tory character to the diagram, and was as common in Central America, where it gave rise to the sacred 'year' of 260 days, as in many parts of the Old World. Such calendars were not originally time-measurers, but divining schemes, as Sahagun expressly states.

THE RACIAL GEOGRAPHY OF EUROPE.

THE complex and historically important subject of the geographical distribution of racial types in Europe has been closely studied by Prof. W. Z. Ripley, and will be made the theme of a series of articles in the *Popular Science Monthly*, beginning with the February number. The articles will be amply illustrated by maps, diagrams and some fifty hitherto unpublished portraits of race types reproduced from original photographs. Having had the advantage of looking through Prof. Ripley's collections upon this branch of anthropology, I feel sure his articles will add much new material and many valuable suggestions to a comprehension of the racial questions of modern Europe. Such points as the cephalic indices, the distribution of blonds and brunettes, the comparison of stature and weight, etc., when studied from hundreds of thousands of individual measurements, must lead to results more secure, and perhaps quite differing from those hitherto published.

D. G. BRINTON.

UNIVERSITY OF PENNSYLVANIA.

NOTES ON INORGANIC CHEMISTRY.

IN the last number of the *Chemical News*, Prof. John Waddell, of the Canadian Royal Military College, describes a large number of experiments on the permeability of various elements to the Röntgen rays. He concludes "that the elements may be divided into two classes, those of low atomic weight and those of higher atomic weight, the transition taking place between the atomic weights of 30 and 40. Among the higher elements the opacity is probably not far from being proportional to density, but with elements of low atomic weight the same law does not hold; sodium, for instance, is decidedly more permeable than aluminum; lithium and sodium are more nearly alike. Metals and non-metals cannot be differentiated from each other; boron is less permeable than sodium, and sodium is less permeable than oxygen."

THE cause of poisoning from wall papers containing arsenic has often been ascribed to the formation of arsin (arsenetted hydrogen) by the action of mould on the paper. An account is given in the last Berichte of a number of experiments carried out by O. Emmerling bearing on this subject. Several different kinds of bacteria were grown in cultures containing arsenic, and in no case was arsin present in the gases evolved. The same was true when several different species of moulds were used. A moist arsenical paper was exposed in a tube in a current of air till it had on it numerous colonies of moulds, yeasts and bacteria. The air was drawn through a silver nitrate solution and no trace of arsin was present. Hence it would seem that danger from arsenical wall papers is not from the formation of arsin, but from particles of dust given off from the paper. Happily, few wall papers are at present manufactured containing arsenic.

IN a letter to *Nature* (Nov. 26), on the subject of osmotic pressure and ionic dissociation, Prof. Henry E. Armstrong uses these words: "There can be no doubt that in so far as *weak solutions* are concerned, a law has been discovered which is broadly true *in mathematical form;* yet I have no hesitation in asserting that the fundamental premises on which it is based are destitute of common sense, in the opinion of those who look at these matters without leaving chemical experience out of ac-

count." "I am a determined opponent of what I think may fairly be termed the *nonsensical hypothesis of ionic dissociation* (italics ours), for there is no other appropriate term for a view which asserts that hydrogen chloride and a few other compounds are so loosely strung together that they fall to pieces when dissolved in water; out of sheer fright, it would seem, as no valid motive is suggested for such self-sacrifice; and no such charge of unprincipled levity of conduct is brought against the vast majority of compounds other than a few acids and alkalies." If there are others who oppose the theory as strongly as Prof. Armstrong, they at least have not the temerity to attack it so boldly in the face of its tacit general acceptance in the chemical world.

In the December Journal of the American Chemical Society, George F. Payne discusses the mineral constituents of the watermelon. He finds in the ash over sixty per cent. of potash and ten per cent. of phosphoric acid; hence the need of fertilizers containing a large quantity of potash.

J. L. H.

ASTRONOMICAL NOTES.

We have received a new book on the determination of planet and comet orbits by Dr. Karl Zelbr. It contains 125 octavo pages, and is reprinted from the first volume of Valentiner's *Handwörterbuch der Astronomie.* It will doubtless be found a very useful text-book of the subject.

The *Astronomical Journal* of December 10th contains a series of observations of the companion of Sirius made at Washington last March by Prof. Stimson J. Brown. At the time of making these observations Prof. Brown did not consider them entitled to very much confidence, on account of the extreme difficulty experienced in seeing the companion so near the principal star. It is now evident, however, from the later observations at the Lick Observatory, that the Washington observations are correct, and that the object seen by Prof. Brown was really the companion.

In the *Astronomische Nachrichten* of December 14th Prof. E. C. Pickering has a note on a method of determining the relative motions of stars in the line of sight by means of spectra photographed through an objective prism. The plan consists of making a pair of photographs of the same region near the meridian in reversed positions of the telescope. As the reversal of the telescope turns the spectra 180°, we can measure on the photographs twice the linear displacement due to the relative motions of any two stars in the line of sight. The second photograph is made through the glass plate, so that the plates may be placed with their films in contact for making the comparisons.

Among recent series of meridian circle observations of which preliminary accounts have appeared in the astronomical periodicals, we notice the following: In the *Astronomical Journal* of December 23rd Prof. Tucker gives a summary of the results of his determinations of fundamental stars contained in the astronomical ephemerides other than the *Berlin Jahrbuch.* In the *Astronomische Nachrichten* of December 22d Prof. Küstner gives his determinations of the *Zusatzsterne* of the *Berlin Jahrbuch* list, made with the meridian circle of the Berlin observatory in the years 1886 to 1891.

H. J.

SCIENTIFIC NOTES AND NEWS.

Gen. Francis A. Walker, President of the Massachusetts Institute of Technology and Vice-President of the National Academy of Sciences, died suddenly on January 5th. He was born on July 2, 1840, and graduated from Amherst College in 1860. He had filled many important positions, having been professor of political economy in the Sheffield Scientific School of Yale University, Chief of the Bureau