tent that the average man knows not what to believe, he sees so many contradictory statements, drawings and photographs.

It need hardly be pointed out that little real progress can be made in any branch of scientific work until the fundamental points are placed on a much more secure foundation than are many of the most important details regarding Mars.

It would seem that the best way of finally settling some of these matters would be, as suggested by Professor Aitken, to have them passed upon by a committee of experts of such well-recognized standing as to make their unanimous verdict final and acceptable to all scientific men.

Then, and not until then, will these questions of the surface markings of Mars be upon a dependable basis.

It is also pertinent to point out the saving of time which will result in many ways and to many people by having a sure foundation in this matter.

The financing of such a project should not be at all difficult considering the general interest which attaches to Mars.

C. D. Perrine

Kircher and the Germ Theory of Disease

It would appear from Dr. Garrison's article on "Fracastorius, Athanasius Kircher and the Germ Theory of Disease,"[1] that I am in the usual plight of one who attempts to fix credit for the early suggestion of a scientific theory. Apparently there is always to be found some one who had thought it all out long in advance of—the next man. But though I have no desire to play the rôle of special pleader for Athanasius Kircher, it is only fair to point out that Dr. Garrison does this early investigator an injustice when he says that "Neither Kircher nor Leeuwenhoek could have seen bacteria of any kind with the lenses at their command. . . . His [Kircher's] glass or microscope was only 32 power at best."

Aside from Kircher's apparently loose statement that one of his microscopes showed objects "a thousand times larger," we have no direct data regarding the magnifying power of his lenses. We do know that the simple microscopes of his and Leeuwenhoek's time possessed great magnifying power and that by their use many structures were studied which at present we should not think of examining without a compound microscope. We know, too, that of the several microscopes described or figured by Kircher, one type was fully comparable to those of Leeuwenhoek and, fortunately, concerning the latter we have very full and definite information. One of the Leeuwenhoek microscopes still extant and described by Harting, had a magnifying power of 67 diameters. The twenty-six microscopes presented to the Royal Society of London, by Leeuwenhoek, varied in magnifying power from 40 to 160 diameters. The maximum power of those known is possessed by one still preserved in the Museum at Utrecht, which magnifies 270 diameters.

In the face of these facts and Leeuwenhoek's detailed description of, for instance, the organisms found in scrapings from the teeth, it hardly needs the additional evidence of his illustrations to prove that this worker really saw bacteria. No one believes that Kircher anticipated by some two hundred and fifty years Yersin's and Kitasato's discovery of the bacillus in the blood of plague patients, but I still believe that "There is no doubt that long before Leeuwenhoek's discovery, Kircher had seen the larger species of bacteria" in putrid broth, milk and the like. Imperfect and faulty as his observations must have been, he had definite observation as a basis for his theory of the animate nature of contagion. Certainly, his conception of the rôle of flies in the transmission of disease marked an advance over the theory of Mercurialis.

William A. Riley

Kahlenberg's Chemistry

To the Editor of Science: Inasmuch as possibly a large majority of teachers of first-year college students will agree with Dr. Hopkins in his criticism[1] of Lewis's review of

[1] Science, April 1.

[1] Science, N. S., XXXI., p. 539.