EARTHQUAKE EXPERTS CALL FOR VOLUNTEER OBSERVERS

Wanted, earthquake observers! Because of a prejudice against any earthquake publicity, no adequate record has been kept of the shocks during the past few decades. With the passing of the feeling that an earthquake is a disgrace the Seismological Society of Americais asking for help in reporting the shocks.

Where were you when the floor suddently rolled under you? Did you hear any peculiar roar like that of distant cannonading? Were you awakened from your sleep suddenly with a feeling of shock? Did another shock occur while you were awake?

These are the type of question that is asked the volunteer earthquake observer by the questionaire put out by the society. They want a report of every shock in or near the vicinity of the observer.

The study of earthquakes in the west has been organized and initiated by the Carnegie Institution of Washington, the U. S. Coast and Geodetic Survey, the U. S. Bureau of Standards, the Hydrographic Office of the U. S. Navy, the University of California, Leland Stanford University, the California Institute of Technology, and the Seismological Society of America.

NEW TYPEWRITER HAS 7,026 CHARACTERS

Japanese typewriters that have only one key but print 7,026 characters have been installed in northwest Japanese wholesale and commission houses. The machine makes carbons, prints from the bottom of the page and from left to right.

The typing characters are single bits of steel adjusted in a movable tray so as to be pushed into contact with a ribbon above to the paper placed in readiness for the writing.

The Japanese operator, generally a man, often writes at the rate of sixty word a minute. This is twice as fast as he can write by hand. A directory like a city street guide, helps him find an unusual character. It indicates, under the word desired, a description of the row in which the character occurs, andhow many letters up from the bottom or down from the top.

In addition to the Japanese charecters the English alphabet is tucked away in one corner.

WORKING PLANTS LONGER HOURS BY ELECTRIC LIGHT

That electric light may be used in place of sunlight and that it does not pay to use it are two of the first lessons taught by the experiments being carried on at the Boyce Thomspon Institute for Plant Research recently established in Yonkers, New York. The new laboratories give the experimenter for the first time opportunity to change one by one all the various factors affecting plant growth in the open, for in the enclosed underground rooms the temperature, humidity and composition of the air can be varied at will and so also can the amount, intensity, duration and character of the light.

In the experiments on the optimun length of illumination a variety of plants

were exposed to electric light for periods of 5, 7, 9, 17, 19, and 24 hours. The dark periods were secured hy wheeling the carts bearing the plants into a constant dark room having the same conditions as the light room. Remarkable differences appeared in the rate of growth of the plants and the age and stature of the plants at the time of flowering with the different lengths of day.

Varieties of tomato, snapdragon, sunflower, coleus, radish, lettuce, clover, geranium, and chrysanthemum bloom much earlier in constant light than in shorter daily illumination. Buckwheat, aster, and soy beans bloom much later in constant light than in shorter days. Salvia, cosmos, and four o'clock failed to bloom at all in constant light.

Tomato grew faster and made better plants as the daily illumination increased from five to seventeen hours. Nineteen hours daily illumination was injurious to the tomato and constant illumination finally killed it. Some other plants were injured by nineteen hours illumination and constant illumination. With some plants then there seems to be a limit to the possibility of forcing by lengthening the day. It is not known whether this is due to the need of daily rest from growing activity, or to some other cause.

But the complete replacement of natural by artificial light shows no prospect of being profitable, according to Dr. William Crocker, director of the Institute, who gives out the following figures as to the costs of illuminating the constant condition room:-

> "On the matter of the economic possibility of using artificial light for growing plants I will mention the costs of illuminating our constant condition light room. This room is eleven feet by eleven feet and is illuminated by twenty-four 1,000 watt tungsten lights. They give about 500 foot candles in the growing room after the rays have passed through the water screen to remove heat. Sunlight at noonday in June gives 4,000 to 10,000 foot candles. With the current at 4½¢ per kilowatt hour the cost of lighting this room is $1.12½ per hour; $27.00 per day; or $2,430 for 90 days. It is evident that one would have to grow something of the order of value of pearls to make the use of this house commercially profitable. The reasons for this are clear. The tungsten lamps convert only seven per cent. of the electrical current used by them into light. The sun is much more efficient as a light source. Thirty-seven per cent. of the energy value of the sun's rays reaching the earth are light rays. The plant uses only the energy of the light rays for making its foods and probably the average plant in this room stores mo more than 10 per cent. of the light energy falling upon it in the form of carbohydrates and other organic foods. This means that less than one per cent. of the energy paid for as electrical current is recovered by the plant. Even a portion of this is used by the plant in its own respiration.
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> The plant is a very inefficient mahine for the transformation and storage of energy. The only reason man can afford to use it at all is because the sunlight from which it stores the energy in nature, like salvation, is free. It might be added, however, that in spite of this inefficiency man cannot only afford but must use it for up to date the plant alone can synthesize many organic materials necessary to life.
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> Now what is the excuse for experimenting with the growth of plants under artificial light, if the plant is such an inefficient

machine for the conversion and storage of energy? The institute has a very good excuse. It is trying to establish the laws of plant development. The only way to establish such laws is by growing plants under controlled conditions. Artificial light makes accurate control possible. I would not imply that artificial illumination has no possibility of profitable use in the growth of plants commercially. I do mean to imply that with the present inefficiency of tungsten lights and the present price of electrical current, we cannot afford to grow the bulk of the plant (and bulk is a measure of the amount of energy stored) with artificial light even if the plant could be sold at a fancy price."

In the meeting of the Illuminating Engineers Society held at the Institute, Victor A. Tiedjens reported the results of his work on stimulating the growth of lettuce by electric light of yarying intensity. A pair of lamps, ranging from 50 to 300 watts, was suspended about five feet over each plot of eight feet square and turned on for various periods after sunset. In general, it was found that the rate of growth increased with the intensity of the illumination.

"The length of the growing period, from seedling to head formation and seed production, was shortened by two and four weeks respectively for the higher intensities, but the growth was not always beneficial to good head formation. The seed stalk was started before a good marketable head was formed in the varieties commonly grown by market gardeners."

FERMENTED BLOOD STIMULATES GROWTH

A form of artificial aliment having a power of accelerating growth in a way that reminds one of Wells's "boom-food", has been reported to the French Society of Public Medicine and Sanitary Engineering by Dr. A. Gauducheau. He makes use of waste blood from the packing houses. This is acidified with vinegar and sugar is added. Then the mixture is sown with distillery yeast and set to ferment at the most favorable temperature. The yeast cells multiply with extra-ordinary rapidity: the culture becomes covered with a thick foam and exudes an agreeable aroma. The fermentation results in two products, one a wine of appetizing flavor, and the other a first class nutriment. Since no heat is used in the process, such sensitive and unstable substances as proteins, diastases and vitamines, are retained unchanged.

Feeding young rats on a ration that contains five per cent. of this fermented product, it is found that they grow two or three times as fast as those fed on ordinary food.

But there is another side to the shield. Dr. Gauducheau finds that his newfangled food also stimulates the proliferation of the anarchic cancer cells as well as the nomal cells of the body, so if the rats have cancer the disease will be increased.

At the session of the Society of Public Medicine at which this paper was read, Dr. Cavaillon called attention to the resemblance between the new food and that which H. G. Wells tells about in his romance "The Food of the Gods" which causes the growth of giants among rats and the human race.
