ing systems, too much light is being used for the welfare and comfort of the eye. Added to this is the effect of the position of the light in the field of vision. The kerosene lamp may be placed at the back or side of the person using it, and, if in the field of vision, it is usually at or near the level of the eye. In the two former cases the effect of concealed lighting is given, and in the latter case the lamp occupies the most favorable position possible for an exposed source. That is, if the source of light is to be in the field of vision at all, it should be as nearly as possible at the level of the eye. This is because of the greater tendency of a light source to produce discomfort and loss of efficiency when its image falls on the upper and lower halves of the retina than when it falls in the horizontal meridian. These facts have been clearly brought out in our work on the effect of position of the light in the field of vision.

In addition to studying the conditions that give us maximum efficiency, it is important to determine the lighting conditions and eye factors that cause discomfort. In fact, it might well be said that our problem in lighting at present is not so much how to see better as it is how to see with more comfort and with less damage to the general health on account of eye-strain. Any comparative study of the conditions producing discomfort necessitates a method of estimating discomfort. As stated earlier in the paper, our method of estimating discomfort is entirely distinct and separate from our method of studying efficiency. Time can not be taken here to go into details of either the method or of the results of this study. It will be sufficient to say that the effect of distribution of light and surface brightness, intensity, and quality are also being studied in their relation in the comfort as well as to the efficiency of the eye.

In conclusion, the writer wishes to point out that no one of the factors he has mentioned can be safely omitted in the search for the most favorable conditions of lighting. Nor can one be investigated and a correlation between it and the others be taken for granted. We have been content, heretofore, to base our conclusions with regard to the relation of a lighting system to seeing on the conventional visual acuity test. While this test may tell us something about the general level or scale of efficiency of the fresh eye, it can tell us nothing of loss of efficiency, because the muscles of the eye, although they may have fallen off enormously in efficiency, can under the spur of the will be whipped up to their normal power long enough to make the judgment required by the test. Moreover, it tells us nothing of the conditions that produce discomfort. In short, the general level or scale of efficiency of the fresh eye, loss of efficiency as the result of work, and the tendency to produce discomfort constitute three separably determinable moments, no one of which should be neglected in installing a lighting system.

C. E. FERREE

BRYN MAWR COLLEGE

CARL FUCHS

MR. CARL FUCHS, the well-known entomologist, died on June 11, 1914, at his home in Alameda, California. He had attained the good age of 74 years, 6 months and 17 days, and was a native of Hanan, Frankfurt-am-Main, Germany, where he was born on November 25, 1839. His remains were cremated. He was always active, energetic and punctual in business, and was noted for his enthusiasm on all matters appertaining to his favorite study. His specialty was the Coleoptera, and up to the time of the earthquake and fire of 1906, he had the largest collection on the Pacific Coast. The loss of this—his life's work, with the exception of a few boxes which contained a genera collection—greatly depressed his spirit and ambition for a time. He rallied, however, and had by unceasing efforts up to the time of his death amassed another moderately large collection.

Mr. Fuchs was one of the most hospitable, kind and lovable of men, ever ready to aid amateurs or his younger colleagues, both as regards advice and material. The news of his death will be a shock to his numerous friends both in the United States and abroad.

His trade was that of a chaser and engraver,

at which he worked up to about three years ago. His work was always of the highest order. His neatness and exactness in the preparation of entomological material was unique and characteristic. It gained for him the appointment of assistant curator in the entomological department of the California Academy of Sciences, where he worked up to the time of his last illness. After the San Francisco disaster and while the academy was unsettled he received the appointment of preparateur and assistant in the entomological department of the University of California, where he was known by the students as Professor Fuchs. When the California Academy of Sciences was again ready for his services he returned to it.

He leaves a widow, Maria Fuchs, who was a typical and devoted helpmate, and who could even excel her husband in the care and mounting of the coleopterous Pselaphidæ.

In the death of Mr. Fuchs, one of the last of a group of the older entomologists has passed away; to this group belonged Frederick Blanchard, Samuel H. Scudder, Henry Ulke and Phillip R. Uhler. The younger entomologists of the Pacific Coast, many of whom were his intimate friends, have ever been stimulated and enthused by his earnestness and example. He was a member of the California Academy of Sciences, and also of the Deutsche Entomologische Gesellschaft of Berlin. It was he who organized the Pacific Coast Entomological Society and was its first president, a position which he held for several years. In his earlier years he was similarly connected with the Brooklyn Entomological Society, and contributed short articles and notes to its *Bulletin*. In 1882, he published a synopsis of the Lucanidæ of the United States.

Frank E. Blaisdell, Sr.

ESTIMATES OF POPULATION

The United States is now a country of 109,000,000 people, according to the bulletin containing the estimates of population for the years subsequent to the thirteenth census, soon to be published by Director William J. Harris, of the bureau of census, Department of Commerce. It was prepared under the supervision of C. S. Sloane, geographer.

As stated, the estimated population of the United States for July 1, 1914, will be 109,021,992. The population of the United States and its possessions in 1910 was 101,748,269; so there will have been an estimated gain of over 7,000,000 persons in a little more than four years. The corresponding estimated population of continental United States for July 1, 1914, is 98,781,324, as compared with the population of 91,972,266, as returned by enumerators, April 15, 1910. This bulletin also presents the estimates of population in 1910, 1911, 1912, 1913 and 1914, for the states and territories, and for cities which had 8,000 or more inhabitants in 1910.

Estimates of population are required primarily for use in the census bureau in calculating death-rates and per capita averages for years other than the census year. The so-called arithmetical method was adopted for computing these estimates. It is the simplest and it has been shown by experience to come nearer in accuracy in the majority of cases than any other formula. It rests on the assumption that the increase in population each year since the enumeration is equal to the annual increase from 1900 to 1910.

The bulletin presents in its several tables population data for the United States and its outlying possessions in 1910 and 1900, with estimates of the population July 1, 1914, 1913, 1912, 1911 and 1910. Similar data are also presented for the different states in the union. There is also presented a statement of white and colored population on April 15, 1910, together with estimates of the white and colored population as of July 1 for each of the years 1914, 1913, 1912, 1911 and 1910. These estimates, however, have been confined to the states having a considerable proportion of colored population, no estimate being presented for any state that did not have 50,000 or more colored inhabitants on April 15, 1910, or at least ten per cent. of its population colored.

The estimates of population for July 1,