

INTERESTING EXPERIMENTS YOU CAN PERFORM WITH THE WESTON PHOTRONIC RELAY

Exp. #1.

SUNRISE ALARM

A PHOTO-ELECTRICALLY OPERATED BELL TO INTERRUPT SLEEP

An alarm which will ring exactly at sunrise on clear days may be easily constructed with the Weston Type 1 Photronic Relay, and provides an interesting and entertaining example of the real usefulness of the Photronic Cell.

Inserted in a UX radio tube socket the Cell itself should be placed near a window exposed directly to the morning sun unshaded at sunrise by trees or buildings while the relays may be located in any convenient position. The small (plus) prong must be connected to terminal #3 of the Miniature Relay and the larger prong goes to terminal #1. Studs 2 and 3 should be connected to the coil of the Power Relay in series with a 4-1/2 volt radio "C" battery as shown in the diagram. All Power Relay terminals can be reached by unscrewing the fiber disc underneath them, and if there is any doubt

as to which are which, the Relay may be opened by removing the round black cover and the connections then traced out. One side of the alarm circuit goes to the Power Relay arm and to the contact point which is closed when the coil is energized. If an ordinary door bell is used, a couple of dry cells will serve for power.

Adjustment of the Miniature Relay should be made at some time in the fairly early morning when the sun is still shining in the window selected. With the light full on the Photronic Cell, the screw in the face of the Miniature Relay should be turned to the right until the little arm makes firm contact with the point. If connections have been made correctly the bell will ring. When the hand or some other object is placed in front of the Cell, the contact should open and silence the bell. If the results are not per-

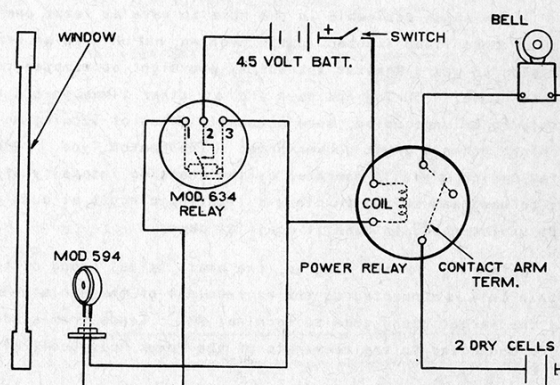
Exp. #1

SUNRISE ALARM

A PHOTO-ELECTRICALLY OPERATED BELL TO INTERRUPT SLEEP

fect after the first trial further adjustment should be made until satisfactory operation has been obtained. A distinct click from the Power Relay indicates that all of the connections from the Cell to the coil are correct. If this click is heard and the bell fails to ring, the fault lies somewhere between the Power Relay output and the bell itself. For shutting off the apparatus when not in use a switch may be provided in the "C" battery circuit or else a box or hood may be placed over the Photronic Cell to exclude the light.

After sunset the device should be placed in readiness with the Cell at the window facing East and in the morning, when the first rays of the sun appear the alarm will ring and will continue until it is shut off by hand.



SETTING SUN CAUSES PHOTO-ELECTRIC CELL TO TRIP RELAY & LIGHT LAMP

It is often desirable in the home to have at least one living room or porch lamp lighted in the evening, not only as an ornament but also to guard against intruders, who might be tempted to enter a dark house. During holidays and at other times when a home is likely to be unoccupied, some automatic means of turning on a lamp at night forms a great convenience. The Weston Type 1 Photronic Relay which is really operated by the changing intensity of light may be used as a switch to close a lighting circuit at dusk and if left undisturbed, to open it again at dawn.

Referring to the diagram, the small (plus) prong of the Photronic Cell is connected to the #1 terminal of the Miniature Relay, and the larger prong goes to terminal #3. Leads from studs 2 and 3 are connected to the terminals of the Power Relay coil with a 4½

volt "C" battery in series as shown. One side of the lamp circuit, which should not exceed 100 watts, is in series with the Power Relay arm and the contact point which remains on closed circuit when the coil is not energized. The inside of this relay may be reached by unscrewing the two small thumb nuts and lifting off the round black cover. Access to the terminals is obtained simply by removing the fiber disc which forms the base of the relay.

The Photronic Cell should be placed where it will receive a maximum amount of light preferably near a window normally exposed to the sun or at least to the open sky. The relatively large output obtained by placing it thus, assures the reliable operation of the relays, which may be grouped in any convenient location near the cell or at some distance if preferred.

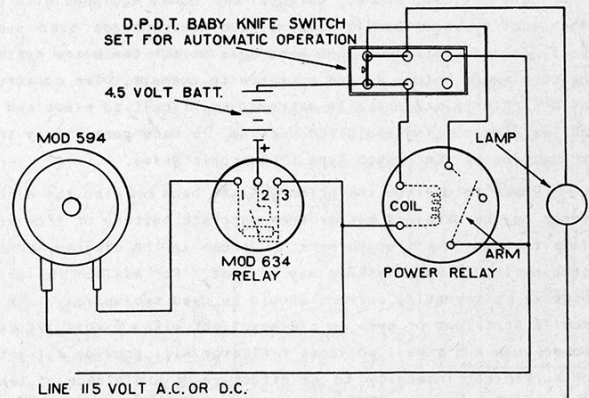
Exp. #2

AN AUTOMATIC, LIGHT-OPERATED SWITCH

SETTING SUN CAUSES PHOTO-ELECTRIC CELL TO TRIP RELAY & LIGHT LAMP

After the proper connections have been made and as soon as the room in question is sufficiently dim to warrant the use of artificial light, the Weston Photronic Relay may be set for automatic operation. With the line voltage (not over 120 volts) on, carefully adjust the screw in the face of the sensitive relay until the small arm just makes contact and the lamp lights. A soft but distinct, click from the Power Relay is positive indication that good contact has been made and should this occur without the lighting of the lamp, it is evident that the fault lies somewhere between the output connections of the Power Relay and the lamp itself rather than between the Power Relay and the Photronic Cell.

Of course, the lamp may be cut out of the circuit at any time and worked independently of the relay system by means of the throw-over switch indicated on the diagram, and the automatic feature may be used only when required.



Exp #3

A LIGHT-SENSITIVE BURGLAR ALARM

LIGHT BEAM ON PHOTO-ELECTRIC CELL SERVES AS PROTECTION FOR VALUABLES

Many offices, stores, garages and homes equipped with one of the usual types of burglar alarms have nevertheless been successfully looted by thieves, who were able to put the alarm system out of commission before it had a chance to operate. The construction of a burglar alarm which is extremely difficult to elude and which defies wire-cutting and disconnecting is made possible by the introduction of the Weston Type 1 Photronic Relay.

Power to operate the primary light beam and also the alarm devices may be obtained either from storage battery or from an A.C. line through toy transformers as shown in the diagram, or else a combination of both methods may be used. For maximum reliability however, alternating current should be used exclusively. An automobile spotlight or even an old headlight with a 6 volt, 21 candle-power bulb and a well polished reflector will provide a light beam of sufficient intensity to be effective at a distance of ten feet from the Photronic Cell. It would also be a good plan to furnish a cylindrical hood projecting a few inches from the rim of this

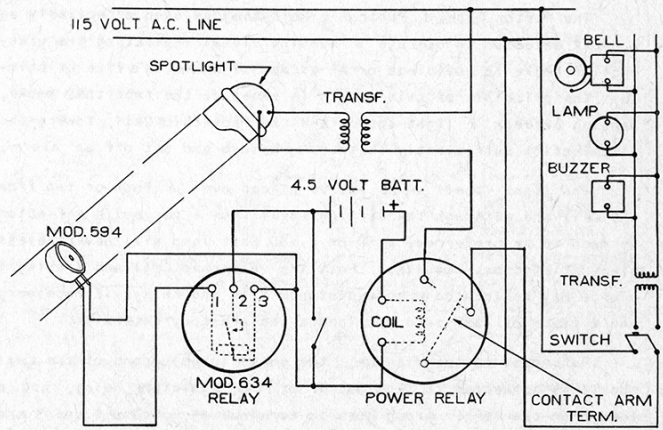
light to prevent the rays from spreading over too great an area. If the spotlight is mounted rather high up on a wall with the Cell supported on or near the floor, so that the rays travel diagonally downward in front of the object to be protected, such as a safe, it will take an unusually clever burglar to avoid disturbing the system at some point thus setting off the alarm. Buzzers, bells and lamps may be used for signals in any combination not exceeding 100 watts and the more of these devices that are arranged in parallel the greater will be the security of the entire system.

As shown by the diagrams, the small (plus) prong of the Photronic Cell is connected to terminal #3 of the Miniature Relay and the larger prong goes to terminal #1. Studs 2 and 3, connected to a short-circuiting switch, lead to the coil terminals of the Power Relay with 4-1/2 volts (3 dry cells) in series as shown. The Power Relay contact arm is connected to one side of both the alarm and the spotlight circuits. The other side of the alarm circuit goes to the "open coil" contact, and the spotlight wiring is completed

LIGHT BEAM ON PHOTO-ELECTRIC CELL SERVES AS PROTECTION FOR VALUABLES

through the "closed coil" contact It is apparent that as long as the power relay coil remains de-energized, the alarm will operate. A switch should be provided to shut it off when desired.

With the alarm switch open, the coil may be energized by means of the short-circuiting switch and the spotlight will be illuminated. The screw in the face of the Miniature Relay should be turned until the contact arm makes firm contact while the light shines on the Cell and yet opens completely when the beam is interrupted. The short-circuiting switch may then be opened and the alarm switch closed. Any interruption of the light will immediately set off the system and cutting of one or more wires between the Cell and Power Relay will produce the same effect. The short-circuiting switch must be effectively concealed and the terminals of the Sensitive Relay should be enclosed to prevent accidental or maliciously intentional operation of the alarm. The output leads to the various signals should also be well protected. By having several such signals, the possibility of the failure of one is rendered unimportant.



HOME CONSTRUCTED PHOTO-ELECTRIC DEVICE ANNOUNCES THE PRESENCE OF EXCESS SMOKE

The Weston Type 1 Photronic Relay may be used effectively as a smoke detector to operate a warning signal indicating the presence of smoke in buildings or an excess of smoke in a flue or chimney. The principle of this device is based on the fact that smoke passing between a light source and the Photronic Cell lowers the illumination sufficiently to trip the relays and set off an alarm.

The light itself need not be placed over a foot or two from the Cell and although the straight beam from a parabolic reflector is much to be preferred, a 60 or a 100 watt lamp will nevertheless give satisfactory results. Both the Photronic Cell and the light source may be located at some distance from the relays if necessary and a piece of lamp cord provides a satisfactory extension.

Referring to the diagram, the small (plus) prong of the Cell should be connected to terminal #1 of the Miniature Relay and a lead from the larger prong goes to terminal #3. Studs 2 and 3 are

connected to the Power relay coil, with a 4-1/2 volt "C" battery in series as indicated. The power relay arm and the "closed coil" contact point form part of the output circuit, and any kind of alarm signal may be used, the total power of which does not exceed 100 watts at 120 volts.

After the apparatus is in place and with the light directed on the photronic cell, proper adjustment may be made by rotating the screw in the face of the Miniature Relay until a gap of about 1/64th of an inch remains between the small arm and contact point. When the light is extinguished or dimmed, the alarm should operate showing that the system has been wired correctly.

Any number of tests may be made by blowing tobacco smoke in front of the Cell and further adjusting the Miniature Relay until the greatest degree of response is obtained.

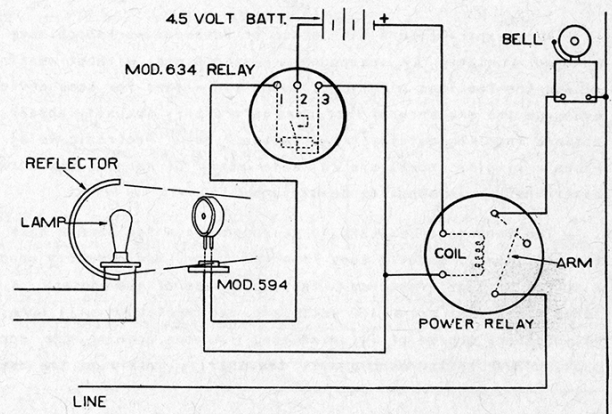
When using this equipment to detect excess smoke in flues and

HOME CONSTRUCTED PHOTO-ELECTRIC DEVICE ANNOUNCES THE PRESENCE OF EXCESS SMOKE

chimneys, it will be necessary to vary the light intensity and the relay adjustments until the maximum permissible smoke density is allowed to pass up the stack without tripping the alarm signal. The Cell should not be exposed directly to the hot gases in the chimney but should be protected from them by a small glass window.

If each of several parts of a building is equipped with a detector, it is a good plan to mount the alarm signals on a central panel or annunciator board, from which the exact location of the smoke may be ascertained immediately.

Greater sensitivity may be obtained by the use of two convex lenses placed near the light source and the Photronic Cell respectively as shown. Since these lenses cause the light rays to converge, any smoke passing through the point of convergence will interrupt the light beam completely and insure positive operation of the Weston Photronic Relay.



A LIGHT-BEAM GUARD FOR WORKSHOP DOORWAYS
PHOTO-ELECTRIC CELL OPERATES ALARM TO ANNOUNCE VISITORS

Many experimenters with attic or basement workshops have been annoyed at times by unannounced visitors and, without wanting to injure the feelings of anyone have often wished for some device to announce the presence of intruders before they actually appear. Unnoticed from the outside the Weston Type 1 Photronic Relay provides a simple, novel and reliable means of warning the workshop owner that he is about to be disturbed.

The Photronic Cell should be supported a few inches back from the door jamb about 4 feet from the floor and directly opposite a source of light fastened to the other side of the doorway. A good sized flashlight or a 100 watt lamp and reflector will furnish a satisfactory degree of illumination. Anyone opening the door or passing over the threshold will necessarily interrupt the beam of

light and operate whatever signal has been included in the circuit. The relays and batteries may be located at any convenient distance from the Photronic Cell.

Connection should be made from the small (plus) prong of the Cell to the terminal #1 of the Miniature Relay, and from the larger prong to the terminal #3. Studs 2 and 3 are connected to the coil of the Power Relay in series with 4-1/2 volts ("C" battery or dry cells) as shown in the diagram. The alarm circuit includes the Power Relay arm and the "closed coil" contact point and power may be taken from the lighting line or from batteries depending upon the type of signal employed. Several signals may be connected in parallel provided the total load does not exceed 100 watts.

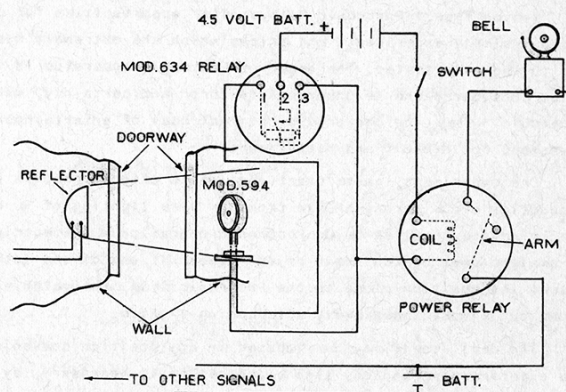
With the light beam turned off the screw in the face of the

A LIGHT-BEAM GUARD FOR WORKSHOP DOORWAYS
PHOTO-ELECTRIC CELL OPERATES ALARM TO ANNOUNCE VISITORS

Miniature Relay should be rotated until the small arm makes contact with the point. A distinct click from the Power Relay occurs when contact is made and also indicates that connections are correct between the Cell and the Relay itself. If this click is heard and the signal does not operate the fault lies somewhere beyond the output terminals of the Power Relay and may be due to a broken wire or a poor joint.

A switch should be placed in the 4-1/2 volt battery circuit in order to prevent needless drain on the dry cells when the apparatus is not in use. Another switch may also be placed in the signal circuit although this is not absolutely necessary.

The care and time spent in installing the Weston Photronic Relay will be repaid by the enjoyment and interest occasioned by its use.



CREATING A BREEZE BY LIGHTING A MATCH
FLAME HELD NEAR PHOTRONIC CELL SERVES TO OPERATE ELECTRIC FAN

Weston Type 1 Photronic Relays offer opportunities for carrying out simple experiments and tricks which are extremely mystifying to the uninitiated. The owner of Photronic apparatus is likely to be considered the neighborhood "wizard" and certainly with the Photronic Relay he can provide a great deal of entertainment and amusement for himself and his friends.

One experiment quite startling in its effect results in the production of a strong breeze from the mere lighting of a match, the principle involved being Photronic operation of an electric fan, or small blower of the "hair dryer" type. If one of the latter is placed in a position close to the Photronic Cell the match will be blown out almost immediately after being lighted.

The cell itself may be located in any position convenient to the experimenter and may also be concealed if necessary by books, ornaments or other objects. If the relays are hidden at some distance from the Cell a greater effect of mystery will be obtained.

Referring to the diagram, the small (plus) prong is connected to terminal #1 of the Miniature Relay and the larger prong goes to terminal #3. Studs 2 and 3 are connected to the Power Relay coil in series with 4-1/2 volts (3 dry cells or radio "C" battery) and this circuit also includes the arm and the "closed coil" contact of the Power Relay as shown. A single throw switch should be provided to by-pass the battery current around this contact while setting the apparatus in readiness for operation. Wiring or the fan is connected thru the arm and the "open coil" contact of the Power Relay, and consequently the fan motor will draw power from the line as long as the coil remains de-energized. If a toy motor and miniature blades are used, a transformer or batteries may be used.

With the by-pass switch closed, the screw in the face of the Miniature Relay should be rotated clockwise until contact is just made between the little arm and the point. A distinct click should be heard from the Power Relay and is an indication that connections are correct between the Photronic Cell and the coil. The by-pass

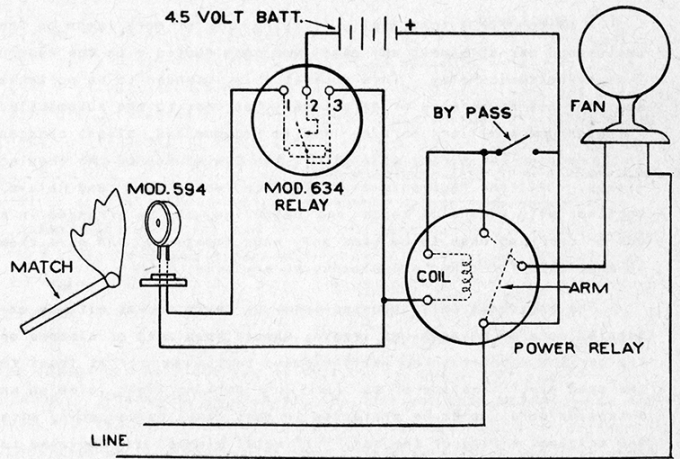
FLAME HELD NEAR PHOTRONIC CELL SERVES TO OPERATE ELECTRIC FAN

switch must then be opened and the coil should remain energized. If the Power Relay arm flies back to the "open coil" position, the battery may be below 4.5 volts or else there may be a poorly made, high resistance connection in one of the circuits. Since the output circuit is held open by the Power Relay the fan should not operate when it is first connected to the line.

If a lighted match, with the head still flaring, is brought within an inch or two of the Photronic Cell the relays will operate instantly and the fan will rotate. If the match head has burned out a few seconds will be required before a flame bright enough to be effective can be obtained.

Once the fan has been started, it will continue to run until the relays are reset which is accomplished by closing the by-pass switch until the Power Relay clicks, and then opening it again.

If as stated, a small blower is placed near the Cell, with the air blast parallel to its face, the match used to operate the relays will be blown out when the flare from its head has subsided.



PHOTRONIC SWITCH TURNS ON PARKING LIGHT OF UNATTENDED AUTO AT DUSK

A switch for automatically lighting one or more lamps on the unattended car at sunset may easily be constructed with the Weston Type Photronic Relay. This apparatus is intended to be portable and need not be screwed or permanently fastened to the automobile. Although an auxiliary parking lamp is recommended, slight changes in the regular car wiring will permit the use of any of the regular lights. All the Photronic equipment including Cell and Relays, together with extension cords and batteries, may be arranged in a box or carrying case to be used only when necessary and will thus be available for other experiments at any time.

The Photronic Cell mounted in a UX radio socket with an extension cord of any desired length, should be placed or clamped on the car in a position normally exposed to the sun or at least to the open sky. The use of an auxiliary parking lamp also on an extension cord is to be preferred in most cases to tampering with the original wiring of the car. If metal clamps are employed to

support the Cell and the light they should be suitably padded to prevent marring highly polished surfaces.

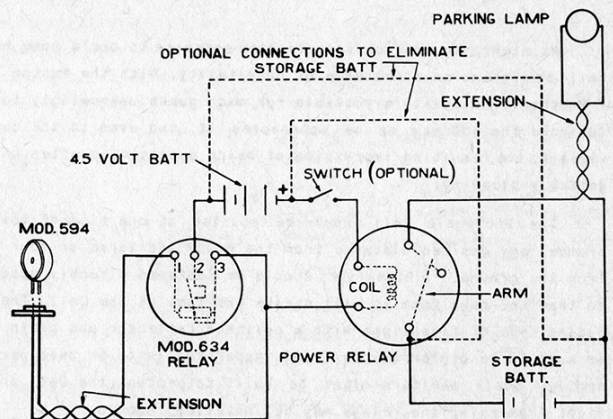
Referring to the diagram, the small (plus prong of the Photronic Cell is connected to terminal #1 of the Miniature Relay and the larger prong goes to terminal #3. Studs 2 and 3 are connected to the Power Relay coil in series with 4-1/2 volts (dry cells or radio "C" battery) as shown. The lamp circuit includes the Power Relay arm and the "closed coil" contact point, and current may be supplied either from the automobile storage battery or else from the dry cells which serve to energize the coil. In the latter case a bulb of small wattage should be used to minimize the drain on the dry cells.

After the proper connections have been made, the apparatus is ready for a trial adjustment. With the car in the garage and the light subdued to approximate conditions at dusk, the screw in the face of the Miniature Relay should be rotated clockwise until the

PHOTRONIC SWITCH TURNS ON PARKING LIGHT OF UNATTENDED AUTO AT DUSK

small arm just makes contact with the point. A distinct click from the Power Relay announces that contact has been made, and is also an indication that connections between the Relay and the Cell are correct. Under these circumstances, if the lamp fails to light the fault lies beyond the output terminals of the Power Relay. When the illumination is increased appreciably the lamp should go out and adjustment of the Miniature Relay should continue until satisfactory operation has been obtained.

If the car is to be left unattended into the evening, the Cell and the parking lamp should be mounted in their proper positions and before the sun has set, the Miniature Relay must be adjusted so that a gap of a little less than 1/64 of an inch exists between the arm and the contact point. The arrival of darkness will then cause the Photronic Cell to trip the relays and operate the parking lamp.



AN AUTOMATICALLY LIGHTED ENTRANCE PHOTRONIC RELAYS OPERATE WELCOMING LIGHT AS VISITORS APPROACH DOOR

At night, an attractively lighted entrance to one's home never fails to present an appearance of hospitality. With the Weston Type I Photronic Relay it is possible for each guest unknowingly to illuminate the doorway as he approaches it and even to the casual visitor, the resulting impression of being expected is often unforgettably pleasing.

The Photronic Cell should be mounted at one side of the entrance, any desired distance from the house and three or four feet from the ground. A flashlight should be fastened directly opposite so that the rays from it will strike the face of the Cell. The focusing type of flashlight with a polished reflector and plain lens is much to be preferred. If this apparatus is to be used permanently, small shelters might be built to protect the Cell and the light from rain; the relays may be installed indoors.

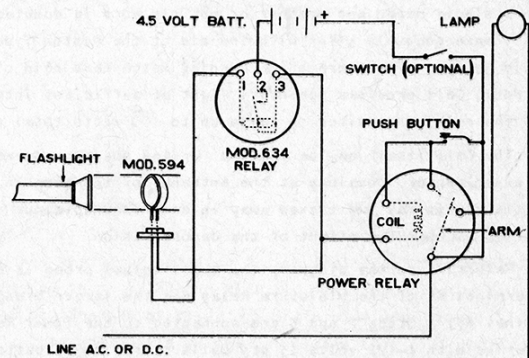
Referring to the diagram, the small (plus) prong of the Photronic Cell is connected to terminal #3 of the Miniature Relay and the larger prong goes to terminal #1. Studs 2 and 3 are connected to the Power Relay coil in series with 4-1/2 volts (3 dry cells or radio "C" battery), and this circuit also includes the arm and the "closed coil" contact of the Power Relay, as shown. An ordinary door-bell push-button should be used to by-pass the battery current around this contact when re-setting the relays. Wiring for the entrance light is connected through the arm and the "open coil" contact of the Power Relay, and consequently power will be taken from the line as long as the coil remains de-energized.

With the push-button blocked in the closed position, and the Cell exposed to the light beam, the screw in the face of the Miniature Relay should be rotated clockwise until contact is just made

AN AUTOMATICALLY LIGHTED ENTRANCE PHOTRONIC RELAYS OPERATE WELCOMING LIGHT AS VISITORS APPROACH DOOR

between the little arm and the point. A distinct click should be heard from the Power Relay and is an indication that connections are correct between the Photronic Cell and the coil. The push-button must then be released and the coil should remain energized. If the Power Relay arm flies back to "open coil" position, the battery may be below 6 volts or else there may be a poorly made, high resistance connection in one of the circuits. Since the output circuit is kept open by the Power Relay with the coil energized the entrance light should not operate when it is first put on the line.

When the flashlight beam is interrupted, as by someone walking through it, the relays will trip and the entrance will be illuminated. Pushing the button, which may be mounted inside near the door, puts out the light and resets the relays for the next visitor.



LIGHTING AN ENTIRE ROOM WITH ONE MATCH APPARENT IMPOSSIBILITY PERFORMED WITH PHOTRONIC CELL

The electrical experimenter with a whimsical turn of mind can offer to illuminate an entire room for an indefinite length of time with a single match and whether or not his word is doubted, he can easily make good his offer with the aid of the Weston Type I Photronic Relay. The flare of a burning match head held close to a Photronic Cell provides momentary light of sufficient intensity to trip the relay and switch on lamps up to 100 watts total power.

The Cell itself may be located in any position convenient to the experimenter, possibly at the entrance of the room in question and the relays may be tucked away in some inconspicuous place in order to heighten the effect of the demonstration.

Referring to the diagram, the small (plus) prong is connected to terminal #1 of the Miniature Relay and the larger prong goes to terminal #3. Studs 2 and 3 are connected to the Power Relay coil in series with 4-1/2 volts (3 dry cells or radio "C" battery) and this circuit also includes the arm and the "closed coil" contact

of the Power Relay as shown. A single throw switch should be provided to by-pass the battery current around this contact while setting the apparatus in readiness for operation. The lighting circuit is connected through the arm and the "open coil" contact of the Power Relay and consequently the lamps will draw power from the line as long as the coil remains de-energized.

When the by-pass, or short-circuiting switch is closed, the screw in the face of the Miniature Relay should be turned to the right until contact is just made between the little arm and point. A distinct click from the Power Relay announces that this contact has been made and is also an indication that connections are correct between the Photronic Cell and the coil. The by-pass switch must then be opened and the coil should remain energized. If the Power Relay arm flies back to the "open coil" position, the battery may be below 6 volts or else there may be a poorly made high resistance connection in one of the circuits. Since the output cir-

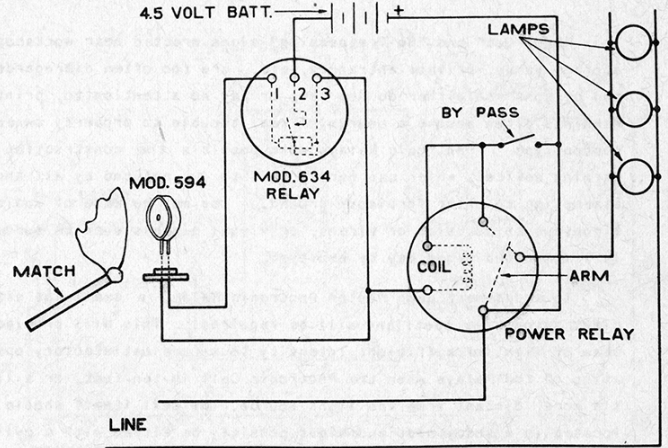
APPARENT IMPOSSIBILITY PERFORMED WITH PHOTRONIC CELL

cuit is held open by the Power Relay with the coil energized, the lamps should not light up when they are first put on the line

If a lighted match, with the head still flaring, is brought within an inch or two of the Photron Cell the relays will operate immediately and the lamps will go on. In case the match head has burned out a few seconds will be required before a flame bright enough to be effective can be obtained. Ordinary wooden, non-safety matches give the best results, but successful operation may be had even with paper book-matches.

Once the room is lighted it will continue so until the relays are reset which is accomplished by closing the by-pass switch until the Power Relay clicks, and then opening it again.

The process of automatically illuminating the room may be carried on over and over again and if the Photron Relay owner is in the habit of placing bets and has a number of skeptical friends he should be able to reap quite a harvest in a single evening.



PHOTRONIC CELL OPERATES SIREN BELL OR ILLUMINATED SIGN TO WARN TRESPASSERS

"Keep Out" and "No Trespassing" signs erected near workshops, storage yards, private entrances, etc are too often disregarded, and persons who either do not see or pay no attention to, printed warnings often become a source of real trouble to property owners. Weston Type 1 Photron Relays make possible the construction of warning devices, which can hardly fail to be noticed by all those attempting to enter forbidden ground. Use may be made of audible signals such as bells or sirens or visual signals such as suddenly illuminated signs may be employed.

To supplement each Weston Photron Relay, a small but efficient automobile spotlight will be required. This will provide a beam of light of sufficient intensity to secure satisfactory operation of the Relays when the Photron Cell is ten feet, or a little more, distant from the light source. The Cell itself should be located in a shady spot and might possibly be fitted with a cylindrical shield or visor to exclude any illumination tending to enter from the side.

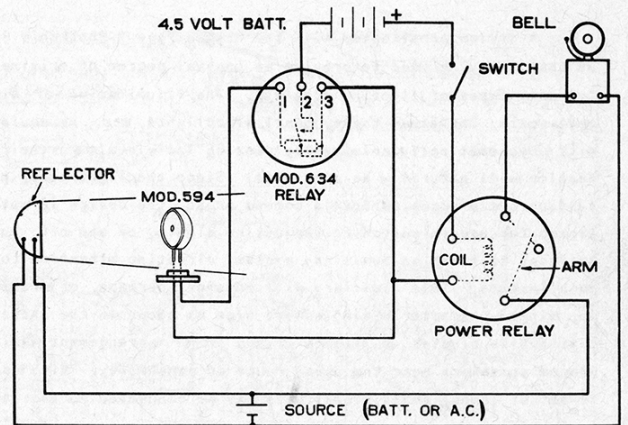
The small (plus) prong of the Photron Cell is connected to terminal #1 of the Miniature Relay and the larger prong goes to terminal #3. Studs 2 and 3 are connected to the Power Relay coil in series with a 4½ volt battery (3 dry cells or a radio "C" battery) as shown in the diagram. A single-throw switch may also be furnished to prevent drain on the batteries when the equipment is not in use. The signal circuit includes the Power Relay arm and the "closed coil" contact point and may be supplied with current from a 115 volt line or from storage batteries or dry cells depending on the type of alarm selected. The total power required to operate the warning signal must not exceed 100 watts, however.

With the spotlight turned off or the beam deflected from the Photron Cell the screw in the face of the Miniature Relay should

PHOTRONIC CELL OPERATES SIREN, BELL OR ILLUMINATED SIGN TO WARN TRESPASSERS

be turned to the right until contact is just made between the little arm and the point. A distinct click from the Power Relay announces the fact that good contact has been secured and also indicates that the connections between the Relay and the Photron Cell are correct. Under these conditions, the alarm should operate and if such is not the case the fault lies somewhere in the alarm circuit itself.

When the rays of the spotlight are directed on the Photron Cell the little arm of the Miniature Relay will move to the left and until the light beam is interrupted the relay and signal circuits will remain open. Persons or objects passing through the forbidden entrance will cast a shadow upon the Photron Cell, tripping the relays and causing the alarm signal to operate momentarily. If this signal is located directly at the entrance intruders cannot fail to notice it and be warned thereby.



A UNIQUE SIGN FLASHER

INTERRUPTED LIGHT BEAM ANIMATES ELECTRIC DISPLAYS

A device constructed with the Weston Type Photronic Relay as a basis may be used to provide an unusual degree of originality for many types of lighting displays. The illumination of signs, gate-posts, Christmas trees, small floodlights, etc. so equipped will be automatically animated by passing individuals and their attention will naturally be attracted. Since the light beam interruption cycle occupies only a second or so, the device is not intended for use in switching the entire display on and off, but is designed to flash an auxiliary system, directing attention to the main feature. This auxiliary will consist perhaps, of an emphatic, single-character or single-word sign as shown in the sketch, a distinctive cluster of lights or any other arrangement desired, placed somewhere near the usual route of passers-by. With a double set of lamps, small floodlights may be connected so that their

colors will change entirely.

The Photronic Cell and a spotlight with a concentrated beam should be located on opposite sides of whatever walk, entrance or passageway has been selected or installing the equipment. A distance of much more than ten or twelve feet between the Cell and the light source will reduce the general reliability of operation. The small (plus) prong of the Photronic Cell, inserted in a UX socket, is connected to terminal #1 of the Miniature Relay and the larger prong goes to terminal #3. Studs 2 and 3 should be connected to the coil terminals of the Power Relay in series with a 4 1/2 volt battery and a single-throw switch may also be furnished to prevent drain on this battery when not in use. The "flasher" circuit, which must not consume over 100 watts, includes the arm of the Power Relay and the "closed coil" contact point, and con-

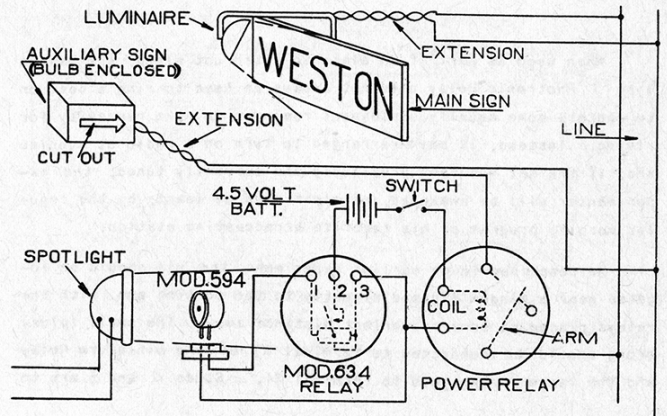
A UNIQUE SIGN FLASHER

INTERRUPTED LIGHT BEAM ANIMATES ELECTRIC DISPLAYS

nects directly to the lighting line.

With the spotlight turned off or deflected from the Photronic Cell the screw in the glass of the Miniature Relay should be rotated until good contact is made between the little arm and the point. A click from the Power Relay announces that contact has been made and indicates that the connections between the Power Relay and the Cell are correct.

With the rays of the spotlight directed on the Photronic Cell the arm of the Miniature Relay will move to the left keeping the circuit open until the beam is interrupted. Persons passing through the beam will unconsciously operate the relay, flashing the auxiliary signal almost in their faces and, of necessity, drawing their attention to the lighting display.



A SELF STARTING RADIO

NEED FOR ALARM CLOCK ELIMINATED WHEN PHOTRONIC CELL SWITCHES ON THE MORNING RADIO EXERCISES

When used as part of an alarm to interrupt sleep, the Weston Type I Photronic Relay need not always be used to ring a bell or to operate some equally unpleasant reminder of the necessity for rising. Instead, it may be arranged to turn on a radio at sunrise and, if the set has been previously and correctly tuned, the experimenter will be awakened, on clear days at least, by the regular morning program of his favorite broadcasting station.

As described in an earlier experiment the Cell should be located near a window exposed directly to the morning sun, with the relays placed at some convenient distance away. The small (plus) prong should be connected to terminal #3 of the Miniature Relay and the larger prong goes to terminal #1. Studs 2 and 3 are to

be connected to the coil of the Power Relay in series with a 4 1/2 volt radio "C" battery. One side of the A.C. line or "A" battery circuit goes to the Power Relay arm and to the "Closed coil" contact point and may be connected thus without disturbing the interior of the set in any way.

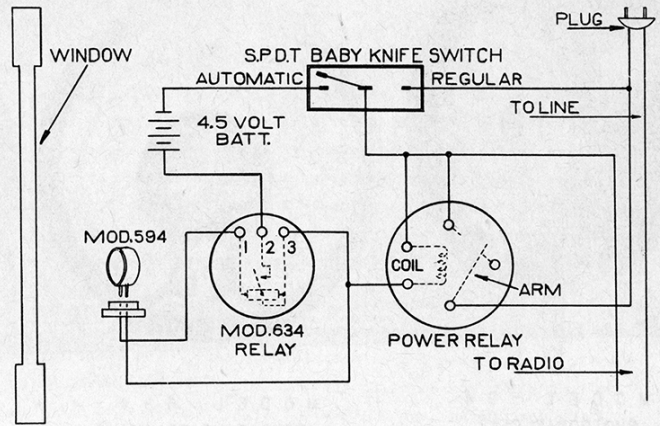
Adjustment should be made with the early morning sun shining on the Photronic Cell and when all connections have been made according to the diagram, the screw in the face of the Miniature Relay should be rotated until the little arm makes contact with the point. When this occurs, a distinct click should be heard from the Power Relay and the radio tubes should light. If the click is heard without any response from the radio, the fault lies some-

A SELF STARTING RADIO
 NEED FOR ALARM CLOCK ELIMINATED WHEN PHOTRONIC CELL SWITCHES
 ON THE MORNING RADIO EXERCISES

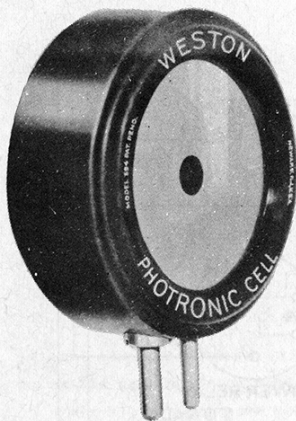
where between the Power Relay output terminals and the set itself and may be due to a faulty connection

A switch, shown in the diagram, is provided for disconnecting the Photron control and throwing the set back to regular operating conditions. In this position, the 4 1/2 volt battery is on open circuit and is not subject to any drain until the switch has been reset for Photron control

In the evening, with the Cell at a window facing East, the apparatus should be placed in readiness and at sunrise the radio set will be turned on automatically. Shortly afterwards, with the beginning of the regular morning broadcast the experimenter will find himself listening to real music rather than to the rattle of an alarm clock.



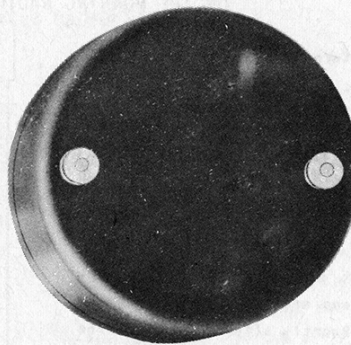
WESTON MODE 601 PHOTRONIC RELAY - TYPE I



MODEL 594
 PHOTRONIC CELL



MODEL 634
 SENSITIVE RELAY



POWER RELAY
 D-68690

The Model 601 Photron Relay as here illustrated is an ideal kit for the experimenter who desires an extremely flexible combination of photo-electric apparatus that is low in cost

It consists of a Weston Model 594 Photron Cell, a Model 634 Sensitive Relay and a D-68690 Power Relay

This combination will control approximately 100 watts at not over 120 volts and operates on a light intensity of 200 foot-candles. A small automobile searchlight or a 100 watt lamp with a reflector will operate the relays through considerable distance.

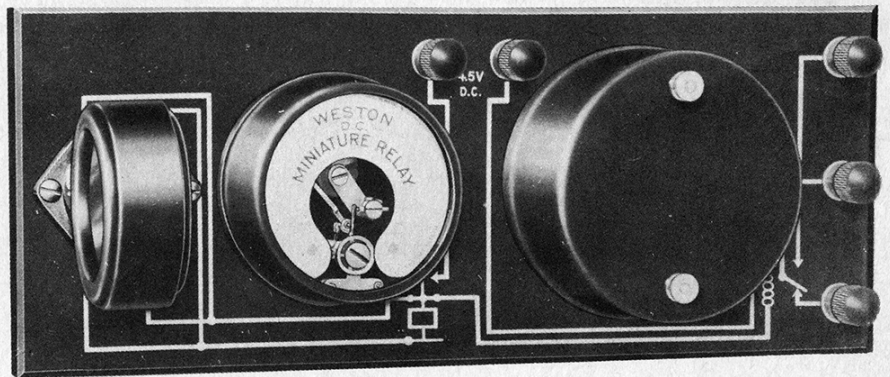
PRICE \$28.50 List

WESTON MODEL 607 PHOTRONIC RELAY

This Photron Relay has been especially developed for lecture demonstration purposes, for school and college laboratories, for science clubs and for amateur and home experimenters.

It consists of the Model 601 Photron Relay the cell and relays of which are illustrated on the opposite page mounted on an attractive block panel and connected as a complete workable unit. To simplify the use of this Photron Relay the connections to the cell and relays are traced in colors on the panel showing clearly the circuit conditions and the principle of operation.

PRICE . . . \$37.50 List



EXPERIMENTERS!

INSTRUCTIONS AND DIAGRAMS COVERING ADDITIONAL EXPERIMENTS ARE IN COURSE OF PREPARATION. THEY WILL BE SENT TO YOU FREE OF CHARGE, ON REQUEST.

INTERESTING PRACTICAL EXPERIMENTS WITH THESE PHOTO-CELL DEVICES MARK THE BEGINNING OF A NEW ERA IN AUTOMATIC CONTROL. TO STIMULATE AND ENCOURAGE ORIGINALITY IN THE APPLICATION OF PHOTRONIC RELAYS, WESTON OFFERS TEN DOLLARS (\$10.00) IN CASH FOR EACH NEW AMATEUR EXPERIMENT WHICH CAN BE PERFORMED WITH THE WESTON MODELS 601 OR 607 PHOTRONIC RELAYS. THE CONDITIONS ARE SIMPLE: IT IS ONLY NECESSARY THAT YOU HAVE PERFORMED THE EXPERIMENT YOURSELF AND THAT YOU SEND A BRIEF DESCRIPTION OF YOUR OFFERING WITH A DIAGRAM OF CONNECTIONS TO US, MARKED FOR DEPARTMENT 89.

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