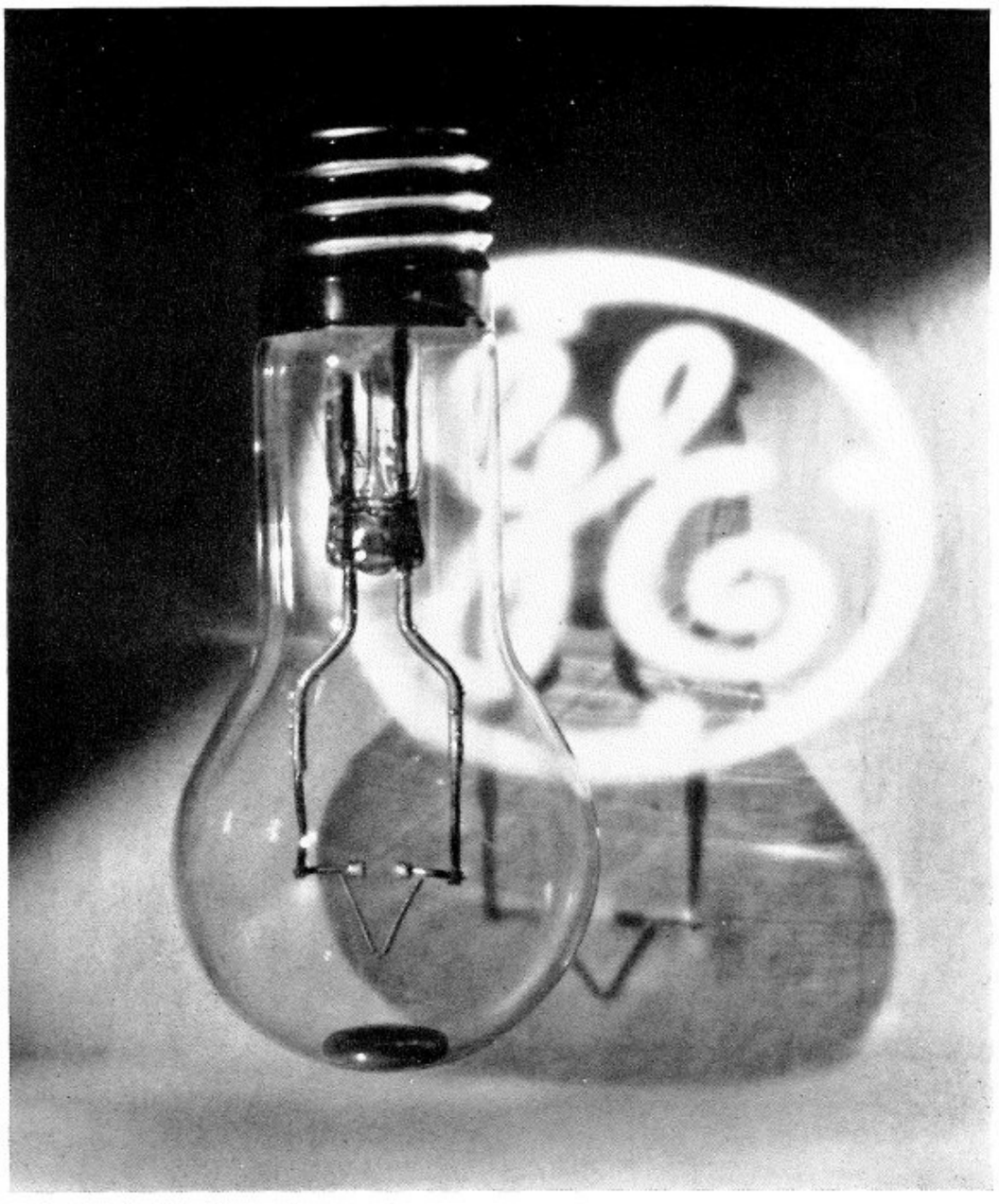


The Heart of the G. E. Sunlamp

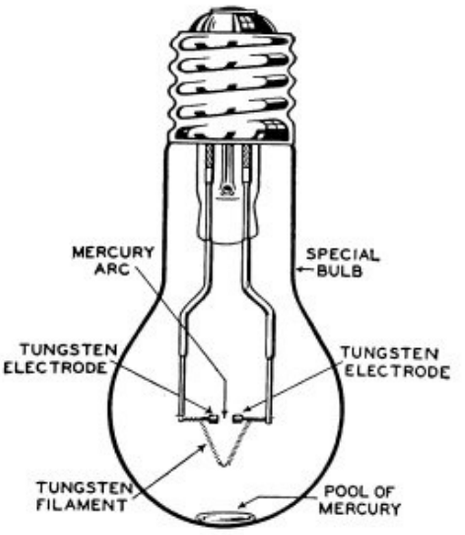
The General Electric Type S-1 Sunlight Lamp

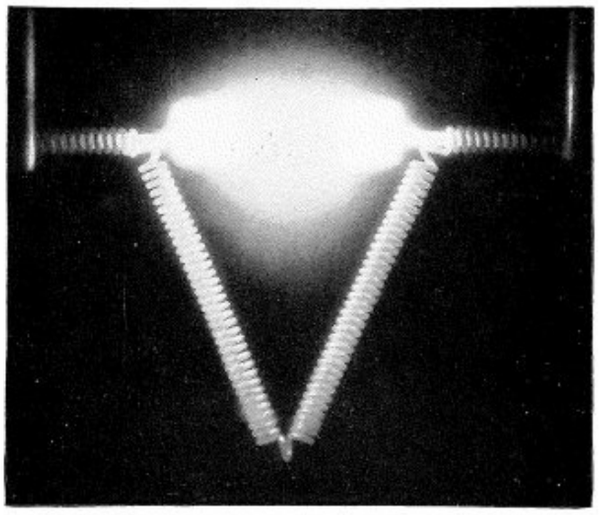
This is the heart of the G. E. Sunlamp, an entirely new development of the General Electric Company which gives radiation that closely approximates natural sunshine both in appearance and effect

When burning, it emits radiation from three sources: The tungsten filament, the mercury arc and the tungsten electrodes give off ultra-violet, infra-red and visible rays.

When the current is turned on the tungsten filament glows just as in a Mazda lamp. The heat from the filament vaporizes some of the mercury and this vapor enables the electricity to jump from one tungsten electrode to the other thus forming a mercury arc. The visible light is radiated from three;

Here is a diagram of the heart of the General Electric Sunlamp. The heat from the glowing tungsten filament vaporizes the mercury. The vaporized mercury causes an arc to form between the two tungsten electrodes.





The bulb of the lamp is made of a special glass which lets through ultra-violet rays which cannot penetrate ordinary glass but holds back rays that would come through a quartz bulb but which are not in the sunshine to which our bodies are accustomed.

sources approximately 7 per cent from the filament, 25 per cent from the arc and 68 per cent from the tungsten electrodes.

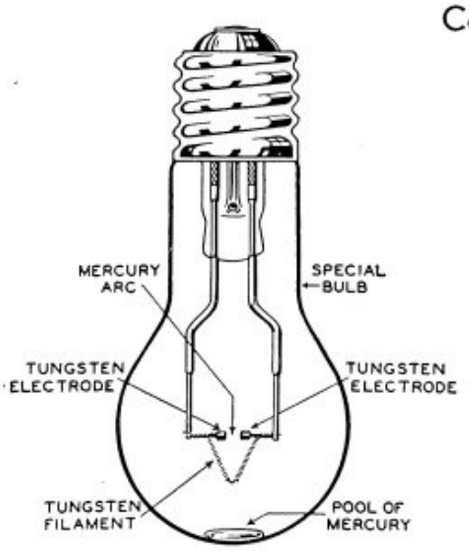
Thus it produces a visible light which resembles Summer sunshine in appearance and also gives infra-red and ultra-violet radiations which are invisible to the eye but vital in sunshine.

The bulb of this lamp is made of a special glass which plays an important part. This glass acts as a filter to the rays of the lamp just as the earth's atmosphere acts as a filter to the sun rays. The glass lets through the beneficial ultra-violet rays which come to us in sunshine but holds back these other ultra-violet rays to which our bodies are not accustomed and which we do not frequently encounter in nature.

In developing the Sunlight lamp the General Electric Company had to prime aims before it—to produce a lamp that was beneficial to use and to produce a lamp that was safe to use. These aims are now achieved and the Sunlamp may be used with that assurance.

The Heart of the G. E. Sunlamp

The Sunlight (Type S-1) Lamp



The G. E. Sunlight Type S-1 Lamp
(Overall Length—6.25 Inches)

Consisting of:

1. A tungsten "V" filament.
2. Two tungsten electrodes.
3. Pool of mercury.
4. Special glass bulb.

Working Like This:

1. The filament and two electrodes are the first to glow.
2. The heat generated vaporizes the mercury.
3. A mercury arc forms between the electrodes.
4. Three-fourths of the light is emitted by the electrodes (68%) and the filament (7%).
5. The arc emits 25% of the total light.

The Special Glass Bulb:

1. Like the earth's atmosphere the type S-1 bulb transmits all the light, heat, and ultra-violet rays found in June sunshine.
2. Screens out the short, HARSH ultra-violet.

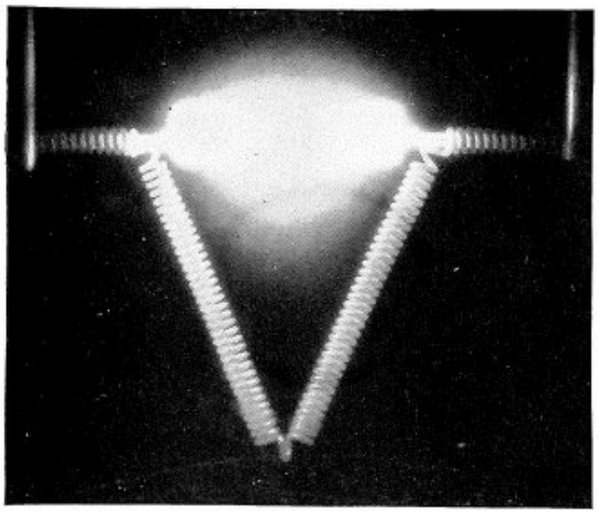


Photo of Type S-1 Energy Source as it looks through piece of smoked glass. Note incandescent filament and arc stream between the two brilliant electrodes.

Different Than Window and Quartz Glass:

1. Window glass — or even a clear MAZDA lamp bulb—would absorb the desirable vital rays of wave-lengths between 2900 and 3100 Ångström units.
2. A quartz bulb would transmit not only the desirable ultra-violet but also a host of very short, harsh rays below 2600 A°.
3. The Type S-1 bulb, transmitting all the desirable rays and screening out the harsh ones, leaves the radiation of ideal sunshine — only.

Character of Radiation

From the Type S-1 Lamp

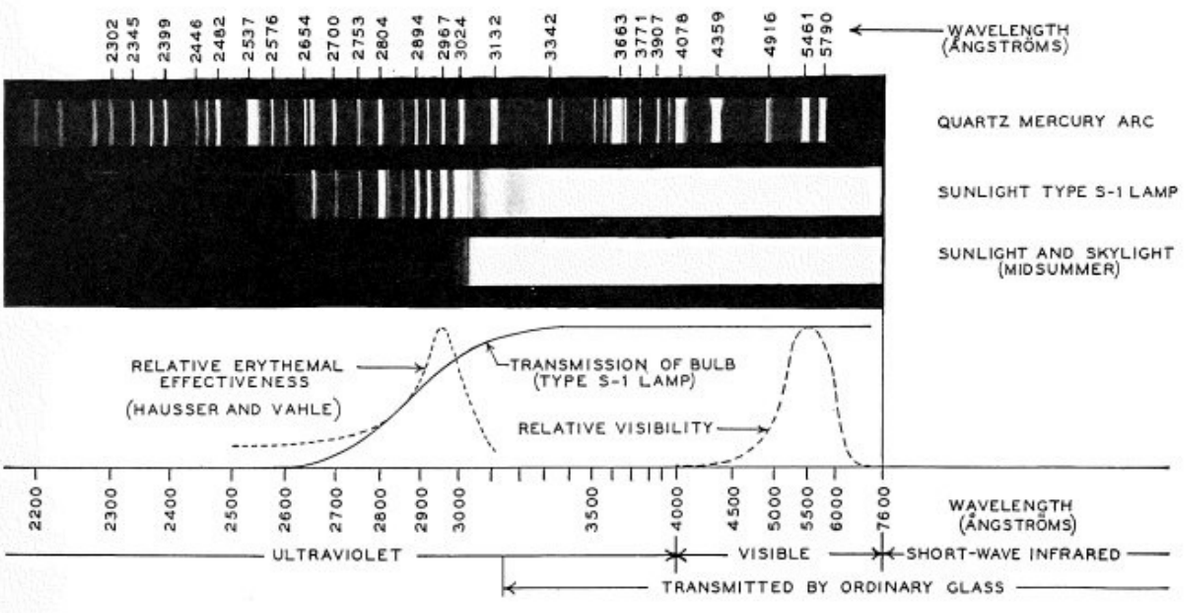
Before entering upon the subject of "how to use" the G. E. Sunlamp to best advantage, a word or so about the character of its radiation as compared with that from the quartz mercury arc lamp and that in sunshine itself is highly relevant at this point. A certain knowledge of the tool to be used obviously should enhance the skill of the user.

Shown below are three spectra — of a quartz mercury arc lamp, of the Type S-1 lamp, and of natural sunshine — photographed by delicate scientific instruments. A spectrum, incidentally, is the image seen when radiant energy is separated in a series of rays in the order of their wavelengths. Ångström units are used by science in measuring wave lengths.

Note that the Type S-1 lamp emits a wealth of the desirable erythema (sunburn) producing rays between 2900 and 3100A°. The short, harsh rays below 2800A° are not permitted to pass through the special bulb in appreciable quantity.

The short-wave limit of the best sunlight is approximately 2900A°. Inasmuch as special glass does not "cut off" radiatian abruptly, 2800A° was adopted as the practicable short-wave cut-off in order ta conserve the radiant energy between 2900A° and 3100A° which is known to be desirable. Owing to this lack of abruptness of the short-wave cut-off of the glass, a slight amount of radiation of somewhat shorter wavelengths is also transmitted. However, the radiation from Sunlight (Type S-1) lamps has been proved by adequate tests to be of such quantity and quality of ultra-violet energy that the eyes are safe without goggles under reasonable usage.

In order to produce an effective substitute for sunlight at reasonable intensities of illumination, relatively much more energy in the "2900" region has been provided than is present in sunlight. The Sunlight (Type S-1) lamp at present provides about 40 times more desirable ultra-violet energy



for the visible radiation than midsummer sunlight. In a proper reflector it produces the same degree of sunburn (erythema) at a distance of 36 inches in approximately the same time as mid-day midsummer sunlight outdoors.

Directions On Use Of The General Electric Sunlamp

How to use the Sunlamp to the best advantage depends—just as it does with natural sunshine—on the user's particular make-up. No two persons are just alike. Some are blonds; others brunets. Some receive the benefits from ultra-violet more quickly than others. Even the skin of various parts of a particular person's body varies greatly in its sensitivity to sunshine, natural and man-made. Obviously, no one specific set of directions can be formulated to fit each Sunlamp user perfectly.

Thus your past experience with strong summer sunshine and a feeling-of-the-way with the G. E. Sunlamp should determine what your proper exposures should be. However, the following general directions should prove helpful:

Dust absorbs ultra-violet radiation, so it is well to dust off the Sunlamp bulb occasionally.

In General

Exercise the same common sense and caution in using the Sunlamp as you would in the case of intense summer sunshine outdoors. One over-exposure may undo the good obtained from several short exposures previously taken. Therefore, feel your way. Also, avoid glare.

There is no more need to wear goggles when using the Sunlamp than there is when you use summer sunshine. Naturally you would not look into the sun and you should not keep your eyes turned toward the lighted bulb in the G. E. Sunlamp.

Distance

At a distance of 36 inches from the light source of the Sunlamp you should obtain the same burning or tanning effects as you do from bright mid-day sunshine of midsummer. If you double the distance to 72 inches the intensity is but one-fourth as strong. Conversely, at half the distance, at 18 inches, the intensity is four times as strong as at 36 inches. Take your first exposure at about 30 inches.

Duration of Exposure

At 30 inches your first exposure should not be for a longer time than 5 minutes. Wait a day. If no appreciable reddening (erythema) has occured, you may take a slightly longer exposure on day No. 2. Remember that reddening of the skin, if any, shows up several hours after the exposure. Lengthen subsequent exposures to suit yourself based, of course, on the results of previous exposures.

"Sunburn" Not Necessary

It has not been proved that "sunburn" or tanning of the skin is necessary as an aid to the maintenance of health, but it is important to avoid severe and frequent reddening. The dangers of a single over-exposure are those of a severe sunburn with accompanying pain, lassitude and discomfort. Therefore, avoid "crowding" the process. Feel your way.

Blonds and Brunets

Fair-skinned folk are more sensitive to ultra-violet rays than dark-complected people. Wherefore, if you are a blond, the exposures which proved successful in the case of a brunet will not necessarily be the best for you. Folks whose skin can manufacture dark pigment easily and who take a tan readily are better equipped to take longer exposures under the Sunlamp than very fair-skinned persons. This pigment acts as a shield or curtain against ultra-violet rays.

The following table shows the approximate length of time required under a G. E. Sunlamp operated on 115 volts to produce a good erythema (reddening of the skin) on an untanned portion of the body. By "good" is meant a considerable reddening of the skin without subsequent peeling. Longer exposures will be necessary to attain the same degree of erythema if the voltage supplied the Sunlamp is lower than 115. On the other hand, voltages higher than 115 will require shorter exposures.

Minutes of Exposure at Various Distances From Light Source

	1½ Feet	2½ Feet	4 Feet	5 Feet
Persons particularly sensitive to sunburn or tan.	5	11	27	39
Persons of average sensitivity to sunburn or tan	9	20	49	71
Persons of less than average sensitivity to sunburn or tan.	15	33	81	117

Area of Skin

When bathing under Sunlamp-shine at 30 inches limit the area exposed to not more than one-third of the body. If you wish to "sunbathe" the entire body — as when rubbing down after the showerbath or upon arising or retiring — a distance of about five feet is recommended.

In Particular

MANY CONVENIENT USES—The G. E. Sunlamp may be enjoyed in a host of different ways by every member of the family. For example, let beneficient rays shine upon you either as you exercise, shave, dress, relax or

read. It may be enjoyed by the kiddies at play in the nursery and by the man at the office the while he opens his morning mail. Fifteen minutes of sunshine is sure to start the day off on the right foot.

EXERCISE—While taking the daily dozen and subsequent rub-down, the suggested distance is about 5 feet from the Sunlamp. The time 15 to 20 minutes. Body area—from head to toe.

WHILE SHAVING—If the back is uncovered, place the Sunlamp not nearer than 30 inches away and limit the exposure to 5 to 10 minutes, depending on the results of previous exposures.

WHILE DRESSING—Since clothing intercepts the rays from the Sunlamp, since the hands and face are not so easily affected as the rest of the body, and since you are a moving instead of a still target for the rays—any convenient distance and length of exposure will do.

WHILE READING—Because the light from the Sunlamp is exceedingly bright at 30 inches and inasmuch as reading is more often a matter of hours than minutes—observe three precautions:

1. Make sure you are at least 5 feet from the light source.
2. Sit in such a position and place your paper at such an angle so as to avoid reflected glare.
3. Avoid over-exposure. A safe measure of precaution is to sit slightly beyond the main path of the light.

THE PLAYROOM—Hours of fun will be healthful hours with a G. E. Sunlamp in the playroom. With the kiddies romping around on the floor they are always at safe distances from the light source high above.

BEDTIME—The height of the G. E. Sunlamp is such that its light source is about 30 inches above the average bed. After you have accustomed yourself to the lamp's health-maintaining rays, a 15 minute exposure upon not more than one-third of your skin is suggested for him who prefers to take his sunshine while relaxing on his bed . . . But do not use the Sunlamp to put you to sleep unless you have arranged to have someone else turn off the Sunlamp for you.

AT THE OFFICE—Many business men whose work confines them to a desk find that there is no more cheerful or beneficial way to start the morning's work than to have fifteen minutes of sunshine when they first arrive at the office. The Sunlamp looks well in the office and will supply the rays that are so often sorely missed.

SOMETIME EVERY DAY—There are dozens of ways to use the G. E. Sunlamp. No one will have any difficulty discovering a time and place to enjoy it. The greatest benefits will come to those who make it a habit to use the healthful, cheering rays sometime every day.