DR. BURT L. HARTWELL, professor of agricultural chemistry in the Rhode Island State College, has been appointed director of the station to succeed Dr. Homer H. Wheeler, who recently resigned.

MR. E. G. ARZBERGER, H. R. Watts, J. B. Demaree, L. E. Melchers and J. T. Rogers, assistant botanists in the botanical department of the Ohio Agricultural Experiment Station, have resigned from their positions.

DR. J. W. NICHOLSON, M.A., Trinity College, Cambridge, has been appointed professor of mathematics in London University, being attached to King's College.

DR. W. H. PERKIN, F.R.S., professor of chemistry at Manchester University, has been elected Waynflete professor of chemistry at Oxford. A grant of £15,000 towards the erection of the new chemical laboratory, as well as a further loan, has been promised by the trustees of the chancellor's endowment fund.

DISCUSSION AND CORRESPONDENCE

A NEW WEED EXTERMINATOR

WILD garlic (*Allium vineale*) has become a serious farm pest, especially in the belt of territory extending from Maryland to Missouri. Beside having the usual competitive action as a weed in cultivated fields, the presence of bulblets in wheat lowers the market value, as the bulblets are about the size and color of the grains, and difficult to separate. The weed also gives an unpleasant taint to the milk and flesh of animals feeding on the leaves, and to flour made from wheat containing the bulblets.

Owing to the remarkable tenacity of life possessed by the bulbs and bulblets no practical method to rid the soil of the pest has heretofore been found, and in some localities fields have been abandoned and given over to the weed.

Nearly two years ago an investigation of the wild garlic was taken up as a special problem by the Botanical Department of the Indiana Experiment Station. The field tests were carried on in cooperation with Dr. H. E. Horton, agronomist of the American Steel & Wire Co., and Mr. Jacob Cronbach, of Mount Vernon, Ind. After various chemical sprays and cultural methods had been tried to little purpose, Mr. F. J. Pipal, assistant botanist in the Indiana Station and in direct charge of the work, suggested the use of orchard heating oil, as supplied by the Standard Oil Co., applied as a spray.

Remarkable results were obtained from the beginning of the tests. It was found that when the oil was distributed over the field in a fine spray by a sufficiently powerful spraying machine, that all growing vegetation was killed, not only above ground but below ground as well, except the long horizontal rootstocks of such plants as *Tecoma radicans* and *Solanum carolinense,* and the extra large roots of such plants as *Ipomœa pandurata,* the latter requiring a correspondingly larger amount of oil. It destroyed the bulbs of the wild garlic, however deep below the surface, and the bulblets at the tops of the stalks as well. The oil appeared to produce no lasting effects upon the soil, and new growth from seeds already in the soil and from subsequently sowed cereals possessed the usual vigor. The best times and methods for the application are now being tested.

The introduction of this new material for killing weeds is accompanied by a new method of application. Heretofore chemical sprays have been differential, and intended to kill only the weeds while leaving the crops essentially unharmed. Orchard heating oil acts as a complete spray, killing all vegetation, like plowing or fire, only more effectively than these, as it follows the stems and roots well into the ground.

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GREEK REFINEMENTS IN ARCHITECTURE

THE existence of subtleties of line and spacing in Greek architecture is now well known. A very interesting point is how much of the classic practise was lost in the Dark Ages and how much preserved. The following extract from "Evelyn's Diary" seems to bear upon the point. It shows, at least, that

similar problems were familiar to English architects of the seventeenth century.

1666, Aug. 27, I went to St. Paule's church, where with Dr. Wren, Mr. Prat, Mr. May, Mr. Thos. Chichley, Mr. Slingsby, the Bishop of London, the Deane of St. Paule's and several expert workmen, we went about to survey the general decays of that ancient and venerable church, and to set downe in writing the particulars of what was fit to be don, with the charge thereof, giving our opinion from article to article. Finding the maine building to recede outwards, it was the opinion of Mr. Chichley and Mr. Prat that it had been so built *ab origine* for an effect in perspective, in regard of the height; but I was, with Dr. Wren, quite of another judgment, and so we entered it; we plumb'd the uprights in severall places. . . . (From Evelyn's Diary.)

EDWARD S. HOLDEN

WEST POINT, N. Y.,
November, 1912

THE QUESTION OF THE OLDER AND NEWER APPALACHIANS

IN a lucid and valuable article on the geography of the United States, Professor Wm. M. Davis divides the Appalachians[1] into an older eastern and a newer western belt. He makes in New England the Taconics and the great limestone valley the newer, and all the rest of New England from and including the Green Mountain range the older. By this he means composed mainly of older rocks.

The distinction is good, but the names should be reversed for New England.

The western division contains mainly Cambrian and Ordovician rocks. A narrow interrupted band of Archæan forms the west border of the eastern band, going south from the Hoosac Tunnel. Next east is a band of the Hoosac and Rowe schists, which are correlated with the Berkshire schist of the western division and so are Ordovician. Next east is the much broader band of the "Calciferous Mica Schist" (the Goshen and Conway schists), which extends to the Connecticut Valley, and widens northerly into Canada, carrying Silurian fossils. Next east is the Bernardston Devonian, underlying the Connecticut Valley and in part covered by Trias. The whole of Worcester County is Carboniferous, cut by late Carboniferous granites. The new discovery of Carboniferous fossils in Worcester by David White reinforces Perry's earlier finds, and all the Carboniferous rock types occur in the eastern rim of the Connecticut Valley, and all the intervening country can be connected by transitions with the undoubted Carboniferous.

East of Worcester is a narrow seaward band of Algonkian and Cambrian greatly covered by Carboniferous, so that about nine tenths of the area between the Housatonic Valley and the sea is covered by rocks newer than those of this valley and the Taconics.

This change of name does not lessen the great value of the distinction, which is based not so much on age as on the presence of the great limestone in the western belt and its lesser metamorphism, which has caused great differences in the topography. The lesser metamorphism of the western belt depends, in part, on the absence of granite which has overwhelmed all the area of the eastern belt. They have both been subjected to the same folding and uplifting agencies, but the overthrust faulting along the east border of the limestone valley has had for an effect that less and more varied pressure was transmitted westwardly, while the greater pressure in the east has not only caused greater metamorphism across central New England, but the extensive intrusion of various granites has greatly increased this metamorphism, and has left a country where a very broad meshed network of Carboniferous schists rests in great areas of carboniferous granite.

The eastern division, which has for its western border the Green and Hoosic Mountains, constitutes the New England Province, and, taken as a whole, has an interesting balanced arrangement. The ancient Green Mountain protaxis made up of Archæan to Ordovician rocks is balanced on the east by the equally ancient Nova Scotian series, which is lithologically similar, and both are gold bearing.

Next inwardly the narrow fault bounded

[1] Mill's "International Geography," pp. 717–732.