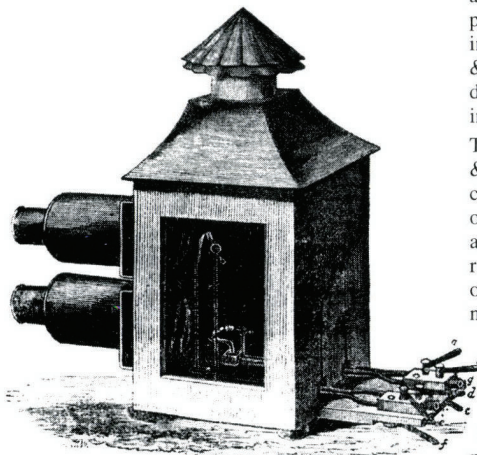


THE FIRST BIUNIAL

When did the first biunial lantern make its appearance? In later editions of his book, *Magic Lanterns: how made and how used, with practical hints to unpracticed lecturers* (London: 1st edition, 1875; 2nd edition, 1877; 3rd edition, 1885; 4th edition, 1891), A.A.Wood attributes the invention of the first biunial lantern to his father E.G.Wood, a well-known maker of optical instruments. John Barnes and Hermann Hecht (both of whom curiously style the elder Wood 'Henry') have commented on the inconvenience that the proud son cites no date for his father's achievement. Hecht says that the 1866 edition of *The Magic Lantern How to Buy and How to Use It*, by 'A Mere Phantom' (probably W.C. Hughes), contains 'the first illustration (I can find of a two-tier dissolving view lantern. (It is not illustrated in the first edition, a year – or less – earlier)'.

However it is now possible to trace the story of the biunial considerably further back, and to give fairly confident credit to E.G. Wood. It seems safe to assume that the instrument offered for sale in the November 1857 catalogue of the optical firm of Horne and Thornthwaite of 121–123 Newgate Street is, in fact, the model to which A.A. Wood refers.



Horne and Thornthwaite's Biunial Dissolving View Apparatus, 1857

E.G. Wood (1811–1896) began his working life as a wood-carver, working on the City churches and at Windsor Castle, but soon developed a skill for making scientific apparatus. He went into partnership with three of his brothers, but then became manager of Edward Palmer's optical works in Newgate Street. On the retirement of Palmer in 1845, the firm was taken over by the partnership of Horne, Thornthwaite and E.G. Wood. William Henry Thornthwaite was an influential photographic pioneer: his booklet *Photographic Manipulation* was published by Palmer in 1843; *A Guide to Photography*, which followed in 1845, went into seventeen editions by 1860. It seems safe to assume from Wood's later career that he concerned himself with the magic lantern side of the business while Thornthwaite supervised the photographic department. Horne, Thornthwaite and Wood issued their first catalogue, consisting of 190 pages, in 1848. The 1857 edition, in which the biunial lantern makes its appearance, was entitled *A Guide to the Purchase and Use of Scientific Instruments*, and covered subjects from astronomy to thermo-electricity, surveying to steam engines.

By the time this edition of the catalogue was published however, Wood had already left the firm to establish his own independent lantern business at 117 Cheapside. The company now became simply Horne and Thornthwaite. The parting seems to have been amicable however, since some years later Wood's name was once again added, and there were evidently subsequent close links between the two firms.

'Horne and Thornthwaite's Bi-Unial Dissolving View Apparatus for the Oxyhydrogen Light', then, was most likely the legacy of the departing Wood in 1855.

The firm was evidently proud of this new addition to its already extensive range of double lanterns and other equipment for presenting dissolving views, and gave comprehensive instructions for its operation. What is especially remarkable about this is that it appears to be the first published description for a system of dissolves achieved by controlling the two illuminants by adjusting the gas supply, rather than by the use of fans in front of the objectives. Most earlier writers have credited this innovation to Samuel Highley in the 1860s, but it is now abundantly clear that we must give credit to the firm of Horne, Thornthwaite and Wood, and probably specifically to E.G. Wood.

The catalogue description boasts that:

'This Dissolving View Apparatus is the most portable, simple, and efficient apparatus yet introduced, for showing any picture not exceeding 3½ inches in diameter, as it occupies only half the bulk of the old construction, and requires no adjusting to ensure perfect coincidence of the two pictures on the screen. The absence of the usual fans in front, enables the effects of lightning, &c., &c., &c., to be exhibited with great brilliancy, whilst the dissolving effects are so easily managed that the most inexperienced would find no difficulty in its use.

The apparatus consists of the gas bags, tubes, stand, &c., as shown in fig.2627; but instead of the usual combination of two lanterns, one only is employed, of the form represented by fig.2633. This consists of a mahogany body, having two sets of lenses and their respective mountings attached to it, one above the other; and having in the interior two sets of the necessary fittings to produce two oxyhydrogen lights.

The conducting tube from the oxygen gas bag is attached to the screw g, and the conducting tube from the hydrogen gas bag is attached to the screw h, and the stopcocks a and e opened. A cylinder of lime is placed on each of the lime holders, and the necessary weights are placed on the pressure boards, the stopcock e opened so as to admit a current of hydrogen to issue from the highest jet, which may now be ignited, the stopcock f is next opened, and the hydrogen can then be lighted at the lowest jet within the lantern. These two jets are to be allowed to burn until the lime cylinders are thoroughly heated; when such is the case, the stopcock b is gradually opened so as to admit the proper quantity of oxygen gas into the flame of the upper jet, until the maximum amount of light is obtained, as described under the head 'To light the gas'. The next operation is to arrange the light so that a clear white disc shall be produced on a wall or screen; this is effected in the same manner as described at page 220. Having obtained this object, turn off the oxygen gas by the stopcock a (leaving the stopcock b open); this will so diminish the upper light that none will pass out of the lantern to the wall or screen. Now gradually turn on the stopcock until the maximum amount of light is obtained at the lower jet, and adjust the lime cylinder holder and jet so that a clear disc of light is produced on the wall or screen, in the same manner as before described.

The apparatus is now ready to display the pictures, one of which is placed in each of the two slider openings. As only hydrogen gas is burning at the upper jet, and the mixed gases at the lower one, the picture in the lower slider opening alone is produced on the screen; to produce the dissolving effect, take the stopcocks a and e, one in

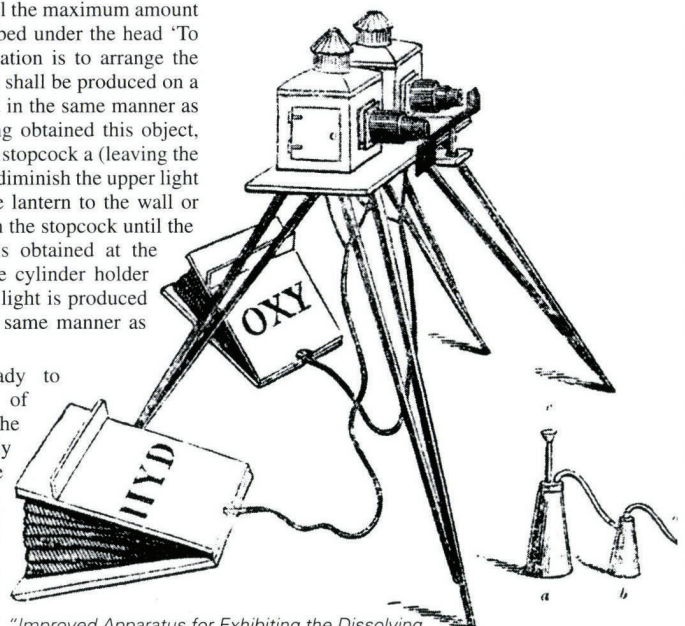
each hand, and gradually close e, whilst a is gradually opened; the effect produced by this action, is to diminish the lower light, and to increase the upper, so as to slowly shut out the lower picture, and as slowly allow the upper one to fall on the screen.

The lower picture is now removed, another substituted, and the dissolving effect produced as before, save that the stopcock a must be gradually closed, and the stopcock e as gradually opened. If it is desired to produce the effect of lightning upon a picture (say, for instance, one placed in the lower slide opening), insert the lightning slider in the upper slider opening; turn on the stopcock a, having previously placed a covering before the upper nose of the lantern, so that the light produced may not fall upon the screen; if the covering is suddenly removed, and then as suddenly replaced, the effect of lightning across the picture is beautifully shown. If the lower picture is made to represent a night scene, by partially closing the stopcock so as to diminish the lower light, this effect is still further increased.

The price for the complete apparatus, including all the necessary gas-making equipment, was £24 with 3½ inch condensing lenses, or £28 with 4 inch condensers. This compared favourably with the price for the twin-lantern dissolving view apparatus 'as shown at the Royal Polytechnic Institution, London', which was £35 with 3½ inch condensers, £60 for 6 inch condensers and a staggering £85 for 9 inch condensers.

Horne and Thornthwaite had already built up a repertory of sets of slides designed for use with either form of dissolving view outfit. The slides were circular, set into mahogany frames and could be had in 3 inch or 3½ inch diameter. The most ambitious series were a 33-picture set of 'The Holy Land' at £18 for the 3-inch format or £21 for the 3½ inch; a 32-picture set of the recent Crimean War, at £17 or £20; and a 31-picture set of 'The Overland Route to India, from Southampton to Calcutta, illustrating the main features of the journey', also at £17 or £20. A set inspired by Albert Smith's famous lecture-entertainment 'The Ascent of Mont Blanc' consisted of 18 slides, at £9 or £10 10s. Fifteen slides celebrated Sir John Franklin's Arctic expedition which had ended in disaster in 1847.

Smaller sets, each of between three and six slides, demonstrated famous sights like Vesuvius, Etna, the Royal Exchange and the Tower of London by day and night, in varying seasons and weather conditions, and undergoing eruption (the volcanoes) or conflagration (the buildings). The Seasons (10 slides for four or five guineas according to format) offered rainbow, storm, fall of snow and aurora borealis. Dissolving views had come to stay – at least for the next four decades.



'Improved Apparatus for Exhibiting the Dissolving Views as shown at the Royal Polytechnic Institution, London'