

er distantly related, which cannot be induced to form seeds that will be viable by ordinary growing methods, but which give promise of yielding important botanical information if they will only live.

*Science News Letter, September 23, 1944*

### Roots Commit Suicide

► ROOTS of plants can poison themselves with the carbon dioxide formed by their own life processes, unless there is some way for this gas to be removed. Dr. H. T. Chang and Prof. W. E. Loomis of Iowa State College told the American Society of Plant Physiologists of experiments in which they demonstrated that in the presence of toxic concentrations of carbon dioxide, roots first failed to absorb water and mineral nutrients, particularly potassium and nitrogen, and finally died. Too high a concentration of the gas proved fatal even to swamp plants like rice.

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### Cork Isn't Waterproof

► CORK isn't completely waterproof, no matter how good it is for stoppering bottles and floating life rafts. When a plant's roots are thirsty enough they can pull water right through the thin layer of cork that covers all but the youngest of them, Dr. Paul J. Kramer of Duke University discovered through experiments.

The thinnest and most delicate portion of a root is its almost microscopically slender tip. This is the only portion that is not cork-sheathed, and for this reason it has long been assumed that water was absorbed only through root tips, or the zone just back of them.

However, when Dr. Kramer attached sensitive instruments showing water absorption rates to the older, corkier parts of the roots of both evergreen and broad-leaved trees, he found that water went through, in small but positively measurable quantities. He was able to show water absorption through the cork layer also when he substituted artificial suction for the natural pull of the tree's transpiring leaves.

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*Magnesium* was first produced commercially in the United States in 1915 when the war cut off the former German supply; domestic production was started for the Army for use in tracer bullets, star shells, flares and flashlight powders.

Government restrictions on *zinc sheet* for use in making printing plates have been relaxed, and plate-makers may use this metal at the 1941 rate.

#### GENERAL SCIENCE

## Postwar Shortage

Even after fighting ends, it will be years before graduate students come from undergraduate classes. Plan offered to speed professional training.

► A PLAN for meeting the acute postwar shortage of trained professional men by an accelerated program of graduate study was outlined before the American Psychological Association meeting in Cleveland by Prof. Sidney L. Pressey, of the Ohio State University.

In the college year 1942-43 the number granted advanced degrees in U. S. institutions of higher learning dropped 30% from the 25,000 who received graduate training the year before, Prof. Pressey said. Soon afterwards some graduate schools were reporting that "the graduate student is practically extinct." It is estimated that even after the war is over, it will take three or four years before the normal flow of students from undergraduate colleges to graduate work is reestablished.

In addition to the acute need for professionally trained persons, demand for acceleration of graduate programs will come from returning service men, already mature and experienced in positions of authority who want their degrees without further delay, Prof. Pressey predicts.

Graduate training needs overhauling, anyway, Prof. Pressey believes. It is just about as it was imported from Germany about 80 years ago and put on top of an entirely different and longer system of earlier education. Before the war in Germany, the average age for receiving a doctor's degree was 24. In the United States it was 30—an age when some of the most creative years and the prime of life, physically, are already past.

First change that Prof. Pressey would make in the graduate program would be to admit students to graduate study on the basis of ability rather than previous degrees. He would count relevant war or work experience in the assessment of ability.

Then, he would find out experimentally just what kinds of work persons with graduate degrees actually do, and plan the curriculum to fit them for those specific duties. We should get away, he said, from the feeling that actual doing of a particular type of professional work is relatively unimportant if only there have been enough courses and readings about

it. He would increase the internships.

He would do away with the final oral examination as the main criterion for granting a degree. It is, he said, literally a heritage from the middle ages. It should be kept, but its role would be supplementary. The student's work in internships as well as class would be considered as well as abilities and personality.

The graduate programs would improve rapidly, Prof. Pressey suggests, if graduate students were given more hand in things. At present they have less to say about policy than do undergraduates in many colleges or even students in high schools. Real participation by students would bring invaluable help in understanding and dealing with student problems, especially those of veterans.

Finally, Prof. Pressey urged that his colleagues act more like scientists and less like lawyers in putting into effect reforms in the graduate training. Try new things, experimentally, he recommended, and see how they work.

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#### MILITARY SCIENCE

### Grasshopper Planes Now Lay Telephone Wires

► GRASSHOPPER planes, the little flying jeeps that carry observers for spotting artillery fire, have taken on a new job. Flying low and slow—height about 200 feet, speed 65 to 70 miles an hour—they quickly lay telephone wire from forward observation posts on the ground back to the gun positions.

Two artillery officers, Capt. Richard Leffers and Lt. George W. Maddox, tell how it is done (*Field Artillery Journal*, September).

Most critical task in preparing to lay wire from the air is the winding of the wire in rolls from which it can be pulled rapidly without jerking or kinking, which would cause breaks. These rolls are spliced into a series, which rides end to end in a cylindrical container lashed to the wing struts, close to the fuselage. Telephone instruments are dropped on small parachutes.

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