mour Institute of Technology, Chicago. He had previously given the Institute an endowment of $1,500,000.

Mr. Washington Duke has given $100,000 to Trinity College, Durham, N. C., which makes the total amount of his gifts to the College $425,000.

Dr. D. K. Pearsons, who has assisted so many smaller colleges, has offered to give the Salt Lake College, of Salt Lake, Utah, $50,000, on condition that its officers raise $100,000 more within a year.

Dr. George W. Hill has been appointed lecturer in celestial mechanics in Columbia University, Miss Catherine W. Bruce having given $5,000 for this purpose.

Professor I. J. Macomber, of Cornell University, has been appointed professor of electrical engineering in the Armour Institute of Technology, Chicago.

Dr. C. E. Bessey, of the University of Nebraska, will give a course of fifteen lectures on botany in the Texas-Colorado Chautauqua, Boulder, Col., in July and August.

Of the twenty fellowships annually awarded at Johns Hopkins University, the following were in science: Joseph Scudder Chamberlain, of Ames, Ia., S.B., Iowa Agricultural College, 1890, *chemistry*; Percy Millard Dawson, of Montreal, Canada, A.B., Johns Hopkins University, 1894, and M.D., 1898, *physiology*; George Stronach Fraps, of Raleigh, N. C., S.B., North Carolina Agricultural College, 1896, *chemistry*; Leonidas Chalmers Glenn, of Crowder's Creek, N. C., A.B., University of South Carolina, 1891, *geology*; Caswell Grave, of Monrovia, Ind., S.B., Earlham College, 1895, *zoology*; George Oscar James, of Bowers Hill, Va., A.B., Johns Hopkins University, 1895, *mathematics*; Joseph Francis Merrill, of Richmond, Utah, S.B., University of Michigan, 1893, *physics*; Eugene Lindsay Opie, of Baltimore, A.B., Johns Hopkins University, 1893, and M.D., 1897, *pathology*; Frederick Albert Saunders, of Ottawa, Canada, A.B., University of Toronto, 1895, *physics*.

The following are among the twenty-four University fellowships awarded in Columbia University: E. L. Firth, C. E., Cornell University, 1895; Columbia University, 1898, *sanitary engineering*; G. B. German, A.B., Columbia College, 1895, assistant in mathematics, 1895–98, *education*; E. Hagen, University of Vermont, 1897, Columbia University Scholar in Botany 1897–98, *botany*; O. B. Huntsman, A.B., Harvard University, 1897–98; *philosophy*; J. D. Irving, A.B., Columbia College 1896, Columbia University Fellow in Geology 1897–98, *geology*; E. Kasner, B.S., College of the City of New York 1896, A.M., Columbia University 1897, University Fellow in Mathematics 1897–98, *mathematics*; W. C. Kretz, A.B., Columbia College 1896, A.M., Columbia University 1897, University Scholar in Astronomy 1897–98, *astronomy*; J. W. Miller, Jr. B.S., Pennsylvania State College, 1897, *mechanics*; F. C. Paulmier, B.S., Princeton University 1894, M.S. 1896, Graduate Student at Columbia University 1896–98, *zoology*; F. J. Poyse, A.M., Queen's University, Kingstown, Canada 1898, Graduate Student at Columbia University 1897–98, *chemistry*; R. S. Woodworth, A.B., Amherst College, 1891; A.B., Harvard University 1896 and A.M. 1897; Assistant in the Physiological Laboratory of Harvard University 1897–98, *psychology*.

DISCUSSION AND CORRESPONDENCE.

COLOR VISION.

There are certain points in Mrs. Ladd Franklin's letter of June 3d that call for comment.

1. Mrs. Ladd Franklin sharply criticises me for having termed the Helmholtz theory a 'three-fibre' theory. The offence, if committed, would not be heinous. The phrase 'Dreifasertheorie' is current in German monographs, and is a convenient, if not strictly accurate, designation of the tricomponent theory. As a matter of fact, however, there is no single passage in my letter in which I characterize that theory as a three-fibre theory!

In mentioning von Kries' double-white process I added, in explanatory parenthesis, the words 'one-fibre white and three-fibre white.' I did this because I supposed that the lay reader might be troubled by the preceding phrase, and because I had found the terms valuable in my

lectures on optics, as shorthand names for the processes in question. Precisely the same terms have recently been coined by Hering and Hess (*Untersuchungen an total Farbenblinden*, Pfl. Arch., LXXI., Heft 3 and 4; March 25, 1898).

2. I spoke of Koenig's 'shift of excitability.' Mrs. Ladd Franklin rejoins that Helmholtz and Fick had a shift of excitability. Of course. If I had not known this from Hermann's *Handbuch* and the *Optik*, at least I should have known it from Mrs. Ladd Franklin's paper in Mind (N. S., II., p. 478; Oct., 1893), in which the facts are fully set forth. I wrote of Koenig's shift, and not Fick's, because it was Koenig's work, and not Fick's, that I wished to call attention to. I was referring to current theories, and had in mind the elaborate paper by Koenig and Dieterici, *Die Grundempfindungen in normalen und anomalen Farbensystemen und ihre Intensitätsvertheilung im Spektrum* (published in complete form in the *Zeitschrift*, IV., p. 241; 1893), and the pages in the *Optik* that rest upon the authors' experiments (2d ed., pp. 366 ff.).

3. On this basis—on the basis of a sheer misstatement, and of misapprehension of a position that should have been clear from the context—Mrs. Ladd Franklin charges me with concealing under an *ex cathedra* manner a 'rather unusual degree of ignorance.' The dogmatic manner of my previous letter I explained and apologized for: Professor Stevens accepted the apology in the spirit in which it was offered. As for the ignorance, the facts are these:

No professor of a total subject—physics or physiology or psychology—can keep adequately abreast of every line of work in his science in any given year. One has to 'keep up,' in a rough way, with most things, and to devote oneself in successive years to the detailed study of a succession of single things. This year has happened to be my optics year. I spent the summer vacation of 1897 and the spare time of the academic year 1897–8 upon optics. When Professor Stevens' letter appeared I felt that I was, perhaps, at the moment, better qualified than most of my colleagues to give him the bird's-eye view he asked for; it seemed to be a matter, if not of scientific duty, at least of scientific courtesy, to pen a brief statement in reply. Mrs. Ladd Franklin's sarcastic remarks about 'renewing my study,' etc., would apply, I take it, equally well—or badly—to every professor of every science in the country. Yet science manages to get on.

4. My position with regard to new theories is misrepresented by Mrs. Ladd Franklin. See my first letter, p. 605.

5. I said that Mrs. Ladd Franklin's theory had had 'grave experimental objection urged against it.' It was open to the author of the theory to call for proof of this statement. She has preferred to give it a flat denial. "There is no experimental evidence against my theory" (p. 775). Fortunately, the literature is still extant.

6. Mrs. Ladd Franklin concludes with an attack on the color theory of my *Outline of Psychology*. I would point out, in the first place, that my last chance for corrections was February 9, 1897 (see Preface to third ed.), whereas the last installment of Müller's paper is dated May 8, 1897. Should the book ever come to a fourth edition, Hering and Müller will be in it, unless the optical situation changes. Secondly, as regards the confusion of the theory, I did my best with the materials existing: I took Wundt's theory and, under the influence of Hillebrand's well known paper (*Ueber die specifische Helligkeit der Farben:* in the *Sitzungsber. d. k. Akad. d. Wiss. in Wien*, Feb., 1889), carried the brightness side of it to its logical conclusion. My position may have been overcautious, over-sceptical; but I was trying to write a scientific book. I can see no ground for the charge of confusion.

I fear that the above remarks contribute nothing at all, directly, to science. I feel, however, that they should in justice be made, since Mrs. Ladd Franklin has been allowed to run amok through my previous letter. Indirectly they may be of service, if they show Mrs. Ladd Franklin that it is necessary to read before you criticise, and that there are amenities to be observed even in scientific controversy.*

E. B. TITCHENER.

*A small point, but typical. In the first five lines of p. 774 Mrs. Ladd Franklin manages to misquote me and to misname Hering's work. The *Zur Lehre* is a collection of six papers, and we have two specifically theoretical papers from the year 1874.