

in Yonkers, N. Y., reported to the American Institute of Biological Sciences meeting in Stillwater, Okla., that they soaked leaves of these different plants in 1-quinat tagged with radioactive carbon to see if it was used in producing aromatic substances.

As might be expected of different smelling plants, each type of leaf used the substance a little differently. Beans, they found, absorbed the smallest amount of the tracer substance but converted more than half to

products that are a little closer to the ones responsible for fragrance. Tobacco, on the other hand, soaked up eight times as much of the chemical as beans but converted only about one-fourth of it.

Going a step further, the researchers found that in tobacco, apples and avocados there was twice as much of one aromatic amino acid, phenylalanine, as of another, tyrosine. In beans, the opposite was true.

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BIOLOGY

Wake Early, Bloom Late

► THE MOST EFFECTIVE way to make poinsettias bloom just before Christmas is to shine lights on the plants from midnight to one a.m. each night from Sept. 22 to Oct. 10. Under this treatment the plants are at the peak of blooming on Dec. 20, rather than Dec. 10—the natural peak point.

These conclusions are the result of a two-year study of plant reaction to different periods of light exposure, Drs. Robert C. Miller and C. C. Kiplinger of the Ohio Agricultural Experiment Station, Wooster, reported in an abstract at the American Institute of Biological Sciences meeting in Stillwater, Okla.

Why does giving a plant more light make it bloom later? Dr. Miller explained it this way: Poinsettias start forming flowers when the days get shorter and are called short-day plants. But really they are long-night plants.

Like people, they need their rest. If their night-long "sleep" is interrupted, they do not flower as soon as they would under normal conditions. Under constant light these plants will not bloom at all.

Researchers and greenhouse owners have tried turning on lights at the beginning and end of the daylight hours, thus lengthening the number of hours of exposure to light. Some used four additional hours of light either in two doses or all in one.

However, no method has proved so effective as "waking up" the plant exactly in the middle of the night, Dr. Miller determined. During the daytime, of course, the plant gets normal sunshine.

The middle-of-the-night method works

just as well even if the light is not continuous. A technique known as "flashlighting" is just as effective, not only for poinsettias but for chrysanthemums as well. This consists of dividing each minute of the hour-long period into two seconds of light and 58 seconds of darkness. For poinsettia growers who have large numbers of plants, flashlighting is particularly valuable for cutting down on electricity bills and is one way of staggering loads on power lines.

Either technique works for poinsettias of any age kept at 62 degrees Fahrenheit. The best type of light found so far is regular incandescent light of about 20 foot-candle intensity.

Because the long-red visible radiation is the most effective agent, fluorescent lights—mostly in the blue range—are not suitable, Dr. Miller said. However, a fluorescent lamp concentrated in the red range is being developed and may prove to be better than ordinary electric bulbs.

Just why a plant reacts this way to interrupted nights is not known. The physiology has not been worked out. The factor that controls flowering is believed to be a growth regulator. Root growth inhibits flower budding and vice versa.

It also has been shown that the leaves of the poinsettia produce a flower inhibitor. A branch from a light-treated plant grafted to an untreated host will flower only if the leaves of the host plant are removed. Dr. Miller found that this single graft can also influence the host to flower earlier than usual.

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of Establishing Charges. In general, a uniform system of charging for hospital care will be followed, and this system will relate the charges to the full cost of furnishing that care. The 'full cost' includes the direct cost and a pro rata portion of the overhead cost. We did not set rates."

The other speakers were Samuel J. Tibbetts, administrator of the California Hospital in Los Angeles, and E. Reid Caddy, administrator of the Westmoreland Hospital in Greensburg, Pa.

In California the average daily hospital bill is the highest in the United States, \$41.80, and in Pennsylvania the charge averages \$23.98 per day.

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MEDICINE

Hospital Charges Probed

► HOSPITALS all over the country are raising their charges but for widely different reasons, a hospital administrator reported to the American Hospital Association meeting in San Francisco.

"We found there was no rhyme or reason, or any similarity of method, that we could count on," Benny Carlisle, administrator of the Oklahoma General Hospital in Clinton, said of a survey of hospital charges in Oklahoma.

"We inquired of hospitals, 'What do you base your charges on?' Some said, 'I inherited this rate schedule' . . . others had formulas for mark-up, still others ad-

justed when other hospitals in the area adjusted, but no method that was explainable, or understandable to anyone was used."

Mr. Carlisle was one of three hospital administrators from the East, West and Middle West who spoke on principles of establishing hospital charges.

Mr. Carlisle said that he assisted with the survey of hospital charges in Oklahoma and found the hospitals' prices for pills varied more than 500%. Laboratory charges varied 120% and operating room charges 200%.

"From all this research, we emerged with our Principles of Uniform Methods