ties of the Paumotu plateau, at Makatea, an elevated island consisting of tertiary coralliferous limestone and at the Gambier Islands which are volcanic islands of considerable height.

A. AGASSIZ.

THE ASTRONOMICAL AND ASTROPHYSICAL SOCIETY OF AMERICA.

II.

THE REVISED HARVARD PHOTOMETRY.

IN the Harvard Photometry, all stars were inserted having the magnitude 6.0 or brighter in any of the principal star catalogues then published. Accordingly, as was expected, many fainter stars were included, since a star really faint, but estimated bright by mistake in any of these catalogues, would be entered and measured. It appears that from this cause, and from the varying scale in different catalogues, more than six hundred stars are included, which are fainter than the magnitude 6.2 on the photometric scale. (See H. C. Annals, Vol. XIV., p. 479.) Numerous measures of the brighter stars have been made in recent years, with the large meridian photometer which has replaced the instrument first used. They include 823 stars measured in connection with fainter stars in Vol. XXIV., Table I., and 1179 stars in Vol. XXIV., Table IV. Measures of all of the bright stars south of declination — 30°, are published in Vol. XXXIV.

The stars of the Harvard Photometry were again observed in 1892–1894, and the results are now being published in Vol. XLIV. A large number of them were also measured in 1895–1898, when determining the brightness of stars of the magnitude 7.5 and brighter north of declination — 40°. Finally, the stars south of declination — 30° are now being remeasured in Arequipa, by Professor Bailey. In a recent letter, he states that sixteen series were obtained on sixteen successive nights, and that 11,448 settings were made during the month of May, 1899. It is hoped that this work will be completed during the present year.

It, therefore, appears that seven photometric catalogues of these stars have been prepared. In Vol. XXIV., Table I., some stars were observed on only two nights, but in all the other catalogues the minimum number of nights is three, and for many of the stars, especially for those that are bright, the number is much greater. When the observations were not accordant the minimum number of nights was five in Vol. XXIV., Part I., and seven or more in the other catalogues. The number of photometric settings on each star each night was generally four, but was occasionally eight or more in the later work. The total number of photometric settings, including those of the fainter stars, will slightly exceed one million. It will be seen, therefore, that a large number of measures of all the bright stars have been made according to the same plan, but with different instruments and by different observers. Each star should appear in at least two of the seven catalogues, and generally in three or more.

It is, therefore, proposed to issue a catalogue of all the stars from the north to the south pole of the magnitude 6.0 or brighter according to the meridian photometer, which will show the brightness as given in each of the seven catalogues. This work, which will be called the 'Revised Harvard Photometry,' will also contain other facts, such as the approximate right ascension and declination for 1900; the designation according to Bayer, Flamsteed, the *Durchmusterung*, the Argentine General Catalogue, the Harvard Photometry and the Southern Harvard Photometry; the magnitude according to Herschel, the *Durchmusterung*, the Argentine General Catalogue, the *Uranometria Oxoniensis*, and the Potsdam Catalogues; the class of spectrum, and, if possible, the photographic magnitude. This would also furnish a quantitative measure of the color.

As it is believed that this catalogue will be found convenient for general reference, the value would be greatly increased if the precise position, the precession, the secular variation, and the proper motion were added. This does not seem advisable, however, since owing to the uncertainties of proper motion, and systematic errors in various catalogues, the labor involved in this work would be very great, and probably many astronomers would be dissatisfied with the results, however obtained. A simple plan would be, for the northern stars, to take the positions for 1875 given in the catalogues of the *Astronomische Gesellschaft*, and for the southern stars those given in the Argentine General Catalogue. Residuals for a few other catalogues could be given and thus permit other places to be used if desired. These positions would be sufficiently accurate for stars of the eighth and ninth magnitudes, but they would be far from representing the accuracy with which the places of the brighter stars are known. Any suggestions and criticism relating to the above plan will be gratefully accepted, as it is not yet too late to make use of them.

G. C. Comstock : *Some Researches in Stellar Color.*

By placing a coarse grating in front of the objective of a telescope the image of a star is broken up into a series of spectra symmetrically placed on opposite sides of a central image, and, as is well known, the distance of the several spectra from the central image depends upon the grating interval and the wave-length of the light in question. When the grating interval is large, *e. g.*, 10 mm. to 50 mm., the first order spectra of stars are almost indistinguishable from stellar points, and if their angular separation is measured with a filar micrometer an excellent determination of the mean wave-length of the light in question is easily obtained. Observations of this kind are in progress with the 40 cm. equatorial telescope of the Washburn Observatory, special attention being given to colored stars and to the planet Mars for the purpose of determining any possible effect of the stellar and planetary color upon observations for the determination of the solar parallax. While definite results are not yet obtainable, it may be stated in general that the mean refrangibility of the light of Mars is markedly less than that of any red stars yet examined.

Attention has also been given to the color of Jupiter's satellites on account of the application of interference methods to the determination of their diameters made by Michelson and Hamy. Both of these investigators appear to have assumed too small values of the mean wave-length, that of Hamy requiring to be reduced about twelve per cent.

F. L. Chase : *Refraction of Red Stars.*

Gill in 1877 and Newcomb in 1895 have spoken of the importance of the effect that a difference in the refraction of Mars and minor planets from that of the comparison stars might have on the apparent parallaxes of the planets. Although feeling that in case of *Victoria* and *Sappho* this color effect was inappreciable, as stated in his recent work on the solar parallax, Dr. Gill requested the several observatories engaged in the solar parallax work to make a short series of heliometer observations on several highly colored stars. Not having time to carry out the program suggested by Dr. Gill, the author selected five other suitable stars and carried out the work as follows:

The plan was to observe the distances between the red star and each of two nearly equally distant comparison stars, one preceding in right ascension and the other following it, and as nearly as possible on the same parallel of declination with it, first at a rather large hour angle when east of the meridian and again in the morning hours when west. Now it is evident that if the red star is lifted less by refraction than a comparison star which precedes it in right ascension, the distance between them on the east side of the meridian will be greater than it would be if both stars were white and less on the other, and *vice versa* if the comparison star follows it. By taking two comparison stars as described above we are able to eliminate any change in the scale value, any variation in the atmospheric refraction, and the difference of the two measured distances would evidently give double the effect we are considering.

Now the refraction of a star of average color may be represented by

$$R = \beta \tan z.$$

The refraction of a star with light of a different refrangibility would then be

$$R = (\beta + d\beta) \tan z.$$

It will therefore be easily seen that the refraction correction to the observed distance between two stars of different refrangibility should receive an additional correction

$$-d\beta \tan z \cos (p - q),$$

z, p and q having their usual significations of zenith distance, position angle, and parallactic angle, respectively.

To each measured distance it would then be simply necessary to add the term

$$-d\beta \tan z \cos (p - q)$$

and to find the value of $d\beta$.

Now for finding of the value of $d\beta$ the observations of each of the five red stars which were to be observed four times on each side of the meridian, would furnish eight equations of condition of the form

$$x + a d\beta = n,$$

where x is the necessary correction to the assumed value of the difference between the distances from the two comparison stars; a is the value of $\tan z \cos (p - q)$, and n is the observed difference of the two distances minus the assumed difference.

Combining the normals derived from these equations of condition for the observations of both last year and this, and solving, I find the following values for $d\beta$:

Star.	Redness.	$d\beta$.	Wt.
R_1	6.0	$+0.''020 \pm 0.''015$	63.6
R_2	7.1	$-0.''008 \pm 0.''014$	16 0*
R_3	7.0	-0.015 ± 0.020	64.4
R_4	8.7	-0.046 ± 0.018	45.2
R_5	7.8	$+0.008 \pm 0.024$	55.7

Average probable error 1 observation $= \pm 0.''151$.

A separate investigation was made along with that of star R_5, which was specially selected because it had a close neighboring white star. The distances of the white star from the same comparison stars were measured on the same nights and the observations were made symmetrically with respect to those of the red stars, so that the conditions were absolutely the same for the two stars.

Similar equations for this white star gave

$$d\beta = +0.''004 \pm 0.''022, \text{ wt. } 55.6$$

as compared with $+0.''008 \pm 0.''024$ for R_5.

The small values above found for $d\beta$ (in the mean for five red stars we find $d\beta = -0.''006 \pm 0.''010$), and more especially the fact that two contiguous stars, one white and the other red, give no appreciably different results, afford rather forcible evidence that to my eye, at least, difference of color in the stars does not effect heliometer observations of distance.

J. E. KEELER: *The Ring Nebula in Lyra.*

In order to test the capabilities of the Crossley three-foot reflector of the Lick Observatory, a number of photographs were made of well-known celestial objects. As the focal length of a camera should be from thirty to sixty times its aperture in order

* Not observed in 1899.

that the photographic and optical resolving power may be equal, it is doubtful if this nebula has ever been photographed with an entirely suitable instrument. As it is a small object and photographically bright, it could be advantageously photographed with a reflector of unusually long focus. The lenses of refractors absorb the actinic rays to such an extent that for such instruments exposures of even twenty hours have been given to this nebula. With the Crossley reflector, under the finest conditions, on July 14th of this year, an exposure of 30 seconds produced an image which was barely visible; one minute a faint image; two minutes a distinct image, and ten minutes exposure gave the best general picture of the nebula. With one and two hours the plate was much overexposed. The focal length of this telescope is 17½ feet, but if it were four times greater a far better photograph could doubtless be obtained, the necessary exposure then being about three hours.

The ratio of aperture to focal length could, however, be reduced by cutting down the aperture, thus diminishing the aberration and atmospheric disturbances. But for an object like this nebula the aberration is insensible, the star images being excellent at half an inch from the axis; moreover the photographs were taken on nearly perfect nights when the definition would not have been improved by reducing the aperture.

These photographs of the ring nebula show features described by observers with powerful visual and photographic telescopes, and others which appear to be new. The outline of the nebula is oval rather than elliptical, with faint structureless fringes of nebulosity projecting on both sides of the oval. The ring has quite a complicated structure, as if made up of several narrower bright rings, interlacing somewhat irregularly, the intervening space being filled with fainter nebulosity.

A comparison was given of the dimensions of the nebula as measured by Barnard with the Lick refractor, and as determined by Stratonoff on photographs obtained in 10 hours exposure with a refractor of 33 cm. aperture, and as measured on a Crossley plate with 10 minutes exposure. The author's measures give a somewhat greater size than the visual measures, and also average slightly more than on the Russian photograph.

Lord Rosse's drawing, published in the *Philosophical Transactions* for 1844, showing the interior space of the nebula to be crossed by a series of dark and bright bands, and hitherto generally deemed fanciful, is now confirmed, it is believed, for the first time.

The actinic power of the central star, noted by many observers, is also confirmed by these plates, being faintly visible on the plate exposed for thirty seconds. It is suggested that the photographic strength of this and other central stars may be due to bright lines, probably of hydrogen, in the upper spectrum; and the author does not anticipate difficulties in photographing their spectra. On all the photographs the central star is as clearly defined as are other stars outside the nebula; there is no evidence of blending into the nebulous background. This is also the appearance of the star as seen with the 36-inch refractor. (Published in the *Astrophysical Journal.*)

W. W. CAMPBELL: *The Wave-length of the Green Coronal Line.*

One of the problems undertaken by the expedition sent from the Lick Observatory to observe the Indian eclipse of January 22, 1898, was the determination of the rotation of the corona from the displacement of the green coronal line. A powerful train of prisms loaned by Professor Young furnished the necessary high dispersion. A successful plate was obtained during the eclipse, and while measuring this in January, 1899, I learned that Lockyer had assigned a new wave-length to the green coronal line. On reducing my measures, with the aid of Hartmann's formula, I obtained a result in substantial agreement with his. The wave-length is

For East side, λ 5303.21
For West side, 5303.32
Mean, λ 5303.26,

which should not be in error by more than $\pm$ 0.15 tenth meters. The difference in the determinations for the two sides corresponds to a relative velocity of 6.2 km. in the line of sight, or a rotational velocity of 3.1 km. per second. However, I regard this result as subject to a possible error of at least $\pm$ 2 km. per second, partly on account of unavoidable errors of observations, but principally on acount of the ill-defined and unsymmetrical character of the bright line.

The continuous spectrum of the inner corona was recorded out to a distance of 2.′5 on the east side and 1.′5 on the west side. While the dark lines in the recorded comparison spectra are sharp and strong, there is not the slightest trace of dark lines in the recorded continuous spectrum of the corona. This radiation seems to be of coronal origin, and is not due to reflected photospheric radiations.

In explanation of the error in the accepted value of the wave-length (λ 5317) of the green coronal line which has prevailed for many years, it is suggested that the true coronal line would be difficult to observe so long as the chromospheric spectrum was visible. Hence the observers, setting on the strongest chromospheric line in this region, at λ 5317, which is very conspicuous just before and at the instance of totality, assumed it to be identical with the true coronal line, and located it at 1474K. Later, when this line had disappeared, rather suddenly, and the background had become dark enough to allow the line at λ 5303 to be seen, the observers were interested in the extent and other properties of the line and no further micrometer settings were made for fixing its wave-length. (Published in the *Astrophysical Journal.*)

EDWIN B. FROST: *Notes on the Reduction of Stellar Spectra.*

The advantage was pointed out of using Hartmann's interpolation formula for the prismatic spectrum in the reduction of spectrograms taken either for the determination of wave-lengths or velocity in the line of sight. An outline was given of the procedure adopted in the latter work with the 40-inch refractor. Each plate is reduced by itself, independently of any solar or other plate, such as many observers have used as auxiliary in the process of reduction. The comparison spectrum from a spark between metallic electrodes, impressed upon each plate, furnishes all the data necessary for reduction. It is hoped that errors due to effects of temperature on the dispersion of prisms and focus of lenses are thereby reduced, and that systematic errors are also diminished.

Attention was called to the favorable results obtained from the use of titanium as a source of the comparison spectrum. The lines are numerous and well distributed throughout the upper spectrum. The metal stands third in Rowland's arrangement according to number of lines in the solar spectrum. The spark passes with great readiness between electrodes of metallic titanium, and the air lines, which are annoying in case of the spark spectrum of iron, are not produced. Sharp titanium lines are found to fall at points in the spectrum close to the positions of the principal lines of stellar spectra of Type 1*b*, and thus facilitate the reduction of such spectra.

Corrections to Determinations of Absolute Wave-length.

The effect upon the absolute wave-length of lines in the solar spectrum of the eccentricity of the earth's orbit seems to have been hitherto neglected, presumably because the observers deemed it insignificant. The largest values, however, of the motion of the Earth toward and from the Sun, due to this cause, amount to 0.50 kilometer per second, in April and October; and if velocities of stars in the line of sight were determined directly from absolute wave-lengths, instead of relative wave-lengths, uncertainties of one-half of a kilometer would at once arise, in measurements now given to the tenth of a kilometer. Expressed in wave-lengths that velocity would produce a displacement of 0.011 *tenth-meters* at *C*; or 0.008 at *F*.

The diurnal correction to velocities in the line of sight, due to the Earth's rotation, also seems to have been omitted in reducing measures of absolute wave-length. This might have an effect up to 0.006 tenth-meter at *C* or 0.005 at *F*.

The need of even a higher degree of accuracy than that yet obtained in relative wave-lengths was urged, as an error of 0.01 tenth-meter in the relative wave-length of either a stellar or comparison line (not coincident) whose separation is measured, produces an error of 0.7 kilometers per second in the velocity of the star as deduced from that line. (To be published in the *Astrophysical Journal.*)

FRANK SCHLESINGER: *Suggestions for the Determination of Stellar Parallax by Photography.*

As the star to be examined for parallax will usually exceed each of the comparison stars in brightness by six or seven magnitudes, the first problem is to reduce in some way most of the light of the brighter stars, in order to escape various errors which would arise in the measurement of star disks very unequal in size and appearance. It is suggested that the portion of the photographic film upon which the light of the principal star will fall be previously treated with some suitable dye, thus greatly reducing its photographic action.

To avoid a second source of error, distortion of the film after exposure, a modification of the method employed by Wilsing is suggested. Let two pictures be taken close to each other on the same plate at the first date; let the plate then be stored undeveloped in a dark room; after six months make two more exposures of the same star and comparison stars on the plate at a little distance from the previous impressions; this plate can then be developed and measured, without fear of any ill effects from distortion of the film. The first pair of exposures on a new plate may then be begun, and this stored for six months; and so on until a sufficiently long chain of plates is secured to give good values both for the parallax and for relative proper motions with respect to comparison stars.

It is proposed that errors of optical distortion caused by peculiarities of the object-glass be eliminated from the parallax by rotating the lens in its own plane through 180° each time that the telescope is reversed. In this way the objective will present the same position relative to a stellar configuration, whether in the east or west, and optical distortion, if any, will shift all images of the same star alike.

According to the author's estimate, a single observer working 15 or 18 hours a week at the telescope and employing the rest of his time in measuring and reducing, could give us in three or four years the parallaxes of 200 stars with an accuracy hitherto attained for only a score. (To be published in the *Astrophysical Journal.*)

S. I. BAILEY: *Periods of the Variable Stars in the Cluster Messier 5.*

This cluster contains about 900 stars on the photographs made with the 13-inch Boyden refractor, of which about eighty-five, or one in eleven, are variable. The periods of about forty stars have been determined from measures made of 63 of these variables on nearly 100 plates by the author and Miss E. F. Leland. The period and light curve of one of the stars in this cluster were determined by Professor E. C. Pickering in 1896, and the periods of three others by visual observations with the Yerkes refractor. A tabular statement was given of the periods, maximum and minimum brightness and range, and distance from the center of the cluster. Drawings were exhibited of the light-curves of the first eight variables in the group. The table disclosed a striking similarity among all these variables, not only in regard to length of period, but in magnitude and range of variation. Excepting No. 9, which has the exceptional period of $16^h\ 47^m$, the longest period among the 40 stars is $14^h\ 59^m$, and the shortest $10^h\ 48^m$. The average period is $12^h\ 37^m$, so that the greatest deviation in period from the mean is $2^h\ 21^m$. At maximum these variables range between 13.4 and 13.9 mags., and at minimum between 14.5 and 14.9 mags. The uniformity of period, magnitude, and light-curve among so many variables in the same cluster points unmistakably to a common origin and cause of variability. No such uniformity is found in the periods and light-curves of over one hundred variables determined by the author in the great cluster *ω Centauri.*

A few of the variables in M. 5 have been studied with special care for the exact determination of the form of the light-curve, and diagrams were shown of two of these, which represent what may be called the 'Cluster Type' of variables. The decrease in brightness is rapid, but not nearly so rapid as the increase. The duration of maximum phase is exceedingly brief, if any; the minimum brightness appears to be quite constant for several hours. The whole period may be divided as follows:

Duration of maximum phase	0	per	cent.
" " minimum "	40	"	"
" " decreasing "	50	"	"
" " increasing "	10	"	"

Note on the Relation between the Visual and Photographic Light-curves of Variable Stars of Short Period.

With a visual telescope of sufficient power a series of frequent observations of a variable star will give the true form of its light-curve, since each observation consumes so little time that it is not affected by the star's variability. The same would be true of photographic observations if the time of exposure could be made so short as to bear an inappreciable ratio to any change of phase. This applies to most long-period variables. Certain short-period variables, however, notably those belonging to dense clusters, are so faint and go through their changes, especially the increase in light, so rapidly, that the necessary exposure bears a very large ratio to the duration of any phase and important modifications in the form of the light-curve follow.

When the light of a star is changing at a uniform rate and in the same direction, the measured magnitude will approximately represent the actual photographic magnitude at the middle time of exposure, but it is obvious that sharp changes in the light of a variable will not be well registered on photographs of relatively long exposure. A diagram was shown of an assumed light-curve, where the exposure required was one-half of the period of the star's entire variation, and the rise and fall of the brightness were equally rapid. Here no photograph of the required exposure would record a complete minimum, but would fall above it, and similarly would fall below the true maximum. Thus the tendency of the photographs is to smooth down the curve, reducing the star's apparent range of variation.

Where the increase and decrease of light are of different rapidity, as is usually the case, the result will be different. A diagram was shown of a slightly modified light-curve of variable No. 7 of cluster M. 5. In order to represent the variable at a complete minimum the exposure must close before the beginning of the maximum phase. The photograph, the middle of whose exposure is at the beginning of maximum, will have the first half of its exposure at minimum and will record the variable as of less than maximum brightness, and the maximum possible on such plates will be recorded on the exposure commencing at the beginning of maximum. With the usual exposure of one hour for this cluster, the photograph beginning an hour before maximum would record the minimum photographic magnitude. This retardation will depend upon the light-curve and the exposure time. In general the difference in time between the photographed and the actual maximum or minimum varies, with zero as a limit, as the exposure is reduced. Evidently a large telescope and very sensitive plates are desirable.

Probably the shortest period yet found is that of No. 91 in *ω Centauri*, $6^h\ 11^m$; as it is not improbable that much shorter periods may be discovered, it is clear that the relation of the exposure to the period becomes very important. (To be published in the *Astrophysical Journal.*)

Neither the original papers nor abstracts have been obtained of the following:

WILLIAM HARKNESS: *On the Semi-Diameters of the Sun and Moon.*

F. R. MOULTON: *Problems in Modern Celestial Mechanics Treated by the use of Power Series. Laplace's Ring Nebular Hypothesis.*

The committee on the total solar eclipse of May 28, 1900, consisting of Professors Newcomb, Barnard, Campbell and Hale (Secretary), presented this preliminary report:

THE TOTAL SOLAR ECLIPSE OF MAY 28, 1900.

The committee on the total solar eclipse of May 28, 1900, appointed at the Second Conference of Astronomers and Astrophysicists, presents herewith a preliminary report.

The aim of the committee has been:

1. To ascertain the opinion of astronomers regarding the best means of securing coöperation, the most important classes of observations and the best means of making them, and the plans of the various eclipse parties.

2. To collect other information likely to be useful to persons planning to observe the eclipse.

For the purpose of securing information on the various points referred to in paragraph (1) a circular letter was addressed to American astronomers. From an examination of these replies it appears:

1. That there is a general willingness to coöperate with the committee in securing thorough observations of the eclipse phenomena and effective distribution of stations along the line of totality.

2. That, in the opinion of those from whom the replies were received, the most important observations includes studies of the minute structure of the corona, both visually and by means of large scale photographs; photography of the flash spectrum and determination of the wave-length of the green coronal line; measurement of the heat radiation of the corona; photographic search for an intra-mercurial planet.

3. That several institutions, including the Princeton, Lick, Naval, Goodsell, Chabot, Flower and Yerkes Observatories, will probably be represesented by well-equipped parties, while a considerable number of astronomers with good instrumental equipment will take part as individuals.

4. That no general appeal to the public for funds is required, as each institution will endeavor to secure the amount necessary for its work.

5. That the work already planned includes observations of contacts, photography of the corona with large and small cameras; visual and photographic observations of the spectrum of the sun's limb and of the corona; visual examination of the details of the coronal structure; measurement of the brightness of the sky at different distances from the sun; search for an intra-mercurial planet; and observations of the shadow bands.

A preliminary report on the weather conditions along the line of totality has been prepared by the Weather Bureau, at the request of the committee. From this it appears that interior stations are probably to be preferred to those on the seacoast, in spite of the shorter duration of the total phase. The full report of the Weather Bureau, which will soon be published, will contain much valuable matter, including maps of the eclipse track, showing location of towns and railways; information regarding hotel accommodations, desirable sites, etc.

It is understood that the Naval Observatory will issue instructions to observers, and that a map of the eclipse track will be published by the Nautical Almanac Office. The Treasury Department has made arrangements by which the instruments of foreign parties will be admitted free of duty.

The committee, if authorized by the conference to continue its work, will be glad to receive and publish further information from eclipse parties regarding their plan of observations and location of stations.

Extracts from the replies of various astronomers were appended to the report, but need not be reproduced here, as they have been published in the *Astrophysical Journal*. The committee was continued in office.

The committee appointed at the Second Conference to act in reference to the questions at issue regarding the United States Naval Observatory also reported that the opinions of astronomers regarding that institution, which had been obtained in response to a circular letter, had been communicated to the Secretary of the Navy. This report is not reproduced here, as it is practically superseded by the official report of a Board of Visitors appointed by the Secretary of the Navy to visit, examine and report upon the Naval Observatory. The recommendations of this official report have been given in full in SCIENCE.

The first meeting of the Astronomical and Astrophysical Society of America adjourned at noon, September 8th.

EDWIN B. FROST,
Acting Secretary.
YERKES OBSERVATORY, WILLIAMS BAY, WIS.

AMERICAN ORNITHOLOGISTS' UNION.

THE Seventeenth Congress of the American Ornithologists' Union convened in Philadelphia, on Monday evening, November 13th. The business meeting was held in the Council Room, and the public sessions, commencing Tuesday, November 14th, and lasting three days, were held in the Lecture Hall of the Academy of Natural Sciences.

Robert Ridgway, of Washington, D. C., was reëlected President; Dr. C. Hart Merriam, of Washington, D. C., and Charles B. Cory, of Boston, Vice-Presidents; John H. Sage, of Portland, Conn., Secretary; and William Dutcher, of New York City, Treasurer. Charles F. Batchelder, Frank M. Chapman, Ruthven Deane, Witmer Stone, Drs. A. K. Fisher, Jonathan Dwight, Jr., and Thos. S. Roberts, were elected members of the Council. By a provision of the by-laws, the ex-Presidents of the Union, Drs. J. A. Allen and Elliott Coues, and Messrs. William Brewster and D. G. Elliot, are *ex-officio* members of the Council.