in any astronomical journal, either in full or in abstract, by Messrs. Lowell and Slipher; nor have I seen reviews of these articles by others.

When I was photographing the spectrum of Mars in December, 1896, with the high dispersion of a Rowland grating, fourth order, 14,438 lines per inch, as described in the *Astrophysical Journal,* volume 5, page 236, 1897, I realized that the Doppler-Fizeau principle offers great advantages for solving certain questions of the Martian atmosphere, as the water vapor and oxygen lines introduced in the Martian spectrum by the earth's atmosphere would be displaced with reference to corresponding lines in the Martian spectrum; but that the method could not be applied, with high dispersion, as the critical lines are all situated in the red, orange and lower yellow, for which regions sensitive plates were not then available. The isochromatic plates of that date gave under-exposed images. However, the question of applying the method by means of the three-prism spectrograph, which had then been in successful use for nearly a year, was thoroughly investigated to determine whether the dispersion of the three-prism instrument, when adjusted for the orange region, would be sufficient to separate or broaden appreciably the Martian and telluric lines when Mars was near quadrature in the first half of 1897. It was found that the dispersion was too low to afford any hope of success, and as the comparatively insensitive dry plates would not admit of higher dispersion, the subject was temporarily dismissed.

I find that Dr. Slipher's observations were first attempted in 1902–03, not published till August, 1905, and again early in 1905; but as his telescope had a smaller light collecting power and his spectrograph apparently a lower dispersion than I had considered using in 1897, his efforts failed. Here is his conclusion: "Measures were made, but they were difficult, uncertain and discordant, and neither proved nor disproved the displacement."

I note that while Professor Lowell recognized the existence of the method of solution in October, 1902, as stated in his bulletin, he appears to have published nothing until August, 1905.

Appropriate notes will be published in the Lick Observatory Bulletins calling attention to Professor Lowell's and Dr. Slipher's articles, as well as to Dr. Slipher's results in low dispersion photography of the Martian and lunar spectra obtained in the summer of 1905, which led him to the conclusion: "No bands or lines could be seen in Mars that were not in the moon, nor any that were certainly stronger in the planet than in the moon. In short, the spectrum of Mars appeared the same as that of our equally high moon, so far as selective absorption is concerned."

W. W. Campbell

Mt. Hamilton,
August 15, 1910

QUOTATIONS

The Sheffield Meeting of the British Association

Huxley, in one of the last of his addresses, expressed some apprehension lest science should be crushed by the weight of the very gifts which she had demanded with such insistence from nature. The same thought has been present to many minds during the Sheffield meeting of the British Association, although it may not have been formulated with any preciseness. There was a time, not so many years ago, when men of science could aspire to the possession of an all-round acquaintance with many, if not all, departments of natural history, as it was then called. That time has gone by, and the infinite specialization which is a leading characteristic of science to-day is becoming more and more embarrassing to those engaged in the advancement of knowledge. This may be one of the causes of the comparative paucity of the numbers attending the Sheffield meeting. At first it seemed as if the members and associates would fall short of the number which took part in the previous meeting at Sheffield thirty-one years ago. Happily, this has not proved to be the case. There have been 1,449 members and associates this year, as compared

with 1,404 in 1879. Still, the fact remains that the number is the smallest recorded since the meeting at Dover in 1899. And this, notwithstanding the fact that Sheffield has doubled its population in the last thirty years, and increased enormously also in wealth and importance.

Many reasons are given for this state of things. By some it is attributed to the large number of congresses annually held in various parts of the United Kingdom and the Continent; by others to the lack of interest taken by the general public in scientific progress; by others, again, to the highly abstruse and recondite nature of many of the papers submitted to the sections. It is pointed out, moreover, that the number of scientific societies and institutions has enormously multiplied during the last few years, and that in these bodies there is a steady and frequent supply of reports and papers similar in kind and quality to those which it has been customary for so many years to contribute once a year to the British Association.

One thing is certain: that the president and council of the association are alive to the situation. They have given and are giving earnest consideration to the question of how to maintain in a high state of efficiency an institution which has played so honorable a part in the advancement of science in the past; and are resolved to put forth every effort to maintain its prestige and add to its usefulness. It is recognized that there has been too great a tendency in recent years to the creation of what may be described as water-tight compartments. In some of the sections, moreover, the papers read have been of so technical a character as to preclude all possibility of comprehension of them by more than a small number of highly-trained experts. The British Association exists to welcome to its meetings the results of the latest and most advanced research, but there is every desire to minimize the disadvantages attendant on specialization. Hence the large number of joint sittings of sections, which has been a notable feature of the Sheffield meeting.—The London *Times*.

SCIENTIFIC BOOKS

The Vegetable Proteins. By THOMAS B. OSBORNE, Ph.D., Research Chemist in the Connecticut Agricultural Experiment Station, New Haven, and Research Associate of the Carnegie Institution of Washington, D. C. Pp. xiii + 125. New York, Longmans, Green, and Co. 1909.

It would be difficult to name a scientist better qualified to review the present status of our knowledge of the vegetable proteins than the author of this monograph. For twenty years Dr. Osborne has unremittingly devoted his energies to the investigation of the problems in this domain; and any adequate presentation of the chemistry of plant proteins must consist in large measure of a résumé of his own contributions to the subject. Out of the chaos of the earlier work there has been evolved a more systematic knowledge of a group of compounds whose importance is just beginning to win appreciation and application in many departments of biological chemistry. Barely receiving mention in the treatises of yesterday, the vegetable proteins are to-day obtainable in a degree of purity scarcely approached in the case of the comparable compounds of animal origin. They are therefore supplanting the latter as materials for the study of protein structure and metabolism; and the development of protein chemistry is likely to receive greater impetus in the immediate future in connection with the products isolated from plant sources.

The present monograph has been written with characteristic accuracy and betrays first-hand knowledge of both facts and literature on every page. Here one finds the first adequate historical review of the subject, beginning with Beccari's experiments with wheat flour (1747) and the early story of gluten. A brief description of the occurrence of proteins in the different parts of plants is accompanied by chapters on the following topics: basic and acid properties of proteins; their solubility, precipitation, denaturing, and physical constants; products of hydrolysis; classification;