INSTRUCTIONS

FOR THE USE OF

Walker's Pocket Cameras.

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Introduction.

PHOTOGRAPHY is a very fascinating pursuit, and when once undertaken in good earnest, rarely fails to repay one for the inevitable failures incident to the art.

The simplification of Photographic processes made within the last few years, the extensive preparation commercially of Gelatine Dry Plates, and the accurate, yet simple apparatus herewith brought to your notice, make the successful pursuit of this most pleasing occupation, especially in its application to landscape, and tourists' purposes generally, within the understanding of any person of average mechanical ability.

It is not within the province of this book to go into abstruse demonstrations of optical, chemical or mechanical facts. Experiment and investigation of phenomena, when intelligently pursued, are commendable, and generally fruitful of good results, and Photography tends more than any other art to stimulate observation of both common and uncommon things and events. As evidence of this we have the unchallenged fact, that the prodigious

strides in the chemical and optical requirements, amounting actually to a revolution in the art, have, almost without exception, been made by amateurs.

The object sought in the publication of this book is to make the foregoing evident by the simplest known processes, and to direct beginners in the steps necessary to success, leaving to the final master of all crafts—experience—the determination of the measure of success.

With the apparatus and materials herewith furnished you, with patience, perseverance and *taste*, the most admirable results the camera is capable of producing are within the reach of the amateur.

With regard to the size of plate used in Walker's Pocket Cameras, it may be well to state that the small expense of the original outfit, its extreme lightness and compactness, the small cost of the plates, and the chemicals necessary to develope them, make this size of plate—$2\frac{3}{4} \times 3\frac{1}{4}$ inches—*fully one-half cheaper to work than the next size larger.* In other words, the amateur would have an equal number of failures with a larger plate at twice the cost, and no advantage gained whatever; while with larger sizes the weight of apparatus and plates is increased in about the proportion of the square of the diameter of the plate, a serious, if not insurmountable obstacle to tourists and field workers.

Many of the finest views taken by the Photo-

grapher of the Hayden expedition. were subsequently enlarged from small plates, and any one who has seen these masterpieces of Photography cannot fail of conviction that large apparatus is a nuisance and a delusion.

As it is impossible to go into very detailed and elaborate general descriptions of apparatus, processes, etc., and as it is advisable that amateurs should post themselves as thoroughly as possible, it is suggested that they purchase a copy of Lea's *Manual of Photography*. This book is a standard publication of over 400 pages, and treats at length of the optical, mechanical, chemical, and artistic sides of Photography. The book is profusely illustrated, and contains formulæ which are invaluable to those who care about going beyond the mere rudiments of the art.

The writer has been highly favored by Mr. Lea's permission to use certain parts of this work. Almost the entire chapter, "Hints about Landscape Photography," is taken from the *Manual*, and those who read it will not fail in detecting not only a master's but a loving hand.

In conclusion, the author begs once more to impress upon the reader's mind the imperative necessity for constant, earnest, watchful attention to all details. He has done all in his power to make Photography simple and popular,—the result must

remain with the amateur. This book will be corrected and added to as experience and suggestions accumulate, as they surely will with time, and nothing will be more welcome than your own experience.

Very sincerely,

WILLIAM H. WALKER.

ROCHESTER, N. Y., *July*, 1881.

Description of Apparatus.

In opening the box containing your outfit, be particular to notice the arrangement of everything.

Camera.—The camera has its lens and diaphragms in the lens mount in the position required for use, and the hood is on the tube cap. The lens can be cleaned if necessary, but the greatest care should be taken never to use anything for the purpose but a fine camel's hair brush, or a clean old linen cambric handkerchief. The ground-glass frame is securely hinged and clasped to the camera back.

Diaphragm.—The office of the diaphragm is to control the amount of light admitted to the camera, in proportion as the light is powerfully or weakly actinic. As a rule, diffused or medium light requires the larger, while brilliant sunlight requires the smaller opening.

Hood.—The office of the hood is to prevent all rays from passing the lens until the exposure is to be made. It should always be left upon the lens cap when the instrument is not in use.

Tripod-head.—The tripod-head is on the camera bottom, in which position it is usually carried unless removed for compact packing. Remove the brass nut and washers, take off the tripod-head, and notice its construction, and the functions of its parts. You will find a new device

for permitting adjustment of the camera in both vertical and horizontal planes, *without the necessity of moving the tripod legs*—the perfect contact of the metallic surfaces being made by the interposition of a disc of plate rubber, which material is preferable to a spiral metallic spring, because its friction upon the threaded stud prevents its being lost; it is cheap, and easily replaced. Now replace the head upon the camera bottom, as you found it.

Tripod-legs.—Observe as they lie in the box the relationship of the several parts. Open them, and you will see that a firm joint is made by the act of straightening them. Separate the two upper sticks, and place the metallic strut in position, then compress that portion of the sticks above the strut until the holes in the brass ends thereof can be placed upon the pins of the tripod-head, being careful to have the brass plate at the joint *outwards;* separate the legs until a line drawn between the spikes on the ground approximates an equilateral triangle, the distance between the spikes being not less than four feet. If the soil is soft and yielding, press them down until a good foundation is secured, and your instrument is ready for use. The legs will be found adjustable to a great variety of positions, enabling the operator to place his instrument in otherwise inaccessible positions.

Legs Folded for Studio Work.—For studio work the legs may be used folded, in which case the spikes are under the tripod-head, and the joints upon a table—the instrument in this position standing about 22 inches high. In field practice the legs need not be disconnected from the tripod

head, but the entire instrument may be carried like a musket over the shoulder, by clasping the lower portion of the legs in the hand. A better way, however, is to carry it as above, but with the lower joint folded as previously described for studio work. This makes everything more compact, balances better, and lessens the liability of catching branches of trees, etc., in transit.

Double Plate-holder.—The double plate-holder is of entirely new construction; the frames being in one piece of non-absorbent plastic material, are consequently *jointless*, and unaffected by dampness. Clasp the holder with the left hand, and with the thumb and first finger of the right hand turn the milled, edged and slotted plate upon the top of the holder which forms the clasp, until it can be entirely removed from the pins, then open the frames as you would a book. Observe the position of the septum: its office is to separate the two plate-holding cells, and the springs upon its faces press the plates gently but firmly against the ledges, which hold them in position.

Slides.—Draw out the slides which cover the cells, observe that the opening through the side of the holder frame, previously filled by the slide, has been closed *automatically* by a light-excluding shutter placed within a hidden chamber, the entrance to which is by the removal of the cap or screw at the top of the holder. Never open this chamber unless you are convinced that the shutter does not cut off all rays of light from without, in which case omit drawing the slide entirely from the holder during exposure. A mark made upon the slide which can be seen from the outside, indicating when the plate is uncovered, will prevent

withdrawal. The necessity for such care will seldom if ever occur, and can be easily remedied in the manner indicated.

Dowel-pins.—When the holder is held in an upright position, i. e., with the clasp uppermost, observe two pins on each of the lower sides of each of the frames. These are to act as dowels, and are inserted in the slots of the two brass plates at the back and bottom of the camera. Of course this cannot be done until the focusing screen is unlatched, and hangs upon its hinges. The clasp for holding the top of the holder to the camera is the same as held the focusing screen in a similar position. It will be evident, by reversing the holder upon the camera back, the slide nearest the lens will draw for one plate to the right, for the other to the left, and it must be firmly impressed upon the mind that the slide nearest the lens is *always* the slide to be drawn in order to expose a plate.

Drop Shutter.—The drop shutter is an accessory for making instantaneous exposures. It is a frame which is attached to the tube cap, having within it a shutter or slide with an opening in it. When this slide is raised and latched in position, the lens is closed. It is detached by touching a spring, and, as the opening passes the lens, exposure occurs. Drop shutters are invaluable for instantaneous views, but require brilliant illumination. Moving objects, men, animals, steamboats, or railway trains in motion, are recorded faithfully, as if transfixed in the act of movement. The spray of the cataract and the flight of the swallow are caught in the twinkling of an eye. The fastest train in the world, the "Flying

Scotchman," running between London and Edinburgh—at times attaining the frightful speed of seventy miles an hour—was *photographed* faithfully *en route*. Of course such work requires great experience, and special apparatus to produce exposure.

THE DARK ROOM.

General Observations.—The dark room is used for unpacking and examining the dry plates, placing them in the plate-holder, and for developing them after exposure. As dry plates are very much more sensitive than wet plates, great care should be taken to keep *every ray of white light* out of the dark room. "Copper-flashed" ruby glass should be used in the window, or lantern, and it is well in the former case to have a sheet of yellow tissue paper over the window, to diffuse the light. It is important to know that while "gold-flashed" ruby glass is indistinguishable with the naked eye from the "copper-flashed," it is worthless in dry plate work, because it fails to stop the green and blue rays of the spectrum, to which gelatine plates are very sensitive. As a substitute for ruby glass, when that is not to be obtained, common yellow post-office paper—that which shows a dark stain upon the application of sulphide of ammonium—does very well. Several thicknesses may be used, and it may be rendered translucent by a coat of castor oil. It must be borne in mind, however, that the less the plates are exposed to *any light*, the better; hence, when a package of plates is opened, they should be carefully dusted with a fine camel's hair brush, and transferred immediately to plate-holders, or light-tight grooved boxes, and *kept in the dark*. The dark room may be pro-

vided with a table, a sink, and running soft water, but where the sink or a special room are not convenient, a common dark closet having a shelf or table of convenient height, a pitcher of fresh water and a basin, will be all that is necessary for washing the plates. When a dark room or closet is unobtainable, the development *must be* postponed until night.

Order.—Two things are absolutely necessary in the dark room—perfect order and absolute cleanliness. Have a convenient place for everything, and *never* use the same bottle or dish for different purposes. By observing these directions, you will avoid a long list of failures, which would otherwise be difficult to account for.

Ruby Lamp.—If the lamp is used, light it upon entering the room, and *lock the door behind you.*

Dry Plates.—Always handle the plates by the edges of the longer diameter, as those edges will be covered by the ledges of the plate-holder. The sensitive surface of the plates is easily distinguished from the back or glass surface by its exquisite, opalescent, slightly granular appearance.

Placing Plates in Holder.—Clasp the holder with the left hand, and with the thumb and first finger of the right turn the milled edged and slotted plate, forcing the clasp until it can be entirely removed from the pins. Then open the frame as you would a book, remove the septum, place a plate in each cell, being very careful not to scratch the plates, and sure that the sensitized surfaces of the plates *face each way from the septum.* Close the frames, still having the holder in the

left hand, the thumb of which holds down the septum until the frames are nearly in contact. Replace the milled edged and slotted plate upon the pins, turn it until a perfect closure is made. As a final precaution, draw the slides, and see if the plates are pressed firmly against the ledges which support them,—also if their sensitized surfaces are exposed to view, and free from dust. *Close the slides carefully and completely.* You can now go out into white light in safety, provided you are quite sure that your light-tight box, containing your stock of plates, is closed and covered *before you open the door.*

In long journeys on rough roads it is well to place straps of light gum elastic around the holder and the slide handles, to prevent the possibility of their being jarred out of position.

MANIPULATION OF INSTRUMENT.

Focusing.—Having provided yourself with one yard of black cotton velvet (a cheaper fabric will do), place the camera firmly upon its tripod, *level* the camera by taking it firmly in both hands, and moving it in horizontal and vertical planes, until the view required is seen upon the focusing screen, always pressing slightly downward, that the operation may not dislodge your tripod legs. If the movement is difficult, ease away the brass nut under the rubber disc; if too easy, tighten it. Now cover your head and shoulders and the camera with the velvet cloth, place the left hand upon the top of the camera, which will serve to steady it, and hold the cloth in position. Now with the thumb and first finger of the right hand clasp the milled collar of the tube cap, and with

a slow spiral motion move it inward or outward as the case may require, until the finest details of the subject are visible upon the focusing screen. If the subject be a landscape having a long avenue of trees or of architecture, including long distances, focus upon a point midway between the instrument and the limit of your vision. Theoretically there is but one plane in focus, at one time; practically, you must approximate to actual focus. Sometimes a small eye-glass is used to determine the exactitude of focusing. Take time for this operation; it will amply repay the greatest care. It is quite evident that clear definition cannot be obtained without accurate focusing.

In focusing where instantaneous views are to be taken with the aid of the drop shutter, always focus upon the point to be occupied by the coming object, and drop the shutter when the object is in range. Tourists will find the drop shutter of great value: pictures can be taken from the deck of a moving steamer, or *vice versa*.

Diaphragm and Hood.—Immediately after focusing, insert the proper diaphragm, and place the hood over the tube cap.

Plate-holder.—Now unlatch the focusing screen, and allow it to hang upon its hinge; place the plate-holder upon the back of the camera, by first inserting the small pins in the sides thereof into the slots of the side-plates of the camera, and *carefully* latching it in position at the top.

Slides.—Now draw the slide of the plate-holder nearest the lens, which is *always* the slide to be drawn.

It is perhaps unnecessary to state that every operation after focusing should be conducted with

the utmost care, to avoid moving the camera in the slightest degree.

Light, Actinic Value of.—Now pause a moment. Remember that the rays of light which are to enter your camera are *reflected rays*, coming from the objects you saw upon the focusing screen. Remember, not only is the actinic power of the sun's rays constantly changing, but the reflecting properties of surfaces vary greatly, some absorbing, while others powerfully reflect these rays. Again, the color of surfaces indicates the actinic value of the ray reflected by them—the approach to yellowness indicating low actinic value, and consequently requiring longer exposure. *Look up.* What kind of light have you? Is the sun obscured by a passing cloud, or is it soon to be? Remember, for bright sunshine insert the smallest diaphragm; if a moderate or diffused light, use the larger; but always use the smaller if possible, especially in landscape photography, as the effect is to sharpen up the picture. Of course, the smaller the diaphragm the less light will be admitted to the camera, and the length of exposure must be determined entirely by the quality of the light, the reflecting properties of the objects you saw upon the screen, and the possibility of the sun's rays reaching those surfaces.

Shading Camera and Tube Opening.—If your instrument is so placed that direct or nearly direct rays can enter the tube opening, no matter from what angle, shade the tube opening by holding the slide of the holder when it is drawn, so as to prevent the possibility of their so entering, being very careful not to obstruct the

reflected rays coming from the object you desire to photograph. By shading with the hand immediately after focusing, and before the screen is unlatched, you will soon become familiar with the position in which the slide should be held. It is well to leave the velvet cloth covering the camera and the holder during exposure, and even to draw the slide from the holder from beneath its sheltering folds, by which means rays which might otherwise enter between camera and holder will be so diffused as to be harmless.

Exposure.—The surer way for a beginner is to make two, three or four exposures of as many plates in rapid succession, upon the same view, without moving the camera, with an exposure of one second for the first plate, and adding one second for each subsequent exposure—using the same diaphragm, and observing carefully any change in light, or other conditions likely to affect the result. Your plate-holder slides should always be numbered consecutively, and exposures *always be made in the order of the numbers.*

Keep a memorandum book, and make notes of all conditions likely to affect these plates during exposure.

Now, everything being ready, clasp the hood firmly with thumb and finger of the right hand, and draw it from the tube cap with a slightly spiral motion, removing it as quickly as possible, and *entirely out of range of the lens*, and, watch in hand, count off the seconds. Then replace the hood carefully and quickly, and insert the slide of the holder, after which the holder may be removed from the camera with impunity. The plate is now ready for development—now reverse

the holder, and expose the other plate in a similar manner—and so on.

Now return to your dark room, carefully close and lock the door, place a light within your ruby developing lamp, open your holders, and place No. 1 of the exposed plates, sensitized surface up, in the developing tray, and proceed to develope it, and subsequently the remaining plates, watching carefully the treatment required for the different conditions under which they were exposed. Don't fail to make your notes again, observing closely any phenomena. Do it *now*, developing one plate at a time. Remember, exposure and development must always be considered together.

You have now several plates exposed under varying conditions, and developed accordingly, and, if you have observed carefully, will have learned more than from an entire summer's random work. You must expect to lose a dozen plates; they are furnished you with that expectation, and it is far better to do it in systematic learning than in guessing.

DEVELOPMENT.

General Remarks.—The development of an exposed dry plate is a process which cannot fail to deeply interest the most careless person. The fact that the plate appears exactly the same as before exposure, that the finest optical instrument fails in detecting the slightest change in its surface, certainly bids us pause and ask, what is this marvellous change, so suddenly and silently wrought? As the first faint outlines appear under the influence of the developer, wonder grows into amazement at the change going on under one's

very eyes. Outlines of familiar objects come out, as first the hull, then the masts, then the rigging and the cords of a great vessel come to us from out the dimness of a fog. The process can be checked instantly, or allowed to proceed until details which were imperceptible to the naked eye claim their full share of attention in the finished negative.

If there were no other compensations in Photography than the development of an exposed plate, it would be amply sufficient to repay all the labor, care, and taste required to produce it.

PREPARATION OF SOLUTIONS.

Ferrous-Oxalate Developer. — Dissolve one-half the contents of the package labeled Oxalate of Potash in 1½ pints of water. Dissolve the contents of package labeled Proto-sulphate of Iron in one pint of water.

Fixing Bath.—Dissolve the contents of package labeled Hypo-sulphite of Soda in 1½ pints of water.

The above solutions are to be kept separate, and will retain their properties indefinitely, but if with age the oxalate solution shows numerous white flakes, or the iron solution a reddish substance floating within, filter by passing through a wad of cotton, pressed into the bottom of a common tin funnel, paying great care to change the cotton and wash carefully after each operation.

Development. — Lay the exposed plate in the copper developing pan, *sensitized surface up.* Fill to the lowest mark of the graduated glass with the solution of oxalate of potash, then very care-

fully of the solution of proto-sulphate of iron until the next or highest mark is reached. The iron must always be added to the oxalate—not *vice versa*.

Excess of Iron.—If a sandy precipitate is thrown down; or a stain made upon the glass, it is evidence of too much iron, on which throw away the solutions and prepare again. Adding more oxalate will not remedy the defect.

Air Bubbles on Plate.—Now apply the mixture to the plate, taking care to cover it at one sweep; if air-bubbles appear, they should be carefully and instantly wiped away with one of the small camel's hair brushes furnished, which should always be in hand ready for the purpose.

Rock the pan gently to keep the solutions moving in waves across the plate, and prevent the lodgment of air bubbles.

Duration of Development.—The image should appear upon a properly exposed plate in from ten to twenty seconds, and the development should be continued until all but the deepest shadows are well darkened.

By "shadows" is meant that portion of the plate which retains the yellow tint the longest.

Fixing.—As soon as the development is complete, the plate should be thoroughly washed in clean water, and held in the bath of hypo-sulphite of soda (a small portion of which has been placed in a saucer or earthen dish, to be used for that purpose only), until the opaque yellowness seen from the *back* of the plate disappears, when it should be immediately washed thoroughly in clean water.

Washing.—The plate can now be exposed to white light—it is in a semi-permanent condition ; but to be quite sure that *all traces of hypo are removed*, it is advisable to wash again very thoroughly by holding the negative under a gentle stream of running water.

Drying.—After washing, hang the negative by its edges between two tacks driven into a board or wall at a distance of say two inches apart. This position leaves the lower corner of the negative in contact with the wall, and is favorable for drainage—*heat must not be used.*

You have now a negative; and, if thoroughly dry, proofs may be taken from it if desired—but great care must be taken before it is varnished to avoid scratching the film.

Frilling.—Occasionally in warm weather, a spongy, hazy, uncertain outline appears, to the utter ruin of fine definition. This is known as "*frilling*," and can be prevented by inserting the plate for five minutes in a saturated solution of common alum in water, *immediately after development.* Dry plates should not be developed in a temperature exceeding 80 degrees. Be sure, however, that it *is* frilling. Refer again to your notes, and see whether the plate was exposed when the wind kept all the leaves in a flutter ; you must observe and carefully note all conditions, to be successful in Photography.

Postponement.—Not the least valuable or remarkable property of a dry plate is its capacity of retaining the latent image between the time of exposure and development.

The writer can vouch for dry plates being exposed in the Sierra Nevadas, packed upon the

backs of mules, *over two thousand miles*, and brought home to Rochester, where the image came up promptly and beautifully under the influence of the developer. Therefore, tourists need never develop their plates *en route*, provided they have first acquired skill in exposure.

Intensifying.—When a negative, from over-exposure or under-development, is weak, flat, or lacking in vigor, it may sometimes be saved by intensifying, in which case proceed as follows :

Take a sufficient amount of the Concentrated Intensifier to cover the plate in a dish used only for that purpose. Then place the plate in the solution, taking care that the surface is entirely covered as quickly as possible. As soon as the film has attained a slightly yellow color, take the plate out for examination, and if the film appear to be entirely changed from the olive to the yellow color, wash the plate very thoroughly, and place it on the tacks to dry. When thoroughly dry, make a proof, print from it, and compare with a photographic view, and if sufficient intensity is not obtained, repeat the operation.

The Intensifying Solution which has been used should be saved in a bottle for that purpose, and may subsequently be repeatedly used by adding from five to ten per cent. of the Concentrated Solution.

The Intensifier must be thoroughly washed from the film, otherwise the image will entirely disappear in time. *Heat must not be used in drying.*

Varnishing.—When you are thoroughly satisfied that a negative possesses the proper qualities for printing from, dust carefully, and take the plate by the lower left hand corner, between the thumb

and finger of the left hand; *then pour about a teaspoonful of the varnish on the upper surface of* the plate, holding the plate level. This pool of varnish should be caused to flow over the entire surface of the plate by tilting the plate from one side to the other steady, finally draining it of all surplus varnish, from the lower right hand corner —the surplus to be returned to the varnish bottle. Now dry thoroughly with gentle heat—meanwhile gently rocking the plate, to prevent the varnish drying in lines or ridges.

Notes.—The plate may be wetted with clean water before the application of the developer if preferred, but should be left in the water at least one minute.

To make clean, work dust off the plates before exposure, and avoid air bubbles on the plate.

The iron should be added to the oxalate—*not vice versa.*

The developing tray should always be used for developing, but never for hypo, alum, or intensification. For the latter solutions a saucer or additional developing pans will do. Hypo and alum may be used until they begin to color, when new solutions should be prepared. Always examine a plate on removal from the hypo, to make sure that the opaque yellowness has *thoroughly disappeared.*

Avoid keeping the plate out of any of the solutions longer than necessary, for a hasty examination, as air bubbles will form upon the film.

If a plate is left too long in the hypo solution undisturbed, it will cause a mottled appearance on the outer surface of the negative, thereby causing its ruin.

FAILURES.

A knowledge of the cause of failures is sometimes useful as an aid in avoiding them, hence we append some of the most common :

Transparent Spots.—Dust on the plate. *Air bubbles on the plate.* Bubbles in developer.

Weak and Foggy Image.—Over-exposure. White light in dark room. Reflections in camera.

Weak and Clear Shadows.—Under-development.

Strong and Clear Shadows.—Under-exposure.

Crystallization on Finished Negatives.—Hypo not washed out.

Most of the failures in the use of gelatine plates are from imperfect light in the dark room, or imperfections in the camera or holder, all of which cause fog more readily on a gelatine plate than a wet plate.

PRINTING.

It is evident if a surface sensitive to light is placed under a negative, and exposed, that surface will undergo a change in exact proportion as the negative shields from or exposes it to the light. This is the principle involved in the process of printing.

Printing Frame.—With the thumbs of both hands press equally upon the ends of one spring, and when it is free from the recess in the frame, turn it around until completely unlatched. Repeat the operation with the remaining spring, and remove the entire back.

Now place the negative to be printed from upon the glass already in the frame, *film side up*, and place one sheet of sensitized paper upon the negative. If it is blue paper, place the blue surface in contact. If it is silvered paper, place the glazed or slightly yellow surface in contact; always being careful not to touch their surfaces, or scratch the delicate film of the negative.

Now place the back in position, and latch first one half, then the other half, always causing equal pressure upon the extreme ends of a spring, to avoid breaking the negative.

Never draw the paper over the negative, but lay it upon it squarely, and hold it in position until the pressure can be transferred to the back you are inserting. Now turn the frame over, and see if the paper covers the negative properly, and if the edges of the negative are clear from the ledges of the frame; if so, expose to the light.

The above operations need not be conducted in the dark, as silvered or blue papers are not excessively sensitive.

Direct or Diffused Light.—Printing may be effected by the direct rays of the sun, or by diffused light—the nature of the negative determining the better course.

Printing in the sun produces softness, while printing by diffused light or in the shade brings out strong contrasts.

A strong hard negative will require a bright light, while weak, thin negatives must be printed from in the shade, or a diffused light.

If a negative is very thin and transparent, place several folds of white tissue paper over the front of the printing frame, thus diffusing the light thoroughly.

A print made in sunshine resists the bleaching action of the subsequent operations better than one made in shade. Therefore always over-print when using diffused light.

Exposure. — Exposure during printing must of course vary greatly, a very thin, delicate negative requiring but a minute, while a hard vigorous one may require hours.

Examination.—To examine prints during exposure, hold the frame in the shadow of your body, unlock one end of the back, open it, bend back the paper, and examine carefully. Avoid touching the negative or the sensitized surface of the paper. When the shadows begin to bronze, the highest lights should be clear, or slightly darkened.

If, in sun printing, the whites darken before the shadows are bronzed, it is proof of a weak negative, and the recourse is to shade printing.

If, in shade printing, shadows are fully printed before detail in the high lights comes, it is proof that sun printing is needed.

When the print is complete, it may be placed in a dark box or drawer until a number are ready for toning; they will not change if kept in the dark.

TONING.

Trimming.—If the prints require trimming, do it before toning, being careful to trim them squarely and take off only sufficient to prevent ragged edges.

Toning.—The prints should then be thrown into clean water, and allowed to soak from ten to fifteen minutes, after which they are placed in the diluted toning bath, and allowed to remain

there until they assume a tint acceptable to the owner.

Fixing.—They should then be placed in a bath of hypo-sulphite of soda, made by diluting some of the hypo bath already prepared for fixing negatives with an equal quantity of water, allowing them to remain therein five minutes in summer and ten minutes in winter. Hypo which has been used for negatives must not be used for prints.

For fixing and toning use a shallow dish; a saucer will do unless the number of prints is large. The toning bath may be used until it refuses to perform its office. The hypo should be made fresh for each batch of about 25 prints.

Washing.—The prints should now be washed very thoroughly in clear running water. The imperfect elimination of hypo will *surely* cause yellow tints in the whites, and finally fading,—a most vexatious and mortifying occurrence, as well as an entirely unnecessary one.

Drying.—After washing, spread the prints between clean blotting paper, and place a book or weight upon them, until they are nearly or quite dry.

Mounting.—If the prints are to be mounted, it should be done at once after leaving the blotting pads, by laying them face down upon a clean blotting pad, and applying to their backs with a brush, clean properly-made flour paste, or gum arabic in water, allowing the print to swell slightly before adhering.

Burnishing.—After mounting, prints are sometimes burnished by passing through a machine prepared for the purpose; the operation closes the

fibres of the paper, giving great lustre, depth and darkness to the picture. The writer has under consideration the construction of a burnishing machine for Pocket Camera prints.

Special care must be taken with card mounts, as many contain traces of chemical matter, which will in time affect the prints.

The writer always keeps in stock a large assortment of both Common and Fine Mounts, of proper size for the Pocket Camera prints, and offers them for sale at reasonable rates. They can be sent by mail. See Printed Price List.

Prints made on blue paper require longer exposure than those made on silvered paper. Print until the image is quite yellow, then throw the print into running water, and leave it to wash until the image is clear and blue, then dry in the blotting pads. No toning is necessary.

Hints to Tourists.

Leather Pouches.—Tourists will find the leather Pouches for carrying Camera, lamp, chemicals and apparatus for developing, a compact and elegant accessory, relieving them from much annoyance by delay of luggage, as the entire requirements are *together*, and are carried on the hip as a field glass would be—ready for instant use.

The Dark Room.—Tourists do not require the special arrangement of a dark room for developing, etc.; any dark closet will do by day, and any hotel room away from light will do by night. If camping out, go away from the camp fire into the darkness of the woods, and there perform all operations belonging properly to the dark room. A pitcher or bottle of water, or the running stream, will furnish all water necessary.

Extra Chemicals and Plates.—Extra plates and dry chemicals may be carried with luggage, and prepared at leisure moments.

Telegraph Orders.—Anything wanted *en route* may be ordered by letter or telegraph. Special care will be taken of such orders that they go promptly to destination named—but be very careful, and allow ample time for the package to reach its destination by Express, as such orders must of necessity be filled C. O. D., unless accompanied by P. O. Order or New York Exchange.

Hints about Landscape Photography.

Choice of Conditions.—As landscapes are always seen with disadvantage under a noonday sun, so Photographs taken under similar circumstances are mostly unpleasing; and as Photography tends to exaggerated contrasts of light and shade, the result is all the worse. Many experienced landscape Photographers therefore avoid bright days, and select those times when the sky is covered with white clouds, through which the sun's rays occasionally break.

Intrusive Objects.—In viewing a landscape in nature, the eye seizes and rests upon characteristic features, overlooking those that are secondary. A lens cannot do this, and, singularly enough, the eye will not do that with a picture which it will with real objects, but insists, as it were, that the picture should represent them as they should be. This fact is so conspicuously true, that examples are scarcely necessary. They will, however, continually present themselves to the Photographer.

Perhaps the view lies in a wild valley in the midst of hills, and the scene is not marred by the presence of a rustic cottage. But perhaps beside it are lines hanging full of clothes, drying. This the eye passes over, and excuses in *the scene itself;* but the same feature introduced into any picture, photographic or otherwise, provokes inextinguishable laughter.

So with the hideous telegraph poles, which line our roads, and intrude into almost all our scenery. The eye consents reluctantly to forget them by an effort, and to consider the scene without reference to them, and will to some extent succeed; but in the photograph they came out straight, stiff and prominent. Even the wire is perfectly made out. It results that often a scene cannot be taken from its best points by reason of these detestable adjuncts, and that because of their continual repetition at short intervals, the effort to wholly exclude them is unavailing.

As the camera has not the painter's power of excluding or subduing intrusive objects, all the Photographer can do is to endeavor so to select his point of view as to avoid them. This is a matter demanding the utmost pains and care, for after the view has been taken, it will sometimes be found that a change of position of even a few yards only would have made a material improvement, a discovery mortifying and annoying, and better avoided by a careful search beforehand.

Cast Shadows are such as retain more or less of the objects that cast them, as distinguished from the more indefinite shadows which come from some less distinct source. Such shadows are often the source of exquisite beauty in landscapes. A level foreground of grass is apt to be flat and unmeaning: the shadow of a tree cast across it gives it at once life, character, relief.

A fine single tree or grove of trees lighted from the *side* affords a beautiful play of light and shade which disappears when the sun is in the line of view behind, or even approaches that direction.

Foreground.—An agreeable division of the foreground is a capital point in a landscape. It has been already remarked how much this is aided by shadows. Almost any characteristic and prominent object will have a good effect, logs, stones, and still more, rocks, bushes; anything that breaks the level and changes the lines also attracts and pleases the eye — not in itself, but in the general character that it imparts. It may generally be affirmed that scarcely anything can so much detract from the effect of a landscape as an unbroken foreground, level in form and uniform in light. Such a foreground will mar, if not destroy, the effect of the finest objects. The artistic photographer will always change his position to avoid such a foreground, or if he is tied down to a particular spot from some imperative cause, he will if possible have some object such as a log, a large stone or a trunk of a tree thrown where it will support his lines.

There is a great beauty in very trifling objects which many habitually overlook. Brushes and vines, rocks, stones, logs, often have elements of attraction that reveal themselves only by observation and cultivation. An artificial arrangement of such objects in the foreground of a photograph lends to it an inexpressible charm.

Distance.—The distance should never find its place exactly in the middle of the picture, which by its disposition becomes divided, as it were, into two equal parts to the complete destruction of its artistic character.

In fact, no important object should be placed exactly in the center of the picture, nor should any important object be placed exactly upon the

middle line which divides a picture from top to bottom or from side to side. Its effect will be always better if it is distinctly removed from either of these lines.

Skies.—A blank white sky disfigures a photograph and must be avoided if possible. Several alternatives present themselves, one or other of which should be adopted whenever possible.

If large slow-moving clouds are present they may sometimes be caught, especially if the illumination of the landscape be good. But it is an excellent plan to cover as much as possible the sky with foliage or other objects: large trees in the foreground will aid this.

Some landscape photographers who know the value of even a little shading to the sky, adopt regularly the following plan: When the printing is done they open one half the back of the printing frame and bend the sky end of the print in a curve backwards and so hold it to the light; it thus becomes somewhat darkened, and by doing this skilfully the shading is regular.

Position.—The whole picture should be composed with reference to some one important object, to which all the rest stand in some more or less definite relation.

Appropriate Surroundings. — The figure itself should be thoroughly in keeping with the scene. Just as a neat trim villa is a particularly uninteresting subject for a picture, so a carefully dressed person looks completely out of place in any rural scene. A laborer, a pedestrian carelessly dressed, country children, these are figures in keeping with the subject. If a river or a lake form part of the

picture, a man fishing or wading will add to the life of the scene; but whatever the object introduced, it must be in keeping with its surroundings. Generally speaking, whatever is neat, trim, or elegant, is displeasing in any view of natural scenery. A handsome carriage introduced into a picture will look absurd; a farmer's cart will probably be in place, and a great help. It is not so much the object itself as its condition.

The rule that persons in the view must not look towards the camera must *never be forgotten.*

The Horizon.—It is always within the power of the photographer to place the horizon where he will. Raising the horizon line will often increase the beauty of the picture, but, it must be confessed, somewhat at the expense of truth. When the object of the photograph is simply to produce a beautiful picture, it is perfectly allowable to modify and improve the scene in any way we can. But when a truthful representation is required, the greatest care will be needed, and the camera must be accurately leveled. The idea that photographs, being produced by mechanical means, are necessarily correct representations of natural objects, is absurd. Nothing is easier than to create false impressions with the aid of photography.

It is an axiom with artists that the horizon shall never come across the middle of the picture and divide it into two equal parts, but always above or below it.

Contrasts.—The effect of a high light in the extreme distance is greatly enhanced by placing a dark object in the foreground, somewhat under it but not perpendicularly. This acts partly by throwing the distance further back and thus pow-

erfully aiding the impression of distance, and partly because the lights become lighter and the darks darker through contrast.

In a landscape the best effects are to be secured by contrast; but in photography, as we have no effects of color, our contrasts are limited to those of light, size, form, character, season and mass.

Of light, as when the artist throws his deepest darkness against his highest light, thus strengthening both.

Of size, as for example, when the greatness of the majestic oak is made more apparent by the shrubs or bushes at its base.

Of form, as when the grand elevation of the mountain is further ennobled by the level lake or plain at its foot.

Of character, as when the graceful lines of pine trees are contrasted with rugged roughness, as in Alpine hills; or when slight and tender vines with delicate tracery are seen clinging to strong trees or the rocky sides of hills, or are contrasted with the rigid lines of architecture.

Of season, as when winter snows look down from the mountain upon summer verdure in the valleys beneath.

Of mass, as when light clouds, the lightest of all visible objects, rest upon mountains, which of all natural objects give the most striking effect of might.

In a word, the beauty of contrast is that which most completely pervades all nature. All our ideas are formed by comparison, and contrast is comparison in its most vigorous form.

Portraiture.

In Portraiture, the exceeding nearness of the object, the difficulty of obtaining proper illumination and appropriate surroundings, together with other obstacles, both optical and mechanical, combine to such a degree as to render it far more difficult of accomplishment than landscape photography.

The greatest ingenuity has been applied to produce the requisite effects, the accessories of a first class studio being far beyond the reach of the ordinary amateur, and it is not within the scope of this book, nor is any landscape apparatus especially recommended for portraiture.

The better way for the amateur is to visit some studio known to produce good work, and study the apparatus and facilities there found. Good pictures of persons and interiors can be produced with the Pocket Cameras, but it is impossible to go into the subject properly within the limits of this little book. Those who desire to perfect themselves in portraiture are advised to purchase a copy of Lea's *Manual of Photography*, which contains very full and explicit instructions with diagrams and cuts of everything necestary, besides being a general reference book upon all branches of photographic information, apparatus, etc., etc.

A few general remarks, however, may be in place.

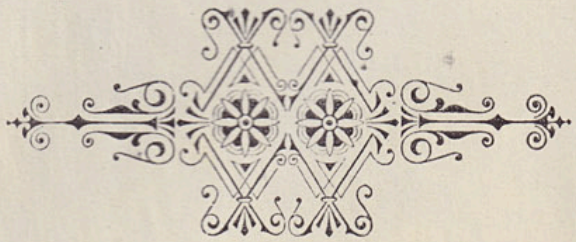
Light.—1st. Horizontal rays coming directly from the front produce *flatness.*

2d. Light from above exaggerates all the features.

3d. Horizontal rays from one side are very unsatisfactory, producing a pinched and forlorn expression of face.

4th. Light coming from the front upper side is generally the most desirable, and a studio should be so constructed as to enable these lights to be readily obtained; always bearing in mind that different subjects require different lights, and that the character of the light is constantly changing from hour to hour, and the facilities for compensating easily and effectively for these changes must be at hand.

Exposure and Development.—The same general rules regarding exposure and development apply to portraiture as previously given in the instruction on landscape photography.



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APPENDIX

INSTRUCTIONS FOR USING

WALKER'S POCKET CAMERAS.

The year 1881 ends with several hundred instruments in the hands of amateurs, most of whom were entirely ignorant of apparatus or processes. Some have not met with success, but we have yet to hear of a single instance of utter failure, while by far the larger number have persevered and conquered by a patient and mechanical following of the instructions.

The accompanying suggestions are the result of inquiries, and are believed to make more clear some "foggy" points. Please cut the slips apart upon the dividing lines, and paste each one upon the margin of the page coinciding with the number given.

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Slides.—Consider that portion beginning with "*never open this chamber*," etc., as not written, and proceed as follows: Remove the slide, and if the slightest ray of light can be seen through the slide opening, remove the cap covering the shutter cell by inserting the blade of a pocket knife under its projecting head. You will find this cap attached to a silk brush, and, as you draw it slowly from its cell, observe that its fibres are *opposed to the incoming slide*. It is obvious that the angle at which the brush or shutter is inserted determines the amount of fibre to be broken down by the incoming slide, and, as it is desirable that friction upon the slide be as little as possible, oppose no more fibre to the incoming slide than absolutely necessary to exclude all light from without.

If the brush is broken down and matted, rub your finger over it briskly until its fibres stand more erect.

Never go into your dark room to place plates in your Holder until you are *sure* your shutters are light tight. This is the only Holder made having a removable shutter: it requires but a moment to adjust it, and there is no excuse for a fogged plate, caused by a broken shutter.

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Order.—Contamination by mixture of hypo with developer is so easy and fatal to development that the greatest caution must be taken against it. *Have a place for your hypo dish and another place for your developing pans*, and instead of moving your pans to the light, move the light to the pans.

18

Old Developer may be used repeatedly, if kept in a corked bottle in the dark. It is, in fact, preferable to the freshly prepared; but if it should fail to fully develop the image, resort must be had to a fresh preparation.

To Make Lantern Slides or Positives upon Glass.—Go into the dark room, and there place the film side of a negative in contact with the film side of a clean dry plate, tying or strapping the plates together with string or elastic bands over that portion of the negative covered by the ledges of the plate holder. Now place the two plates in a shallow box, *negative uppermost*. Cover the box, and expose to gas or ~~benzine~~ light ~~fifteen~~ seconds, by removing the cover of the box. Develop exactly as if it were a negative.

Caution.—*The plates must not slip or slide upon each other. Beware of shadows cast by the sides of the box.*

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Exposure.—Instead of exposing four plates as directed, proceed as follows with *one* plate: Draw the slide but one inch, and expose by removing the hood and replacing it *as quickly as possible*. Now draw the slide one inch more, and expose again exactly as before. Now draw the slide entirely from the holder and expose the third time as before, and proceed to develop the plate. It is evident you will have an exposure of three seconds for the first third, two seconds for the second third, and one second for the third or remaining part of the plate; and the simultaneous development of the three exposures cannot fail to clear up the mystery of exposure.

After exposure, ease away the nut of the tripod head. Instances are reported of the camera being wrenched from its socket during subsequent manipulations by neglect of this caution.

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Duration of Development.—The greatest errors made by beginners in Dry Plate work are *over-exposure* and *under-development*, and as the appearance of the plate during development always indicates the nature of the exposure, it is necessary to remember the significance of the phenomena, viz:

Over-Exposure—Upon the application of the developer the image flashes instantly into view, without any very distinct outlines, and then fades away into a smoky haze almost if not quite as quickly as it came. There is no hope for such a plate; intensification will not redeem it.

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Under-Exposure.—Image comes up very slowly, with strong contrasts between lights and shadows, but *no detail*, and may require hours to bring up any detail in the shadows; probably none will ever appear, although patience and change of developer will sometimes save a much coveted view.

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A Proper Exposure.—Image appears as stated, in *from ten to twenty seconds*, and while the contrast between light and shade is vigorous, the shades being brilliant pink, still, as the operation proceeds, infinite detail comes in the shadows. The instructions say: "*The development should be continued until all but the deepest shadows are well darkened, and by shadows is meant that portion of the plate which retains the yellow* (or pink) *tint the longest.*" The average beginner, fearing the destruction of his negative, checks this fading or darkening process too soon, at the expense of loss of detail and character; while if the process is continued until the image is almost entirely invisible, except in the deepest shadows, which will now be somewhat faded, a perfect negative will be the result. A plate thus fully developed may be left in the hypo fully one minute after the pink opacity has disappeared from the back, and be much improved by the long immersion.

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Toning.—The change from the brown or sepia tint to a metallic grey does not occur entirely in the bath, but comes after drying in the blotters. From three to five minutes in the hypo, prepared as directed, will be sufficient for fixing.