SCIENCE NEWS

Science Service, Washington, D. C.

ARTIFICIAL SUNLIGHT

It takes a mixture of lights from various types of electric lamps, plus water-screening, to make artificial sunlight that duplicates the real thing, according to the illumination engineers of the General Electric Company. They have succeeded by using a combination of fluorescent lamps, mercury lamps, sun lamps and incandescent lamps. The light from two sources was "treated" by passing through a sheet of water.

First the composition of solar energy using the latest developments in the field of illumination was studied, measurements of sunlight, analysis of its characteristics and the intensity of each spectral band of solar energy being made. Then scientific knowledge of the radiation from various lamps to develop a combination to duplicate the light from the sun was applied.

To test the conclusions, a dark room the size of an ordinary office was selected. Light from six 3,000 watt mercury lamps and 234 incandescent reflector lamps of the 300-watt type was directed into the room through a wire glass ceiling, over which drifted a continuous sheet of water.

Absorption of some radiation by the water prohibits certain spectral bands of solar energy from passing through the glass ceiling, this action causing distribution of resulting radiation to be similar to that of sunlight. The system thus takes into account selective absorption of certain radiation by water vapor in the air.

On other sections of the ceiling was a row of 275-watt sun lamps and several rows of 100-watt fluorescent lamps. The sun lamps produce a tanning effect. A fan was installed to draw off part of the heat of the fluorescent lamps through perforations in the ceiling. This heat elimination, coupled with the heat dissipation caused by the continuously flowing water, permitted an abundance of infrared rays to be radiated into the room.

The total result of the combination of lamps and the special arrangements was a light closely approaching actual sunlight in characteristics and intensity. Householders need not anticipate lighting their homes with this artificial sunlight as yet—it required as much electrical power for this single G-E room as is ordinarily required to light a hundred houses.

ITEMS

In the proposed support of research with Federal funds now being considered by Congress, investigations by government agencies themselves should have their place in the sun, it was pointed out by Dr. Lyman J. Briggs, retiring director of the National Bureau of Standards, at the annual meeting in New York City of the American Standards Association. He stated that the Magnuson bill now in the Senate committee was written primarily around the idea of providing federal funds to universities: that the Kilgore and Fulbright bills provide for the participation of government agencies also in the enlarged research program and that scientific research by government agencies and basic research in particular has not in the past had much support in congressional circles. He hoped that the greater interest now being shown in research would provide a place in the sun also for the old-line government research agencies and that they may have the opportunity to show what they can do with adequate support. He believes that research by industry should be encouraged in every way possible, including tax exemptions or similar indirect subsidies.

The "electronic blanket" is in reality an electrically heated bed blanket with an electronic device to control its temperature. The new blanket and control were demonstrated recently by the Simmons Company, its producer. The control is centered in a small instrument in an attractive case placed beside the bed within reach of the occupant. The heating electric current passes through the case. Three electronic tubes within it determine the amount of current passed, and these are affected by the heat of the blanket. Within the blanket is a small flexible cable consisting of two parallel conductors. One of the conductors serves as a heating element, the other is the temperature control or "feeler" wire. When the temperature of the blanket goes above or below the temperature set on the control device, this feeler wire sends electronic impulses to the control which automatically regulates the amount of current sent through the heater wire.

Whirling airplane propellers appear to stand still when viewed through a new optical instrument developed by The General Electric Company. It is known as a Rotascope, and is said to be an optical system of untwisting the light of rotating objects before recorded by the human eye. It is claimed to be the first instrument of its kind which allows a continuous viewing of a rotating object at any particular point in its path of travel. While it eliminates the rotary component of a whirling object's motion, it does not eliminate any flutter or vibration of the moving part. In this is its primary value—by its use scientists are able to make a thorough study of the rotating parts of machinery.

Sparkplugs with electrodes that grow with use instead of wearing away and a new airplane ignition system for high-altitude flying are recent contributions to aviation developed by the electrical engineering department of Yale University. The life of the sparkplugs is considerably lengthened by the development, and in the new ignition system they are fired by radio frequency currents. The special electrodes with which the sparkplugs are equipped grow in physical length as they are used, by approximately the same amount that the ordinary electrodes wear away. This keeps the spark gaps more nearly constant and doubles the length of life of the plugs. The principal feature of the new ignition system is the use of high-frequency currents to fire the new sparkplugs. The two developments constitute a valuable combination in planes, particularly at extremely high altitudes. They were developed at Yale University by Gregor Lang, of the American Bosch company.