of these tubers showed the necrosis to be the characteristic phloem-necrosis which is being investigated. The tubers from the two check cages where the vines had been kept free from aphids and from all other insects showed no necrosis.

This is the first instance, so far as the writer is aware, of the production of net-necrosis under control conditions, and the first proof of what has been heretofore a hypothesis, though supported by considerable evidence, namely, a causal relationship between leafroll and net-necrosis.

The suggestion as to the above relationship is not new. Schultz and Folsom in Maine, showed in 1921 that net-necrosis occurred in varying percentages in hills adjacent to and in the near vicinity of leafroll plants. They further characterized the necrosis as a phloem necrosis rather than a necrosis of the xylem of the vascular tissues and suggested that it might be due to the same virus as that causing leafroll. The experiment here reported furnishes strong evidence that the above suggested explanation is a correct one.

The complete data connected with this investigation will be published in a forthcoming paper.

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"GENERAL ZOOLOGY"

I FEEL that I can not let Mr. H. L. Clark's review of my text-book of general zoology (SCIENCE, VOL. 67, No. 1726) pass without comment. Mr. Clark appears to have two main grievances which (with apologies) he airs at some length. They are (1) the choice of title and (2) the fact that I have omitted all mention of the Echinodermata! I omitted mention of many other groups of the animal kingdom, but I can quite understand that these omissions are nothing like so criminal to him. Mr. Clark is known to us as a very capable investigator of the Echinodermata. I am not sure what experience he has had of teaching work in the universities or higher schools of to-day. He starts off, however, by classifying teachers of zoology into three groups: (1) those stressing structure, (2) those emphasizing function and (3) those magnifying habits and life histories.

I venture to say that this classification is not only incomplete but unjust. There are many teachers of zoology to-day who realize the importance of a broad study of their subject and who endeavor to combine the studies of structure, function, life history and habits.

Now in England in the past it has been customary (and I think the arrangement may not have been different in the United States) to introduce the subject of zoology by a detailed course on the structure of a limited number of well-known types—amoeba, hydra, crayfish, dogfish, pigeon and rabbit. Many students who took this course never heard anything about the way the structures functioned, and it was very difficult for them to find anything in the literature about the physiology of these common types. This very one-sided study of zoology is now realized to be out of date. There is no need for me to discuss that here; it is universally recognized by the best teachers to-day.

Well, I was asked to write a text-book which would introduce the usual types, so that their structure could be studied in detail in the practical classes *together with a study of function.* The book was not to exceed five hundred pages—quite large enough for the purse of most first-year students in this country. If I had described the morphology of the types at length, I should have simply duplicated much that is found in many excellent text-books already in existence. I, therefore, expanded the functional side and introduced a very considerable amount of information not found in any elementary text-book of zoology or physiology with which I am acquainted. Structure was not neglected, but illustrations were used to save description and to aid the students in their dissections.

I do not apologize for the plan of the book. It is novel and that at least is something these days. To Mr. Clark's rebuke that I have omitted all mention of turtles, echinoderms and the songs of birds I retort that they do not come into our introductory text-books in this country. I still wonder whether he was serious when he wrote about the songs of birds.

My reply to his last sentence is that a student familiar with the contents of my book and with the laboratory training which accompanies it, will have a far better knowledge of animal life than one who has only studied the structure of representatives of a large number of animal groups and a far better training than one who has swallowed a superficial account of chatty nature study.

As to my choice of title "The Elements of General Zoology." Zoology to me is the study of animal life, and physiology is as important a part of it as morphology or taxonomy. I do not belittle either of the latter. The necessity of morphological work is clearly indicated.

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THE PRONUNCIATION OF RESEARCH

IN the issue of March 23, Nicholas Kopeloff expresses the opinion that "overwhelming usage seems to