clearly: first, that English scholars have a genuine appreciation of the value of the study of the history of the physical sciences, and, second, a recognition of American activity in this same field. Present indications are that the study of this phase of the growth of civilization soon will win an important place in the curriculum of the American college.

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A NEW ELM DISEASE

AFTER the identification of the Dutch elm disease in Ohio, during the summer of 1930, some 300 specimens of diseased elm trees were collected or received from correspondents, examined and the fungi in them isolated in cultures at the Dutch elm disease laboratory operated by the Ohio Agricultural Experiment Station and the division of forest pathology, Bureau of Plant Industry, at Wooster, Ohio. In these cultures it was found that a certain fungus was present in a little over ten per cent. of the cases. The past history and the condition at that time of several of the trees from which this fungus was isolated indicated that they were probably parasitized, some dying entirely during the summer of 1930 and others losing part of their tops. On the strength of these observations, soon after growth began this spring, fourteen young elms were inoculated with the fungus.

About a month after inoculation, symptoms of disease appeared on seven trees. Drooping and wilting of the leaves, preceded or accompanied in most cases by a distinct yellowing was first noted. In a short time most of the leaves dropped although some leaves turned brown and remained on the twigs for more than a month. The diseased twigs and branches died as well as the main trunk above the point of inoculation. A blackening of the bark, which in a few cases extended directly up the trunk from the point of inoculation, was noted on some trees. Apparently the disease made more rapid progress upward than downward, since the branches below the point of inoculation with a few exceptions remained healthy. The entire top of one tree, inoculated at the base, died.

A brown discoloration of the cambium and current growth of sapwood was evident when cross-sections of the diseased branches were examined. The staining in the inoculated trees was more uniform and somewhat more diffused than that found in trees affected with either the Dutch elm disease or Verticillium wilt. However, the discoloration in some cases resembled that of the two latter diseases markedly.

The fungus was reisolated from the inoculated diseased trees but not from inoculated trees which did not develop the disease, although attempts were made to do so. Check trees remained healthy.

On potato dextrose agar the fungus first appears from plantings of diseased wood as a white, cottony colony of aerial mycelium. Later it becomes light brown. But one type of spore has been noted in the cultures. They are hyaline, generally elliptic, although the shape is variable, and in most cases contain one or two oil drops. The average size of 50 spores was 1.9 x 4.5 microns. Occasionally a group of spores loosely bound together in a small head and borne on the end of a short conidiophore was found. For this reason the fungus is tentatively referred to Cephalosporium. No difficulty is experienced in distinguishing this fungus from *Graphium ulmi* Schwarz. Although the spores are about the same size, the type of growth of the colony, its color, and the relatively scant spore production differentiate it from the organism causing the Dutch elm disease.

The fungus was cultured from specimens sent to the Dutch Elm Laboratory from Iowa, Missouri, New York and Washington, D. C., as well as from various localities in Ohio. A more detailed study of the disease and the fungus is in progress.

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THE GALL BLADDERS OF CHICKS IN A VITAMIN D DEFICIENT CONDITION[1]

SEVERAL times during the past few years we have noted in this laboratory that the gall bladders of chicks in a vitamin D deficient condition appeared to be larger than those of chicks of the same age but receiving an adequate supply of this vitamin.

Recently there was an opportunity to make quantitative observations of the gall bladders of two groups of chicks which had been on an experiment from hatching until nine weeks of age. Both groups received the same basal ration, which was deficient in vitamin D. For Group 1, 1 per cent. of cod-liver oil was incorporated in the ration, but Group 2 subsisted on the basal ration only. When the chicks were killed at nine weeks of age leg weakness was quite marked in the latter group, whereas the former was normal. The average weight of the gall bladders of Group 1 (ample vitamin D) was 0.57 gm (P.E. $\pm$ 0.04) and that of those of Group 2, 1.27 gm (P.E. $\pm$ 0.12). When the probable error of the difference between the two means is calculated and compared with the difference, a high degree of significance is obtained. Although accurate measurement of the volume of bile from the two sets of bladders was not feasible, the volume in the case of the deficient chicks was markedly larger than that of the normal chicks. It is significant that although the average

[1] Journal Series paper of the New Jersey Agricultural Experiment Station.

body weight of the vitamin D deficient group is approximately 60 per cent. of that of the normal group, the average weight of the gall bladders of the former is slightly more than twice that of the latter.

Whether the enlarged gall bladder is characteristic of the vitamin D deficient condition or whether it is found in chicks deprived of other dietary factors is not known.

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A TREMATODE FROM THE CLOACA OF THE GULL

RECENT experiments at the Marine Biological Laboratory, Woods Hole, Massachusetts, have shown that the oyster drill, *Urosalpinx cinereus,* is the snail host of *Parorchis avitus* (Linton 1914),[1] the adult trematode having been originally described from the herring gull, *Larus argentatus.* The cercaria was found by Stunkard in the summer of 1930 and a complete description of it has been submitted for publication. On account of the resemblance of this larva to *Cercaria purpurae*[2] which has been reported by Lebour and Elmhirst[3] to be the cercaria of *Parorchis acanthus* (Nicoll),[4] it was suggested that the present species might be the cercaria of *Parorchis avitus.*

Most of the larvae encyst on the bottom of the dish within forty-eight hours after escaping from the snail. They have not been found to encyst in the mantle of *Mytilus edulis,* as reported by Lebour and Elmhirst for the cercariae of *Parorchis acanthus.* This gives another specific difference between *Parorchis avitus* and *Parorchis acanthus.* The cysts were fed to tern nestlings which were brought into the laboratory shortly after hatching. Twelve flukes were obtained from the cloaca of a single bird which was killed ten days after the infestation was established. Although the worms recovered were not sexually mature, they were readily identified as *Parorchis avitus,* and this identification has been confirmed by Dr. Edwin Linton. Experiments are now being made in order to obtain mature worms and to complete the life history by infesting the snail. A detailed account of this work will appear at a later date.

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HYBRID WORDS

"SHAPOMETER" is a good expressive word, and Messrs. Tester and Bell are to be commended for disregarding pedantic conventions to secure a good word that suits their purpose. If such words are "obvious hybrids, interdicted by good usage," as stated by Mr. Dayton in the issue of June 26 (73: 704), it is time for scientists, who live in the present and face the future, to change the usage. Our language contains far too many words like "morphometer" or "psephometer" formed with undue consideration of a dead language and too little consideration of the needs of a living language and a progressive people. The English language would be in better shape if some people knew less Greek and Latin.

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REPORTS

GRAVITATIONAL AND ELECTROMAGNETIC FIELDS

PROFESSOR ALBERT EINSTEIN has recently completed a part of his work (in collaboration with Dr. Walter Mayer) on the "Unitary Theory of Gravitation and Electricity." It will be published in the near future probably in Pasadena in connection with Professor Einstein's investigations of last winter. Meanwhile Professor Einstein has prepared a preliminary announcement for the Josiah Macy, Jr., Foundation, under a grant from which the work was done. The statement was prepared by Professor Einstein in German, and the publication in English has been authorized by him. It reads:

Ever since the formulation of the general relativity theory in 1915, it has been the persistent effort of theoreticians to reduce the laws of the gravitational and electromagnetic fields to a single basis. It could not be believed that these fields correspond to two spatial structures which have no conceptual relation to each other. Thus arose the theories of Weyl and Eddington, which, however, have been abandoned by their authors, the theory of Kaluza and also the theory of distant parallelism. After we both had worked more than a year on the further development of the last theory, we reached the conclusion that we were striving in the wrong direction and that the theory of Kaluza, while not acceptable, was nevertheless nearer the truth than the other theoretical approaches.

Kaluza's theory rests on the assumption that the

[1] *Proc. U. S. Nat. Mus.,* 46: 551–555, 1914.
[2] *Trans. Nat. Hist. Soc.,* Newcastle, n. s., 1: 437–454, 1907.
[3] *Jour. Mar. Biol. Ass'n,* Plymouth, n. s., 12: 829–832, 1922.
[4] *Quart. Jour. Mic. Sci.,* 51: 345–355, 1907.