relationship is less obvious than usual, because the fungus only fructifies on the tree that it has killed, and the mycelial threads are only discoverable with difficulty on the living wood. The proof lies in the fact, well brought out in this report, that inoculation of a healthy tree with a piece of the fungus nearly always causes the disease.

As its name implies, the disease is characterised by the silvery look taken on by the leaves, due, apparently, to a disconnection of the cells. Changes in nutrition processes are, no doubt, the immediate cause, but it is suggested that the final cause is a poison formed during the growth of the fungal threads, which then spreads into the tree. This hypothesis explains, among other things, why the fungus is never found on the diseased leaves. The disease is usually fatal. All kinds of fruit are not equally susceptible; plums come first, followed by apples, laburnums, Portugal laurels, and pears as the least susceptible. If a tree recovers, it may still be badly attacked again; there was nothing to show that previous infection tends to immunise trees against subsequent attacks.

In New Zealand, where this disease is also troublesome, the application of ferrous sulphate is recommended as a remedy, but the authors cannot find that it is of any value. Indeed, no method of treatment seemed trustworthy, and all that the grower can do as yet is to burn affected trees and so prevent the disease from spreading.

Elementary Treatise on Physics, Experimental and Applied, for the Use of Colleges and Schools. Translated from Ganot's "Eléments de Physique." By Dr. E. Atkinson. Eighteenth edition, edited by Prof. A. W. Reinold, F.R.S. Pp. xiv+1225. (London: Longmans, Green and Co., 1910.) Price 15s.

ALL teachers and most students of physics know Ganot's "Physics," and will be interested in the appearance of another new edition. On examining the new volume they will find changes in the arrangement of subjects and chapters. In the section dealing with heat, the subjects of solution, equilibrium, and liquefaction have been put into separate chapters. Radiation is now dealt with under light. In numerous parts of the book extensive additions have been made, and much new matter on modern subjects of physics of great importance has been added. But to prevent an undue increase of size, sections dealing with matters of no interest to students of to-day have been omitted. In its new form the treatise is likely to continue its popularity. When another edition is necessary the editor should substitute a modern form of rain-gauge for that on p. 1146, and revise the section on the Gulf Stream on p. 1172, where several time-honoured fallacies are repeated.

Dunkelfeldbeleuchtung und Ultramikroskopie in der Biologie und in der Medizin. By N. Gaidukov. Pp. vi+83+Tafel v. (Jena: Gustav Fischer, 1910.) Price 8 marks.

THIS booklet gives a brief but fairly complete summary of the researches which have been pursued by means of dark ground illumination and the ultramicroscope in the domain of biology and medicine. Thus the structure of colloids and of "sols" and "gels" and the minute structure of various animal and vegetable cells as revealed by these methods are epitomised. But the methods themselves receive but the scantiest notice, the theory of the subject and the apparatus being dismissed in the space of a couple of pages. Those who desire to work at the subject will therefore have to seek instruction elsewhere. In some cases we do not think justice is done to ordinary methods of illumination; in Fig. 5, for example, a comma bacillus is depicted as being practically structureless when viewed by transmitted light, whereas with care a certain amount of structure can always be made out. Dark ground illumination no doubt does much to elucidate the finer structure of minute unicellular organisms; how far the ultramicroscope will help remains to be proved.

The work concludes with a very useful bibliography, and is illustrated with numerous figures in the text and five plates, two of which are coloured.

R. T. H.

LETTERS TO THE EDITOR.

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The Limiting Line of Sedimentation in Wave-stirred Areas.

IF you can spare the space I think I can put your reviewer (October 6, p. 433) in the way of obtaining the information he seeks as to the "limiting line of sedimentation" in "wave-stirred areas." The presence of tidal and other currents is assumed.

In a paper to the Royal Society in 1882 I chanced to hit upon this limit, experimentally and incidentally, in the following observation:—

"Dried peas placed on a glass plate in a slight depression on a sandy bottom in 6 inches of water were rolled off by waves about 12 inches long and about 1 inch high. . . .

"Shorter waves 1½ inches high had much less effect on them. A little sand that had collected on the glass was beautifully rippled with ⅛-inch ripples" (Proc. Roy. Soc., 1882, p. 16).

According to this chance experiment the limit was rather more than half the wave-length.

In 1884 I submitted to the late Sir G. G. Stokes, F.R.S., the case of a soda-water bottle, trawled at about 40 fathoms in the English Channel, which exhibited evidence that it had been subjected to long periods of quiescence, with intermittent disturbance. Sir George Stokes replied in the very important letter published in my paper on the Skerries Shoal (Trans. Devon. Association, 1887, p. 498). For publication in the same paper I had asked Lord Rayleigh to give me some simple formula for ascertaining the practical limit of wave-action. His reply was:—

"For each step downward of $\lambda/8$ divide by 2·2." I may mention that λ represents the wave-length.

Now according to this formula the disturbance at a depth of half (or four-eighths) of the wave-length is about one-twenty-third of that at the surface, whereas at the depth of five-eighths it is about one-fiftieth. I believe that one-fiftieth is negligible, whereas one-twenty-third is not always so.

Thus the limit of disturbance lies between half and five-eighths of the wave-length.

This exactly agrees with my accidental tank experiment.

For further confirmation I may refer your reviewer to Stevenson's interesting discussion on the "Level assumed by Mud a Measure of Exposure" (Stevenson on Harbours, second edition, p. 16).

I will not trouble your reviewer with my own papers except to mention one in the Linnean Society's Journal, Zoology, vol. xviii., p. 263, "On the Influence of Wave-currents on the Fauna inhabiting Shallow Seas."

At the recent inquiry on coast erosion Mr. R. H. Worth cited a delightful zoological proof of a local limit of disturbance. Speaking of *Alcyonium digitatum* and several other hydroids, Mr. Worth stated that:—

"Somewhere below 35 fathoms they will attach themselves to light bodies; above 25 fathoms they will never