without injury, and the efficacy of these coatings in reducing transpiration has been determined. The table shows a comparison of a few materials sprayed on uniform lots of five-year-old dormant pines.

PINE (PINUS AUSTRIACA)

	*Daily loss before treatment	†Daily loss after treatment
Corn oil	20.7 gms	2.4 gms
(1) Sulphonated linseed oil emulsion 33⅓ per cent.	20.8	8.4
(2) Crystal No-Dri 50 per cent. solution	20.7	18.0
Beeswax emulsion	20.9	18.3
Untreated (control)	20.3	26.3

* Averages for 8 days.
† Averages for 7 days.
(1) Prepared by heating 9 parts boiled linseed oil to 470° F. and adding 1 part flowers of sulfur to the hot oil. Emulsified by mixing with laundry soap and water.
(2) Manufactured and sold by the Crystal Soap and Chemical Co., Inc., Philadelphia.

The trees had been grown in pots long enough to be thoroughly established and to ensure that all were living. The pots were sealed in metal cans and the trees exposed to outdoor conditions. Trees were grouped into five lots of four trees each and transpiration (loss of weight) was determined every two days, water being added after each weighing to make good the loss. After a period of eight days during which the comparative transpiration rates of the five lots were determined, different treatments were applied to each lot and the loss in weight determined for seven more days, water loss being replaced as before. It will be noted that in the period before treatment the groups were selected so that their average daily transpiration rates were practically equal. After treatment the groups showed wide variation in water loss. The data show that all coatings reduced transpiration as compared with the untreated control, pure corn oil in this instance, causing a reduction of 88.4 per cent. Whether such a great reduction in transpiration is necessary or even desirable is not yet known, although no detrimental effects were noticeable after several months. Further investigations are under way to determine the ultimate effect of these coatings on the tree's metabolism.

In actual practise the materials are best applied by spraying seed beds or nursery rows before digging. Thousands of conifer seedlings and transplants have been treated this year with oils and emulsions, apparently with good results. It is believed that these coatings may also prove useful in protecting coniferous seed beds from excessive drying out over winter. In this connection the efficiency of the sulphonated oil is of interest, as this material is also a repellent for rodents that attack nursery beds.

A complete report of these investigations will appear in a later publication.

J. L. EMERSON
A. C. HILDRETH
CHEYENNE HORTICULTURAL FIELD STATION
U. S. DEPARTMENT OF AGRICULTURE

BOOKS RECEIVED

ANTEV, ERNST. *Alpine Zone of Mt. Washington Range.* Pp. viii + 118. 38 figures. Merrill and Webber.

BAILEY, L. H. *The Cultivated Conifers.* Pp. ix + 404. 114 figures. Macmillan. $7.50.

BOYNTON, PAUL L. *Intelligence: Its Manifestations and Measurement.* Pp. xi + 466. Appleton. $2.50.

Bulletin of the Academy of Sciences of the United Provinces of Agra and Oudh, Allahabad, India. Volume I, 1931–32. Pp. 150 + 49. Illustrated. The Academy.

Bulletin of the Association of Field Engineers, June, 1932. Pp. 128. Illustrated. U. S. Coast and Geodetic Survey.

Contributions to the Calculus of Variations, 1931–32. Theses Submitted to the Department of Mathematics of the University of Chicago. University of Chicago Press. $3.00.

CRUM, ROY W., Editor. *Proceedings of the Eleventh Annual Meeting of the Highway Research Board, December, 1931.* Part I: *Reports of Research Committees and Papers.* Pp. 443. Illustrated. National Research Council, Washington.

FAIRCHILD, HERMAN L. *A Chapter in Earth Science History.* Pp. xvii + 232. Illustrated. The Geological Society of America. $2.50.

GALT, WILLIAM. *Phyloanalysis.* Pp. 151. Kegan Paul, Trench, Trubner & Co., London. 2/6.

GOWANLOCH, JAMES N. *Fishes and Fishing in Louisiana.* Pp. 638. Illustrated. Bulletin No. 23, Department of Conservation, State of Louisiana.

GRAY, LEWIS C. *History of Agriculture in the Southern United States.* Pp. xix + 567. Carnegie Institution of Washington.

HEGNER, ROBERT W. *Invertebrate Zoology.* Pp. xiii+ 570. 403 figures. Macmillan. $3.75.

LASLEY, JOHN W. and EDWARD T. BROWNE. *Introductory Mathematics.* Pp. xvi + 439. McGraw-Hill. $2.75.

LINDSEY, ARTHUR W. *A Textbook of Genetics.* Pp. xvi + 354. 128 figures. Macmillan. $2.75.

LINGEL, ROBERT. *Educational Broadcasting, a Bibliography.* Pp. x + 162. University of Chicago Press. $1.50.

LINTON, RALPH. *The Tanala: A Hill Tribe of Madagascar.* Pp. 334. 35 figures. Field Museum of Natural History. $2.25.

MILLER, CASPER O. *The Ether in its Relation to the Structure of Matter and the Transmission of Force.* Pp. 442. 45 figures. Henkel Press.

MOSELEY, EDWIN L. *Other Worlds.* Pp. xi + 231. 55 figures. Appleton. $2.00.

Recent Social Trends in the United States: Report of the President's Research Committee on Social Trends. Vol. I: Pp. xcv + 750. Illustrated. Vol. II: Pp. vi + 751–1568. McGraw-Hill. $10.00.

ROQUETTE-PINTO, E. *Boletim do Museu Nacional.* Vol. III. No. 3. Pp. 133–256. Illustrated. Museu Nacional, Rio de Janeiro.

TYSON, LEVERING, Editor. *Radio and Education.* Pp. viii + 298. University of Chicago Press. $3.00.

WOODS, ALAN C. *Allergy and Immunity in Opthalmology.* Pp. xiv + 176. Johns Hopkins Press. $2.25.