IMAGE

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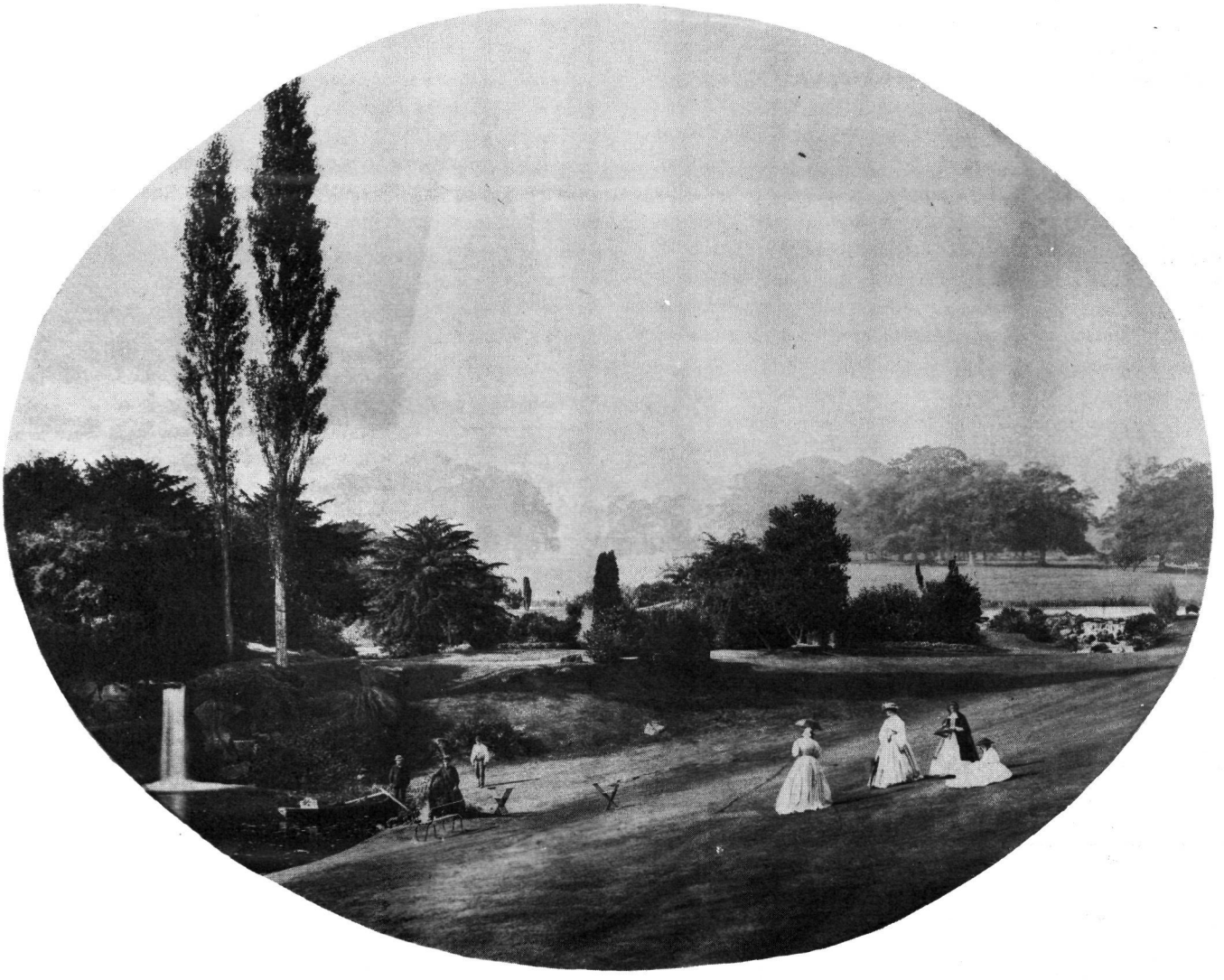

SCENE FROM A PHOTOGRAPH FOUND IN AN AMATEUR ALBUM OF THE 1870's. The wealthy amateurs could afford to pursue photography during the days of the wet plate negative and the albumin print; and in England many such amateurs were at work. As members of the leisure class they were expected to pursue art in some form and the camera obviously gave them a ready means to cultivate their taste and indulge their elegant pastimes. They had a charming device for acquiring copies of the best prints; each one of a group made as many prints from his negative as there were members and after an exchange of prints they were mounted in scrap books. Some of these books were very elaborate, title pages in hand set type on india paper, the photographs carefully tipped in or mounted with rubber cement on fine rag paper, the scrap books were often bound in leather. What is more surprising to this generation, accustomed to amateur snapshots, many of these amateur photographs of the 70's lived up to their elegant and expensive presentation. Several of them are being shown in the Eastman House exhibits called "Masterpieces from the Collection."

THE ORTHOSCOPIC LENS

By Rudolf Kingslake

The famous Portrait lens designed by Joseph Petzval in 1839 was originally intended to be a convertible system. There were two rear components designed, either of which could be suitably combined with the same f/5 telescope objective used in front. The *portrait* rear component, as described in a previous note in *Image,* was an instant success, and in the urge for its rapid production the alternative *landscape* rear component was laid aside and temporarily forgotten. Petzval himself referred to the second system as the "Photographic Dialyte," and intended it to be used as a landscape lens of higher aperture than the simple Landscape Lenses in common use.

With the invention of the wet collodion process by Scott Archer in 1851, photographers became able to take indoor photographs of architectural subjects. This new potentiality created a demand for better lenses, and in particular for lenses of greater rapidity and a wider field than the f/15 landscape lenses then available, and above all for lenses free from the objectionable curvilinear distortion inherent in simple landscape lenses. Many attempts were made by opticians to develop a lens meeting these requirements, and when the cry for distortionless lenses was at its loudest, Petzval recomputed his 1839 landscape lens, made a trial sample, and (since he had quarrelled with Voigtländer) commissioned Dietzler in 1856 to manufacture the lens. Petzval applied for an Austrian patent on the design in 1857, and the lens was put on the market in that year.

As soon as Voigtländer heard of the new lens, he recognized it as the second Petzval design of 1839, and at once began production independently, over the violent protests of Petzval. He chose the name "Orthoscopic" since freedom from distortion was the chief demand of photographers at that time. The new lens was given tremendous and altogether unprecedented advance publicity, especially in England, and readers of *Photographic Notes* and the *British Journal of Photography,* for instance, were promised a panacea for all their difficulties. For a considerable time the new lens was much in demand, and we are told that its reputation was such that timid photographers scarcely dared exhibit a picture that had *not* been made by its aid! Its manufacture was taken up by Ross in London and Harrison in New York. But in spite of the promises of the manufacturer and the claims of its supporters, careful workers discovered that it actually did exhibit distortion, of the unusual pincushion type, and its field was decidedly curved, although the central definition at f/10 or f/15 was excellent. The lens was thus eminently suited to the photography of large groups in the open air where the distortion and field curvature were unimportant and where the excellent definition would be appreciated. Because the lens failed to realize the properties implied in its name, it quickly lost its appeal and was soon forgotten, although its use continued for some years in Germany and Austria. Modifications of the same general type were attempted later by other opticians but without significant success.

The George Eastman House is fortunate in possessing two of these lenses made by Voigtländer, of focal length 326 and 443 mm, with maximum apertures of f/15 and f/12 respectively (although early descriptions of the lens indicate its maximum aperture was f/8). They contain a front and a rear component spaced apart, with a diaphragm behind the rear lens, the front component being a telescope objective of f/5 aperture as in the Portrait lens, and the

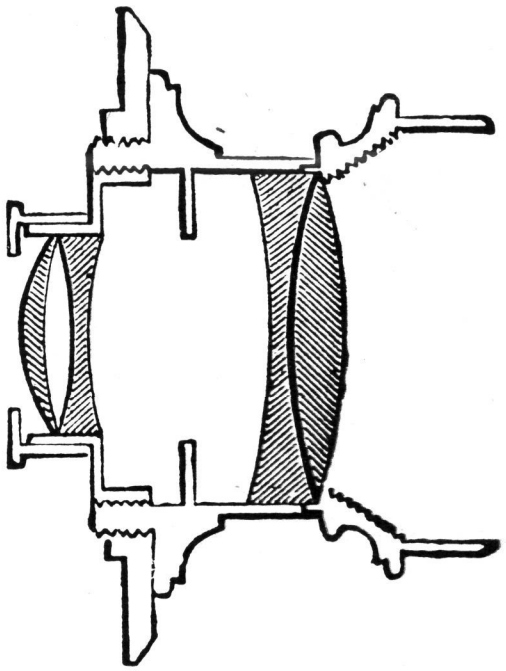

DIAGRAM OF THE ORTHOSCOPIC LENS

rear component consisting of a strong biconcave negative lens and a weaker positive meniscus lens behind it (see diagram) giving the rear component an overall negative power. In modern parlance the objective would therefore be regarded as a moderate telephoto having a total length equal to 98 percent of the equivalent focal length. The length of the lens itself and the power of the rear component were evidently chosen by the designer to give a compromise between pincushion distortion and inward field curvature, since any attempt to correct one of these faults merely aggravates the other; the shapes of the rear elements were chosen for spherical and coma correction. The lenses cover a plate having a diagonal about equal to the focal length, that is, a semifield of 26°. Apparently in the orthoscopic lenses by Ross and Harrison the diaphragm was mounted inside the lens and the rear component had almost the same diameter as the front.