

13th Edition

**The Watkins
Meters
and
Methods.**

RIGHT EXPOSURE
AND DEVELOPMENT,
WATKINS SEES
TO THAT.

The Watkins Methods.

EXPOSURE.



THE Watkins Meters indicate the correct camera exposures to give under all conditions, the basis being an actual test of the light by the sensitive paper in the meter, this one test taking the place of the elaborate classification of time, of day, year, position of subject, and state of weather in other calculators.

Exposure depends on three influences—*Plate Speed, Light, Diaphragm*. The plate speed is given on our speed card. The light is tested by the sensitive paper in the meter, the number of seconds required to darken to tint being noted. The diaphragm (or stop used on the lens) is marked by the optician.

In the Watkins Meters a simple form of calculator estimates from these three influences the required exposure. All the meters are based on the same radical method with which the inventor practically created the modern exposure meter in 1890. The method is quite different from that of tables, and so-called meters, which make no actual light test, and which are only of assistance out of doors. The Watkins Meters indicate difficult indoor exposures with exactness and certainty.

TO TEST THE LIGHT.

Hold the meter to face *the source of the light which falls upon the subject, not to face the subject.*

The light which falls upon the worst lighted part of the subject in which detail is required in the negative is that to be tested.

W.D.
16°
175
BR

The Watkins Methods.

DEVELOPMENT.



ALMOST the whole power in development lies in regulating contrast between the tones, just as the whole science of exposure aims simply at securing a *difference* in light action for different tones.

Control is exercised by using a uniform developer, and continuing development for just the right time to give the right contrast in the print, a short time tending to softness, a long time

to vigour, or, in excess to hardness.

Different subjects do not often require development variations, as a standard time gives the amount of contrast seen by the eye, whether it is a large or a small range of contrast. **Time Development** is therefore adopted, and the time varies greatly according to the brand of Plate and the Temperature even when a constant developer is used.

There are two distinct Watkins Time Methods (Factorial and Thermo), which are quite separate, and must not be confused. The First is:—

THERMO- . . . DEVELOPMENT.

This originated with Hurter & Driffeld, and has been improved by Ferguson & Mees. In the Watkins Method the fact that different plates have different rates of development is allowed for by using different dilutions of the developer in accordance with a classification indicated on the Speed Card (this plan

The Watkins Methods.

is now used both for Time Developer as well as with the Time Thermometer). This makes the required variation for PLATE, the time being always the same at a given temperature.

The variation for TEMPERATURE is indicated by the scale against the mercury in the Time Thermometer. Variations for subject (not often required) are made by dilution or concentration of developer.

No dark room light is required, merely a darkened room.

The temperature scale of the Thermometer is adapted to certain developers only, and we do not undertake to test others for their coefficient, efficiency, or energy.

FACTORIAL . . DEVELOPMENT.

A Dark Room light is required. The developer is poured on and the number of seconds elapsing before the first trace of image appears is noted. This "time of appearance" makes full allowance for both brand of plate and temperature, and dilution of developer, and multiplied by a fixed number (called the Watkins Factor, *which varies for different developers*) gives the total time of development for a standard contrast.

For details see the Watkins Manual.

Practically it is the exposure which decides the density of the negative, and development is timed so as to secure truthful gradation in the print, this is the end aimed at by the Watkins system.

OUR BUSINESS.



THIS is unique. We do not sell general apparatus or appliances, only those embodying the methods of Mr. Watkins, all tending to accuracy and simplicity in Photography. Many of these instruments are new creations, not merely new patterns. We now make almost all we sell in our own Factory.

Prices are so low that we must ask for postage in addition to list prices, and for stamp for reply to be enclosed with enquiries concerning methods.

Our only way of giving speed information is by the rd. Speed Card.

Although our Instruction Books embody a large mass of expert trials, these were made for clients collectively, and we undertake no expert tests or trials (plates or developers) for individuals.

WHAT TO BUY.

The Meter is the main thing, the Bee in most cases (substituting Queen Bee or Stop-Watch Meter if luxurious, and adding extra dials for special purposes, if required) or the Focal Plane Meter if a hand camera only is used. The Manual is almost indispensable, and then comes the Time Thermometer. Few outdoor workers will omit Exposure Notes, and the Dark-Room Clock is a thoroughly useful and comfortable—not faddy—working instrument.

A cheap and comprehensive outfit for all our methods is the Bee Meter, Thermometer, Manual and Exposure Notes, for 6/6, post free.

Price List.

THE WATKINS METERS.



The Bee Meter

(PATENT)

2/6 By Post **2/7.**

**For all out-door and in-door
Camera Exposures.**

Complete in box with Speed Card, spare
Discs behind pad, short and full
instructions.

**Instruction
Booklets
can be had
in French,
German,
Spanish,
Russian,
Italian and
Swedish.**

The Bee Meter is a solidly made sound instrument which accurately tests the light, and its value must not be judged by its low price. It is far and away the most successful and widely used of all aids to exposure, and its sales increase every year in spite of the number of plate and developer makers cardboard calculators, which have about a week's life in the pocket for every year's life of a Bee. It helps in difficult cases, applies to *all* plates, and can be fitted with extra Dials for special uses at nominal cost. Solid white metal case with snap lid, Nickel plated, size 1½ inches.

INSTRUCTIONS: Grip front glass and back together, as in the illustration, and set the diaphragm against the plate speed. The exposure is then read against the light value as tested by the actinometer which is embodied in the instrument. To use it for copying or enlarging, tables are consulted.



The Bee Meter can be used with a **CHAIN PENDULUM** if desired (a useful aid in counting seconds).

1/- extra. By Post 1/1.

The Bee Meter is sent out with any Special Dial (in place of the regular one for F stops) without extra charge, Autochrome Dial excepted. See page 6. See also pages 7, 8 and 9 for other accessories or variations.

**Refill for
Bee Meter 6d.
Post Free 7d.**

Extra Dials

For BEE (and QUEEN BEE) METER.

Note revised price—all 6d. (post 1d.) including tint, instructions, and speed card, except Autochrome, Queen Bee and Stop-Watch dials which are 1/- (post 1d.).

Ordinary dial with whole tint (F stops).

U.S. dial marked with U.S. Nos. for Kodaks, &c.

$\frac{1}{4}$ Tint dial } F Nos. These calculate direct from
 $\frac{1}{16}$ Tint dial } their tints without multiplying by 4
 or 16. For interiors.

Autochrome dial, also for other colour plates, makes a special calculation, 1/- (post 1d.)



Special Dials

for the cheaper cameras with unmarked stops, one dial for each camera. We also can supply a dial for any camera with not more

than 3 stops if the stop values are furnished. All 6d. (post 1d.) including tint, instructions and speed card. At present in stock for:—

Nos. 1, 2, 2a, 3 and Stereo BROWNIE.

Nos. 2, 2a, 3 and 3a FOLDING BROWNIE.

Nos. 1 and 1a FOLDING POCKET KODAK, VEST POCKET KODAK.

Nos. 2 and 3 BULL'S EYE.

No. 3b QUICK FOCUS.

Nos. 1,000, 00A, 00B KLITO.

Nos. 2 $\frac{1}{2}$, 3 $\frac{1}{2}$, 3 $\frac{3}{4}$ BOX ENSIGN.

Nos. 2 $\frac{1}{4}$ A ENSIGN, 2 $\frac{1}{4}$ B FOLDING ENSIGN.

Also for the ENSIGNETTE.

All can be supplied for Queen Bee or Stop-Watch at 1/-, but only the ordinary and U.S. are ivoryine.

Instructions
in English,
French, or
German.

Autochrome Meter

3/= (Post 1d.)

This makes a special calculation, and is applicable to otherscreen colour plates. Its sales have increased enormously in all parts of the World, as it has proved itself to be the only exposure guide for these valuable but expensive plates.

The case is that of the Bee Meter, and their dials interchangeable.



Full Instructions.

Indoor Meter

2/6 (Post 1d.)

A new introduction for interior work, being fitted with a $\frac{1}{16}$ tint, and a dial calculating from it.

The Watkins Meter has 20 years reputation for interiors, and this embodies the most useful form. The case is that of the Bee Meter, and the dials interchangeable.



Compass Bee Meter

3/6 (Post 1d.)

This has a small compass in back lid.



Indicate
Exposures
up to 4000
second.

Focal Plane Meter

3/6 By Post 3/7.

A new Meter especially designed for Hand Camera work, the stops indicating against the shutter speeds.

It is especially fitted for use in SNAP-SHOT WORK, and therefore indicates half the exposure of the other meters.

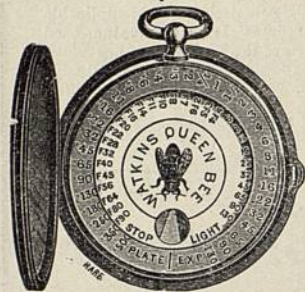
Its case is different to that of all other Meters, and, therefore, no other dials can be used in it, or its dial in any other case.



With
Instructions.

Instructions
in French,
German,
Spanish,
Italian, and
Swedish.

Queen Bee Meter 10/6



A refined hand finished edition of the Bee Meter, the figures being engraved (not stamped) on the case.

**For all out-door and in-door
camera exposures, one
movement only.**

Silver-Plated
Handsome Flat Ivory Dial.
Improved Inside Spring Plate Fitting.
In Neat Leather Covered Pocket Case.
Chain Pendulum for Seconds timing

For extra dials, tints, refills, &c., see Pages 6, 8 and 9.

Blue Glass.

This baffles any attempt to make a colour match, and is therefore an improvement with many users. All dials can be supplied in blue glass at an EXTRA cost of 3d. (additional to cost in white glass).

All Meters can be supplied fitted with blue glass at an EXTRA cost of 3d. above the price of the Meter.

Far superior
to all other
Meter Paper.

DISC REFILLS

(Fit all Watkins Watch Shaped Meters)

6d. (Post 1d.)

A "whole tint" on mask ready for the Meter is enclosed in each refill, but a $\frac{1}{4}$ or $\frac{1}{16}$ tint, or one of the varied openings described on Page 5, can be substituted without extra charge.

RIBBON REFILLS

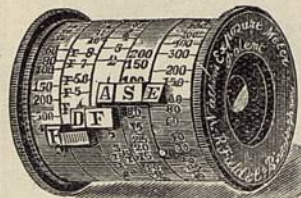
6d. (Post 1d.)

This STEADFAST Paper contains no soluble salt, and is most satisfactory.

Figures
are all
Engraved,
not stamped.

Standard Meter 15/=

**With Full Instructions
and Speed Card.**



Provided with the subject and enlarging scales, which do not obtrude themselves when not wanted.

The only instrument made which is *absolutely complete for all problems, especially copying and enlarging without reference to Tables.*

Provided with a Pendulum.

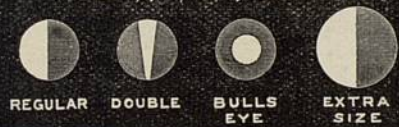
The ribbon of sensitive paper in this lasts longer without changing than disc refills.

INSTRUCTIONS (for all ordinary subjects): Set Pointer P to plate speed, D to the diaphragm. A to the light value and E will indicate the exposure.

Standard Meter in Magnalium, £1 1s.

Post Abroad, 1/- extra.

WATKINS TINT OPENINGS WITH EITHER WHOLE, $\frac{1}{4}$, OR $\frac{1}{16}$ TINTS



We now send out all Meters with a single "whole tint" only—a half circle of tint and a half circle opening. 20 years experience convinces us that this is not only better than having 2 tints in sight, but is better than a "bull's eye" opening. The above block shows the "regular" tint, and also the other shapes which we are always willing to send to order, either with Meter, Dial, or Refill, without extra charge over stock pattern. The $\frac{1}{4}$ and $\frac{1}{16}$ tints are best carried on a separate Dial, and the leather Exposure Note Wallet will carry these. In the Standard Meter (above) the $\frac{1}{4}$ tint is provided on the back of the whole tint, the mask is reversible and only one type of opening (regular) is applicable.

**Tints only
either
pattern
1½d.
post free).**

**The Triple
Tint is
withdrawn.**



THE Watkins Time Thermometer.

(Patent).

Temp. Coeff. 1-9.

**Indispensible for Tank
Development.**

No dark room light required.

**Right for Kodak Film Tanks
and Developer.**

2/6 Post Free 2/7.

The time to develop is read directly from the height of the mercury without calculation or adjustment of any kind, the time for 60° being fixed at 6½ minutes. The other scale reading longer times for tank development.

The strength of developer is adjusted (once for all) to make the standard time right for the particular plate, and for the user's choice of contrast in negative.

The Thermometer thus allows for temperature variations, and the dilution of developer for plate variations.

Either one of at least seven different developers (formulae are given for two) can be used, and a table of dilutions is given for each.

CAN BE USED WITH

Pyro Soda, Metol Quinol (formulae given),

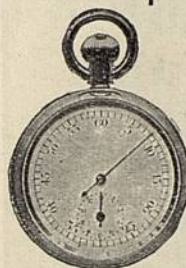
Rodinal, Certinal, Azol, Victol.

Special Time Thermometer for "Autochromes"
(set at 2½ mins. at 60°.)

"	"	"	for "Rodinal."
"	"	"	for "Rytol."
"	"	"	for "Kodol."

Price 2/6 each.

Stop-Watch Meter. 35/=



A Swiss made, fly back, centre seconds time recorder, with a Queen Bee Meter cleverly fitted in the back. The hands of the Watch (both seconds and minutes) start from zero at first pressure of the button, stop at the second, and fly back to zero at the third. The exact time can therefore be taken by pressure of the button as soon as the Meter has darkened to its tint; the Meter being perfect both for out-door and interior use.

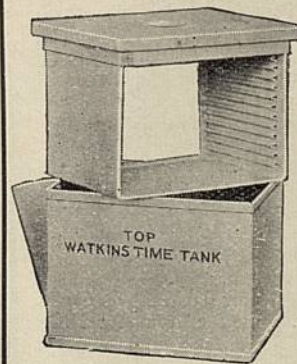
Stock pattern with Bee scales (down to 1/100th and F/4) also can be had with Focal Plane scales at same price.

The flat dials are interchangeable with Queen Bee.

We were the first to make a Stop-Watch Meter, and the present improved pattern with flat scales is the result of two years experience using them. Nickel-plated.

New Time Tank

(See next page).



See previous page for Illustration.

Daylight Time Tank



Now made in our own Factory, and vastly improved on the earlier cheap zinc pattern. In heavy German silver, nickel plated. Specially designed for use with a Thermometer. It is in two solid parts, and has no caps, chains, catches, taps, rubber bands, wires or movable fittings. A special method of guiding plates into grooves. In present pattern the top lid is turned over, and the light trap at spout is new. The washing inlet is trapped.

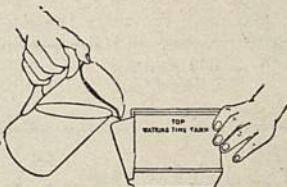
Since we revised instructions for pouring in developer (tilting tank sideways), air bells do not occur.

The plates are horizontal, so a small number can be developed with less than a tankful of developer. It is for daylight use and holds 12 plates.

**FOR
PLATES
NOT
FILMS.**

**NO
DARK
ROOM
LIGHT
REQUIRED,
BUT
DARKENED
ROOM
TO PUT
IN PLATES.**

**Can be
used
in
Daylight.**



**Fitted
with
Inlet
for
Washing.**

Any tank can be furnished (to order) with a lid and rack for any smaller size, the cost of lid and rack being one-half the full price of the complete tank. But it is preferable (on account of quantity of developer used) to get a complete small tank, and we now make a separate size of body for each size of plate (as per list below).

$1\frac{3}{4} \times 2\frac{1}{8}$	9/-	$\frac{1}{2}$ plate	14/-
$\frac{1}{4}$ plate	9/-	$8\frac{1}{2} \times 6\frac{1}{2}$	18/-
$3\frac{1}{4} \times 3\frac{1}{4}$	9/-	9×12 cm	12/-
$3\frac{1}{2} \times 2\frac{1}{2}$	9/-	10×15 cm	14/-
5×4	12/-	13×18 cm	16/-
$5\frac{1}{2} \times 3\frac{1}{4}$	14/-	45×107 mm	9/-
$5\frac{1}{2} \times 3\frac{1}{2}$	14/-		

Postage 5d. extra.

German silver sheaths for flat films, 4/6 per doz., $\frac{1}{4}$ plate. No use for Premo or N.C. films.



**Instructions
in English
or German.**

Large Dial. Centre Seconds. Stop Action.

10/6 with Full Instructions.

THE WATKINS

Dark-Room Clock



With 4 inch dial, minute and seconds divisions very plain for dark room, centre seconds hand, stop action, and outside indicator to mark the completed time.

The 10 minute dial, giving large minute divisions, so convenient for time of development, is retained. The figures also indicate the seconds, 1 being 10 seconds, 2, 20 seconds, &c. The stop action enables both minute and second hand to be stopped at 0. Started on pouring on developer by pressing the lever, and stopped for an instant to read the time of appearance in seconds.

Available for ANY TIMING PURPOSES, such as developing machine, enlarging, sensitising, &c. The hands are black and very plainly distinguished in dark room.

Watkins Clock.

Usual Clock.



**This Shows
2 $\frac{1}{2}$
Minutes.**



For use with watch or dark room clock

THE WATKINS

Factorial Calculator

**In Solid
Aluminium.**

2/= By Post 2/1.



**Instructions
in English
or German.**

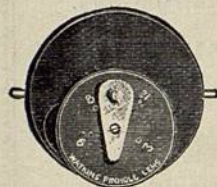
For calculating time of development by the Watkins Factorial method, in connection with Watkins Dark-Room Clock, or any other clock or watch, raised figures on silvery matt surface easily read in dark room.

FULL INSTRUCTION Booklet included.

Pinhole "Lens"

With Four Holes

5/- Post Free **5/1.**



Complete
with
Instructions
in English
or German.

Instantly fits any lens flange. Gives Artistic Texture.
Pleasing effects. Any angle of view.
Absolute Simplicity. No focussing.
For all size plates. Good for copying.
Simple exposure calculation. Works at any focus.

The 5/- Pinhole Lens has four pinholes (W.P. 6, 8, 10 and 12) and larger focussing hole on revolving plate.

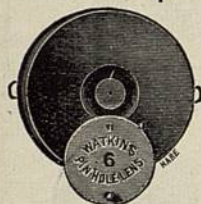
An extra charge made for different selection of holes.

The W.P. number is marked, and this multiplied by the focal distance gives the diaphragm value. Thus No. 6 at 8 inches would be $F/48$, and if the exposure is calculated with this stop by the BEE METER and the calculated time is given in MINUTES instead of seconds it will be right. It can be used for wide or narrow angle views on the same size plate.

Pinhole "Lens"

With One Hole

1/6 Post Free **1/7.**



Complete
with
Instructions
in English
or German.

The W.P. number marked on the stock size is No. 6.

Other size apertures (W.P. 8, 10, 12) to order, state focus wanted, enclose stamp if reply wanted, or two stamps for Booklet with full particulars.

WATKINS

Thermo-Calculator

(PATENT)

This is a laboratory calculating instrument, for calculating variations of time for temperature with ANY DEVELOPER of which the temperature co-efficient is known, or for calculating a temperature co-efficient from trials. The circular calculating disc is 4 inches diameter. Adjustable to any temperature co-efficient.

Supplied either with Fahrenheit or Centigrade scales.

Price in brass, all figures engraved, **25/-**

The Watkins Manual

1/- By Post **1/2.**

Fifth Edition. 50th Thousand.

Revised for Thermo Development.

A complete Handbook of Exposure by Actinometer and Time Development.

THE BOOK THAT HELPS.

"I find when I lend your Manual people never return it"—REV. J. A. RIVINGTON.

"The most instructive and clear I have ever read."—G. W. BAILLY, JR.

"A real treat, such as I have not enjoyed since Robinson's *Pictorial Photography* years ago,—full not of vain repetitions but of Common sense, basing its system on an idea which is worked out logically and practically."—"WOLBOROUGH," in *English Mechanic*.

"I bought 2 or 3 Elementary Books, studied them hard, with the result that I could get nothing satisfying about exactitude of exposure and development. I bought your Manual and exposed and developed four very good negatives—my first practical attempt. There's method in it, that's the whole secret of it."—THOS. PERRANS.

NEW CHEAP FORM.

In Stout Paper Covers. Seventh Edition.

Exposure Notes

Price **3d.**, By Post **3½d.**

A neat pocket book, containing practicable ruled pages for noting down exposures and development. With classified pages for other notes, and all tables, &c. for the Watkins Methods.

NOT AN ANNUAL.

Designed either for use by itself, or as a refill for the new leather wallet.

Pigskin Wallet

Price **2/-**, or with Exposure Notes **2/3.**

Very best long wearing quality, far superior to most shop leather goods. Loop with pencil, pockets for speed card, extra dials, &c. Sewn, not paste down.

Official
Testimony.

SOUTH POLE.

June, 1910.

"Your meters having served me so well in so many lands, I have decided that each sledging party on the Expedition shall have one, in the use of which I will instruct them."

Dec., 1912.

"Your exposure meters proved as reliable in the Antarctic regions as they have always been. In the extremely puzzling light of the Polar regions I should have been quite nonplussed at times without them. I have brought back many hundreds of negatives, the correct exposure of which they were the means of indicating."

H. G. PONTING

(Photographer in Captain Scott's Expedition).

The
Mawson
Expedition
also
equipped
with them.

Photography

Its Principles & Applications

(Westminster Series)

BY

Alfred Watkins, F.R.P.S.

"This is just what we wanted from Mr. Watkins, not a résumé of the thoughts and experiences of other people, but his own opinions, for there are few photographers of experience who will not be of opinion that the conclusions and experiences of Mr. Watkins are worth a library of compiled text-books."—*Morning Post*.

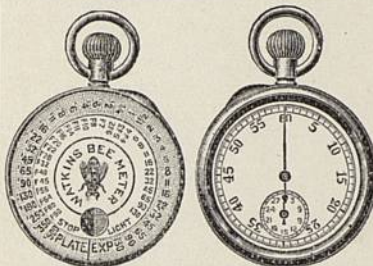
(We can only supply these to retail customers, and must refer the trade to the Publishers, Messrs. Constable, London.)

Fully
Illustrated,
6/- net,
post free 6/5.

With SCOTT AT THE SOUTH POLE

RECENT IMPROVEMENTS.

We were first to issue this type, it is now perfected, and is the thinnest made. Can be had with Focal Plane Scales.



Stop=Watch
Meter

35/-

Nickel Plated.

A specially designed Meter for the use of moving Picture Photographers.

Kinematograph
Meter = = 5/-

With instruction booklet giving speed of shutter, and pendulum for timing seconds and half-seconds. Tells what stop to use for the light. Dial not applicable to Bee Meter.



Identical with previous Autochrome Meter, but for all colour and panchromatic plates.



Colour Plate
Meter = 3/-

The Dial (applicable to Bee Meter Case) 1/-.
Instruction Booklet re-written.

Postage of above, 1d.

WATKINS METER CO., HEREFORD.

Testimony—continued.

"I bought one of your Bee Meters in January, 1903, and have been using it ever since and find it invaluable."—D.G.B. (April, 1911).

"The exposures given and taken from your card for . . . and . . . plates were correct, although they gave your numbers as 25 per cent above their H. & D."—J.T.R.

"May I add my testimony to the great assistance I have received from the Manual and Meter. I have been at photography since the age of 13, and on looking through the negatives taken before I had your instrument (that is for 14 years) I cannot find one even approximately correctly exposed."—W.J.C.

"Since using your Dark Room Clock, Developer, and Meter I have not lost a single plate."—P.J.W.

"I am so pleased with your $\frac{1}{2}$ -plate tank, I would like one for $\frac{1}{2}$ -plate."—Mrs. W. A. P.

"I am delighted with the Manual in its new form. You call it a beginners' hand-book, I should call it *the book* for photographers, for I know of no other in existence which gives so clearly and so accurately the very latest information as to the scientific basis on which negative making depends."

—W.B.F. (K.C. and F.R.P.S.).

"I am very pleased with the $3\frac{1}{2} \times 2\frac{1}{2}$ tank, it is a beautifully made article and very simple and effective in use."—A.L.

"I have shown my meter and results I have obtained with it to my friends, who found them so satisfactory that they requested me to procure similar ones. In about 18 to 20 exposures, varying from 2 seconds to 14 minutes, I have not lost one plate."

—W.C. (Nice).

"The $\frac{1}{2}$ -plate tank is far and away ahead of the many tanks now on the market. I am delighted with it."—S.F.S.R. (Commander H.M.S. —).

The Progress Medal

Of the Royal Photographic Society
for 1910 has been awarded to Mr.
Alfred Watkins for his work on

Exposure and Development.