

chloride for edestin, sulphosalicylic acid for casein—he is able to measure the amount of peptic, tryptic, and ereptic digestion with accuracy and speed. In a second paper (Journal Amer. Chem. Soc., 1913, vol. xxxv., 1546) the same author describes improvements in the micro-chemical method of forming copper complexes of amino-acids, peptides, and peptones in neutral or slightly alkaline solution, so that quantitative results can be obtained in dilutions of one part in 500,000. It is shown that very few other substances react with the reagent, and these can be easily removed by means of ammoniacal lead acetate. The method has been studied carefully in its application to blood, urine, and the measurement of proteolysis, and it appears to give results accurately and quickly with small amounts of material. Seeing that the Sørensen, van Slyke, and Abderhalden methods for determining amino-acids have each in their turn been most fruitful in advancing the knowledge of the proteins much is to be hoped from the application of the new method.

MR. FRANCIS EDWARDS, bookseller, 83 High Street, Marylebone, W., has issued a catalogue of books, pamphlets, engravings, maps, and manuscripts relating to the whole American continent. The catalogue contains some 1662 entries, many of them referring to works of unique interest.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES FOR JANUARY, 1914:—

- Jan. 3. 9h. om. Earth nearest the Sun.
 5. 6h. om. Mars at opposition to the Sun.
 8. 21h. 41m. Saturn in conjunction with the Moon (Saturn $6^{\circ} 47' S.$).
 11. 1h. 49m. Mars in conjunction with the Moon (Mars $0^{\circ} 34' S.$).
 12. 1h. 39m. Neptune in conjunction with the Moon (Neptune $4^{\circ} 26' S.$).
 17. 7h. om. Neptune at opposition to the Sun.
 20. 4h. om. Jupiter in conjunction with the Sun.
 24. 21h. om. Mercury in superior conjunction with the Sun.
 25. 6h. 32m. Venus in conjunction with Jupiter (Venus $0^{\circ} 33' S.$).
 „ 8h. 43m. Jupiter in conjunction with the Moon (Jupiter $3^{\circ} 22' N.$).
 „ 8h. 54m. Venus in conjunction with the Moon (Venus $2^{\circ} 48' N.$).
 27. 20h. om. Uranus in conjunction with the Sun.
 30. 15h. 36m. Venus in conjunction with Uranus (Venus $0^{\circ} 30' S.$).

A FAINT NEW COMET.—A Kiel telegram dated December 18 reports the discovery by Delavan of a comet of magnitude 11.0 on December 17 at 10h. 34.8m. La Plata mean time. Its position is given as R.A. 3h. 3m. 19.2s., declination $7^{\circ} 25' 24''$ south.

A further telegram from Kiel, dated December 19, reports the observation of this comet at Bergedorf on December 18, at 8h. 5.3m. Bergedorf mean time. It is stated to be of magnitude 11.0, and its position is given as R.A. 3h. 2m. 41s., and declination $7^{\circ} 21' 29''$ south.

THE EARTH'S ALBEDO.—*Astronomische Nachrichten*, No. 4696, is occupied for the main part with a contribution by Mr. Frank W. Very on the earth's albedo. The research consists of determining the albedo from visual observations on the earth shine on the moon in comparison with light from similar

sun-illuminated areas on the moon's surface. The contribution describes in the first instance the photometer employed, the methods of procedure, and the necessary constants of the instrument. Then follow the records of the observations made during the years 1911 and 1912. Mr. Very finally concludes that in round numbers the earth shine at new moon has an intrinsic brightness of about $1/1600$ of moonlight of average quality, such as is received shortly before first quarter. He eventually states, as a final result, that the albedo of the earth may be taken as $A_e = 0.89$. This value he finds favours the higher of the two values of the solar constant, namely 3.6 cal./sq. cm. min., which he published at the beginning of this year.

ANNUAIRE DE L'OBSERVATOIRE ROYAL DE BELGIQUE.—The Royal Belgium Observatory's Annual, published under the direction of M. G. Lécointe, the director of the observatory, is well known to amateur and professional astronomers on this side of the channel, and the issue for the year 1914 will be found as useful as ever. The aim of the publication is to present the indispensable elements to those who interest themselves in astronomical observations and to help render the science more popular by means of numerous clearly written articles on various astronomical topics. The list of the contents is a very full one, but attention can only be directed to one or two of the items inserted. The recent progress of astronomy, *i.e.* the progress up to the end of the year 1911, is well summarised by M. P. Stroobant, and is very well illustrated. Under "Periodic Comets" an interesting table is given showing, among other facts, the epochs of the first and next appearances. The scheme for the distribution of international time by wireless is thoroughly described, and such sections as those devoted to different tables, their cost, elementary notions on the measurement of time, &c., will be found useful.

DISTRIBUTION OF ELEMENTS IN THE SOLAR ATMOSPHERE.—In this column for September 11 very brief reference was made to an important paper by Mr. Charles E. St. John on radial motion in sun-spots, the contribution in question dealing with the distribution of *velocities* in the solar vortex. The November number of *The Astrophysical Journal* (vol. xxxviii., No. 4, p. 341) is devoted to a second portion of the investigation, and deals with the distribution of the *elements* in the solar atmosphere. This paper forms No. 74 of the contributions from the Mount Wilson Solar Observatory. Mr. St. John finds that radial displacements are intimately associated with depth, and, assuming as a standard a series of displacements shown by the iron lines, he deduces the relative level of twenty-six other elements of the reversing layer and chromosphere. The distribution shows that the form of calcium that produces the H and K lines is at the highest level, followed by the $H\alpha$ line of hydrogen. Then successively come the vapours of magnesium, sodium, iron, aluminium, &c., each increasing in absolute density with the depth until in the lowest portion of the reversing layer occur also the vapour of all the elements the lines of which appear in the solar spectrum. It is interesting to note that enhanced lines show smaller radial displacements than unenhanced lines of the same solar intensities, and thus originate at higher levels in and near sun-spots. A differentiation is also made between the levels of different groups of iron lines. A comparison of the radial displacements with the weakening and strengthening of spot lines shows that the latter is associated with increase of depth and the former with high elevations. Numerous other important conclusions are included in this investigation.