tion of assistant professor of chemistry at the University of Arizona, to fill the position vacant by the death on November 21 of Professor B. Tatarian.

M. LASSOUR has been appointed professor of microbiology at the University of Nancy.

DISCUSSION AND CORRESPONDENCE

THE STARCH GRAIN

TO THE EDITOR OF SCIENCE: The article by O. L. Sponsler on "The structure of the starch grain" in the November issue of the *American Journal of Botany* is of more than ordinary interest. If we understood the structure of the starch grain and could produce it artificially in the laboratory it would mark the beginning of our intimate knowledge of biological problems.

The starch grain is elusive and one may study hundreds of specimens and yet not have the typical specimen revealing its intimate structure. Some years ago I obtained a hint from Fischer's work on Inulin. Late on a summer's afternoon I went to the laboratory and treated all of the starches which I had with aniline dyes. The mixtures were allowed to spontaneously evaporate over night and I obtained specimens which showed without doubt the complex nature of the grains. This was particularly true of potato starch. As I had a quantity of the stained material, I supplied all who wished specimens and it was not until a year or more later when I attempted to repeat the experiments, that I could not confirm my original work. I then very carefully attacked the problem in much the same way as I had studied the continuity of protoplasm, but to no avail. I worked for several years trying to repeat these experiments but have never succeeded since.

Mr. Sponsler has studied the starch grain using X-rays in much the same way that Herzog and Jancke had done in the study of the cell wall. Mr. Sponsler's attack of this problem is of very great scientific interest and while his results seem to indicate that the starch grain does not have a crystalline structure, I doubt if the results are conclusive. As I have shown, there is a substance in the grain which is dextro-rotatory and it is not at all difficult to observe starch grains which show, as pointed out by Meyer and Schimper, a spherocrystal structure.

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WHAT IS A PLANT?

THE writer has unsuccessfully sought for a definition of the term *plant* suitable to use when introducing the subject of botany to college classes. The definitions given in the dictionaries are all unsatisfactory. According to Webster's International Dictionary (1922), a plant is "any member of a group of living organisms exhibiting irritability in response to stimuli, though generally without voluntary motion or true sense perception." Funk and Wagnall's Standard Dictionary (1913) defines a plant as "an organized, non-sentient being endowed with vegetable as distinguished from animal life." Both definitions, but particularly the latter, recall Linnæus' distinction, long discarded, of plants as structures that grow and live, while animals grow, live and feel. The definition given in Jackson's Glossary of Botanic Terms (3rd ed. 1916)—"a vegetable production, nourished by gases or liquids and not ingesting solid particles of food"—is even more unfortunate. The text-books are still more vague, commonly not even attempting a definition, but plunging abruptly into a discussion of the special characteristics of plants.

In the belief that a concise, clear-cut definition of the term is of very definite value to the beginning student, the writer ventures to present to his colleagues for their criticism the following definition which he has been using in his classes: *A plant is an organism possessing chlorophyll or descended from chlorophyll-possessing ancestors.* This definition, given at the outset, makes the method of nutrition the primary basis for distinction between the two groups, the other differences being naturally presented as in large measure the consequence of this fundamental difference. At the same time, it provides for the inclusion of the non-green plants and places significant emphasis, at the very beginning of the course, upon the idea of evolution. Bacteria, except possibly certain of the higher filamentous forms, are excluded. In view of the power of chemosynthesis possessed by certain members of that group, and of the very plausible possibility that they