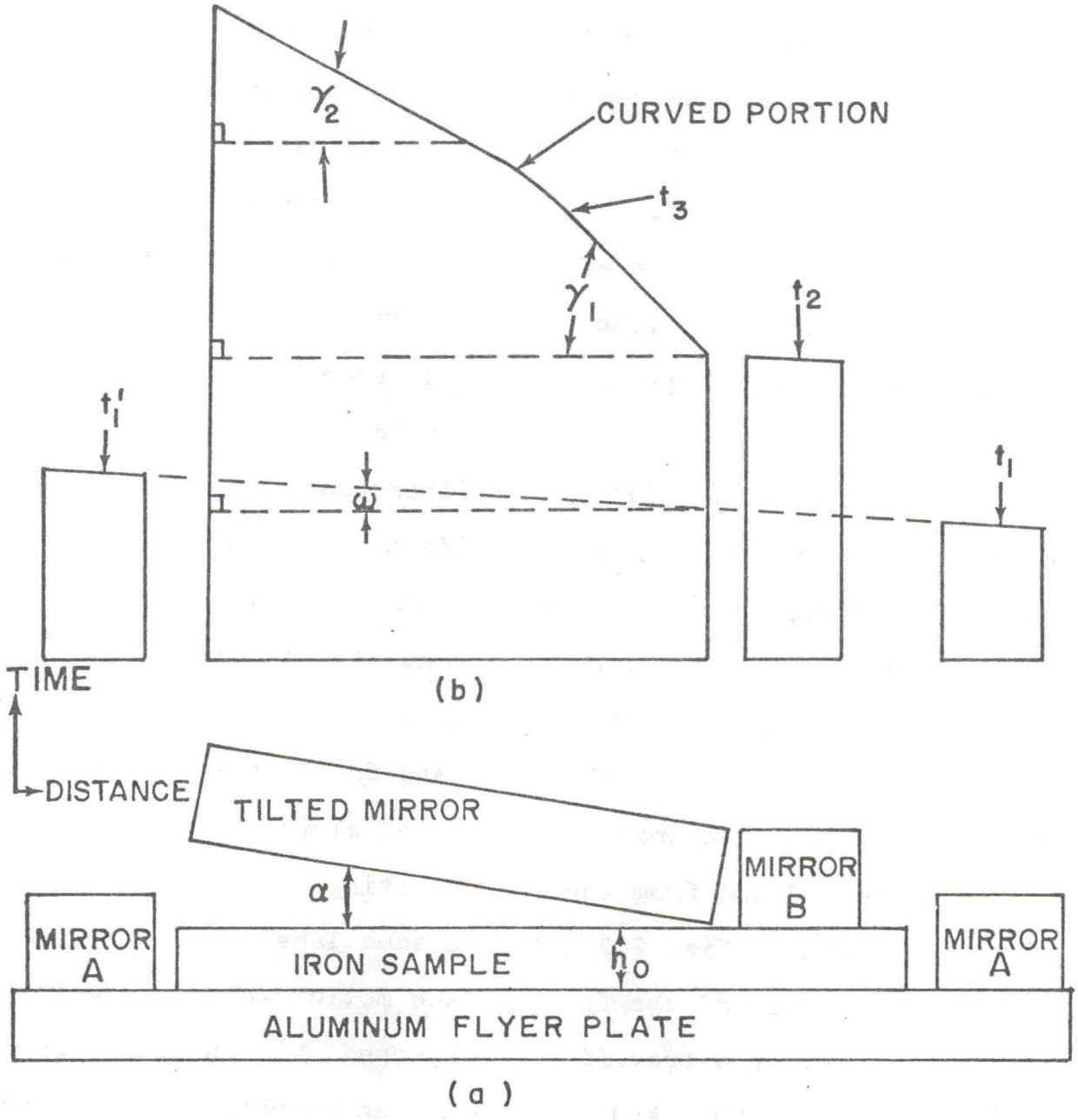

Fig. 2.2.--Reflected light plate slap experiment (a) and corresponding streak camera record (b).

surface, t_1; plastic I arrival at the free surface of the iron sample, t_2; and plastic II shock arrival at the free surface, t_3. Elastic shock arrivals at the free surface were not recorded because of their small amplitudes. The continuous trace due to the free surface impacting the tilted mirror has two linear parts connected by a curved part. The first linear part represents free surface motion produced by the plastic I shock and makes an angle γ_1 with the distance axis on the film. The curved part is due to the finite rise time of the plastic II shock front. The second linear part represents free surface motion produced by the plastic II shock. It makes an angle γ_2 with the distance axis on the film. Tilt of the flier plate is indicated by non-simultaneous arrivals at the outside mirrors, A, labeled t_1 and t_1' on the record, and by non-simultaneous arrival over mirror B on the sample. Times t_1 and t_1' define a line which makes an angle ω with the distance axis.

Average shock wave velocities and free surface velocities are determined from measured distances and slopes, respectively, on the film record and from the known writing speed of the camera. A record is shown in Fig. 2.3 with the same labels as in Fig. 2.2.

Film records of the free surface motion were read with a Vanguard analyzer or a traveling microscope. Distances on the film as small as 0.006 and 0.001 mm can be resolved with the Vanguard analyzer and microscope, respectively. To accurately determine slopes of linear parts of the trace many points were read and fitted by least squares to a straight line. Each trace was read at least three times and the resulting slopes were