of geology at the University of Utrecht. Dr. Brouwer will not leave the chair of geology at Delft, but will go to Utrecht to give his courses.

PROFESSOR HANS RADEMACHER, of the University of Hamburg, has been appointed professor of mathematics at the University of Breslau.

## DISCUSSION AND CORRESPONDENCE

### PROJECTION OF ULTRA-VIOLET LINES

RECENTLY, when attempting without quartz lenses or prisms to demonstrate the existence of ultra-violet lines in the spectrum of mercury, I projected the image of a slit in front of a "Laboratory Standard" mercury vapor lamp onto a "day-light screen" (Trans-Lux), using only a flint prism and a single crown lens. I expected to use a fluorescent screen to pick up the ultra-violet lines but found that the trans-lux screen showed these lines up, though not brightly. The lines were easily visible at a distance of five feet.

I could only convince myself that these were ultra-violet lines by these arguments: (1) the lines were not at all the correct color for the violet end of the spectrum; (2) they were not due to stray light; (3) when falling on anthracene they produced fluorescence, even when the slit was covered with an ultra-violet wave-filter.

Perhaps a more powerful source of light, with proper lenses and prism, would bring these lines out strongly enough for a large lecture room, especially when the wave-filter cuts off the visible spectrum.

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### INFLUENCE OF AIR AND SUNSHINE ON THE GROWTH OF TREES

A CASE came under my observation this past summer that will furnish an example of some value to teachers of botany and crop production of the advantage of ample air and sunlight for growing plants.

Mr. A. L. Rogers, of Waterville, Washington, in order to study past variations in climate in that locality, made a section of a forest tree for the purpose of studying the thickness of the annual growth rings and correlating variations in this thickness with known variations in rainfall for the past thirty-three years—the records of rainfall being available for that period. I recently had the opportunity of examining the section. Assuming that a ring of growth has been made each year, the tree was a seedling in the year 1820. Up to, and including the year 1898, the average thickness of the annual rings was approximately one sixteenth of an inch. Beginning with the year 1899, and extending to 1924, when the tree was cut, the rings had an average thickness of approximately three sixteenths of an inch. I suggested to Mr. Rogers that the region must have been logged off in the winter of 1898–9; that previous to that time the tree had been closely surrounded by other trees and thus was unable to secure the necessary air and sunshine for maximum growth; that after the logging off, the rate of growth of the tree had been about tripled.

Investigation revealed that this suggestion was in accordance with the facts. Several stumps, much decayed, were found in the immediate vicinity of the tree, and the date of the logging off operations proved to be the date suggested by the change in rate of growth of the tree.

Additional moisture available to the tree after the logging operations may also have been a factor in the increased rate of growth.

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U. S. DEPARTMENT OF AGRICULTURE

### AN UNUSUAL STRAIN OF SERRATIA MARCESCENS BIZIO

A STRAIN of *Serratia marcescens* which, so far as we have any knowledge, has been kept in the laboratory of the department of botany of Wellesley College for at least four years, has developed characteristics unusual for this species. It seems worth while to make a brief note of these variations.

The following culture reactions were obtained with this organism: agar streak varying from white to pink and red, taking on a very bright color and metallic luster with age, *the pigment sinking into the agar,* in some instances for several millimeters; *pigment formed at 35° C.–37° C., soluble in water* and alcohol, slightly soluble in chloroform; gelatin liquefied rapidly, the medium becoming red; nutrient broth turbid after two days, then becoming *red throughout* and showing a thin pellicle; no gas in *dextrose,* sucrose or lactose broths after two weeks, dextrose and sucrose acid; the reaction in lactose broth was rather peculiar and necessitated more extended experimentation which can not be reported at this time; indol not produced; nitrates reduced to nitrites; potato agar showing a very luxuriant, rose-colored growth; growth on starch agar as on nutrient agar and the color bright red; 30 per cent. peptone agar, producing a very light pink growth; litmus-milk acid and coagulated with little or no peptonization. The form is Gram negative, and motile with peritrichous flagella. The italics indicate the deviations from the description given in Bergey's Manual.[1]

[1] Bergey's "Manual of Determinative Bacteriology," Williams and Wilkins, Baltimore, 1923.