SCIENCE

FRIDAY, JULY 27, 1900.

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MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

THE ASTRONOMICAL AND ASTROPHYSICAL SOCIETY OF AMERICA.

I.

THE second annual meeting of the Astronomical and Astrophysical Society of America (fourth conference of astronomers and astrophysicists) was held on June 26–28, 1900, at Columbia University, in the City of New York, in connection with the forty-ninth annual meeting of the American Association for the Advancement of Science.

A brief report was presented by the Secretary upon the action of the Council in administering the affairs of the Society during the past year showing an addition of forty-three members since the date of the last meeting. With one exception the officers of the Society whose terms of office expired at the present meeting were re-elected, and the list for the year 1900–'01 is as follows: *President*, Simon Newcomb, of Washington, D. C.; *First Vice-President*, Charles A. Young, of Princeton, N. J.; *Second Vice-President*, George E. Hale of Williams Bay, Wis.; *Secretary*, George C. Comstock of Madison, Wis.; *Treasurer*, Charles L. Doolittle of Philadelphia, Pa.; *Councillors*, Edward C. Pickering of Cambridge, Mass.; James E. Keeler of Mt. Hamilton, Cal.; Ormond Stone of Charlottesville, Va.; and Stimson J. Brown of Washington, D. C.

By direction of the Council the next annual meeting of the Society will be held in Denver, Col., in August, 1901.

In accordance with the expressed wish of the Society the Council adopted the following resolutions and directed the Secretary to transmit copies of them to the Chief of the Weather Bureau and to the Western Union Telegraph Company.

Resolved, That the Astronomical and Astrophysical Society of America extends to the Chief of the U. S. Weather Bureau its hearty thanks for his courtesy in transmitting daily weather bulletins to those astronomers who observed within the United States the total solar eclipse of May 28, 1900.

Resolved, That the Astronomical and Astrophysical Society of America extends to the Western Union Telegraph Company its hearty thanks for the courtesies extended by it to those astronomers who observed within the region covered by its lines the total solar eclipse of May 28, 1900.

The number of papers actually read before the Society at this meeting was approximately the same as at previous conferences, but many of these were technically presented to Section A of the A. A. A. S., and were read at joint sessions of that Section with the Astronomical and Astrophysical Society. Only those papers formally presented to the Society and of which abstracts have been submitted to the Secretary, are summarized below.

A new feature of the Society's program was the discussion of the observations made at the total solar eclipse of May 28, 1900, accompanied by the presentation of numerous photographs of the eclipse and the discussion of a program for observing the planet Eros during its close approach to the earth in the autumn and winter of 1900–'01. A summary of these discussions follows the abstracts of papers presented.

The Rate of Increase in Brightness of Three Variable Stars in the Cluster Messier 3: By S. I. Bailey.

The proportion of stars found to be variable in the cluster Messier 3, N. G. C. 5272, is greater than in any other object of the same class. This object is so low, however, at Arequipa, and the stars are so faint that satisfactory photographs of it, with the 13-inch Boyden refractor, cannot be obtained with exposures of less than 90 minutes. The rate of increase of the light of many of these stars is extremely rapid and in order to determine this change with the highest precision, photographs of very short exposure are necessary. At the request of the Director of the Harvard Observatory a series of most admirable photographs of this cluster were taken with the 3-foot Crossley reflector by Professor James E. Keeler, Director of the Lick Observatory. These photographs were taken on May 20 and 21, 1900. The first plate had an exposure of 60 minutes, but all the others 24 in number had exposure of only 10 minutes, while showing the variables at minimum magnitude. The shortness of these exposures, combined with the high quality of the plates, make the results obtained very satisfactory.

Three variable stars have already been measured on these plates. They are Nos. 11, 96 and 119. The series of plates extended from $17^h\ 42^m\ 46^s$ to $20^h\ 24^m\ 11^s$ on the night of May 20th, and from $17^h\ 2^m\ 38^s$ to $20^h\ 53^m\ 27^s$, May 21st, G. M. T. These periods of time covered the entire interval from minimum to maximum, for each of the above stars on at least one night. The same stars were also measured and 49 photo graphs made at Arequipa during the years 1895–1899. From a study of all these measures I find the periods to be: No. 11, $12^h\ 12^m\ 25^s$; No. 96, $12^h\ 0^m\ 15^s$; No. 119, $12^h\ 24^m\ 31^s$. For the following discussion of the rate of increase, however, only plates made by Professor Keeler, on the night of May 21st, and having exposures of 10 minutes were used.

The measures of the brightness of the

variables were made by Argelander's method, using a sequence of comparison stars whose magnitudes have not yet been determined. The results are, therefore, given in grades. The value of one of these grades is somewhat uncertain, but is not far from a tenth of a magnitude, since in a previous work the value of my grade has been 0.085 of a magnitude. The observations were then plotted, using vertical distances to represent magnitudes and horizontal distances to represent time, and a smooth curve was drawn through them. The time scale employed in this drawing was very open, in order to read with greater accuracy the ordinates of the curve corresponding to intervals of five minutes. The results of the measures are very accordant. Of all the measures on the Lick plates of ten minutes' exposure the average deviation from the curve is less than half a grade.

From these curves it appears that the total increase of light, amounting to 17.5 grades in the case of variable No. 11, takes place within 70 minutes; in the case of No. 96, an increase of 16.7 grades occurs within 60 minutes; and No. 119, 17.0 grades, within 75 minutes. The maximum increase during any interval of 5 minutes, is, in the case of No. 11, 1.9 grades; No. 96, 2.5 grades; No. 119, 1.5 grades. During 30 minutes No. 11 increases in magnitude 10.9 grades, or *at the rate* of 21.8 grades per hour; No. 96, 12.8 grades, or at the rate of 25.6 grades per hour; No. 119, 8.6 grades, or at the rate of 17.2 grades per hour. The greatest rapidity is met in the case of No. 96, where for 5 minutes the increase is at the rate of 30 grades, or about 2.5 magnitudes per hour, and during 30 minutes has a rate of 25.6 grades, or more than two magnitudes per hour. This rate of change appears to be more rapid than that of any other star known.

The Algol variable *U* Cephei, which perhaps undergoes the most rapid change of any star not found in clusters, changes at the rate of about one and a half magnitudes per hour, during the half hour when its increase and decrease are most rapid. The total times of increase of the three stars, 70, 60 and 75 minutes, are 9, 8 and 10 per cent. respectively, of their whole periods. Near the beginning and end of increase, however, the rate of change seems to be relatively much slower. If we allow one and a-half grades for each of these slow changes, making three grades in all, we find that the remaining increase, amounting to more than four-fifths of the whole change in light, takes place for the three stars in 42, 34 and 54 minutes, respectively. That is, in about 6, 5 and 8 per cent. of their respective full periods.

In the case of No. 96 this increase is about ten times as rapid as the corresponding decrease. In general it may be stated that the length of periods and form of light-curves are similar to many of those in the clusters Messier 5 and ω Centauri. (See *Astrophysical Journal*, Vol. X., 255.) It will be noted that the periods of these three stars are about one-half a day. Several other variables in this cluster appear to have approximately the same period.

The Series of Parallaxes of Large Proper Motion Stars made with the Yale Heliometer: By F. L. CHASE.

A large proper motion is, as is well known, the strongest indication of a star's nearness. Some years ago it seemed to us at the Yale Observatory that it would be a promising task to make a rather sweeping survey of all the fainter northern stars having a large proper motion to single out those which show a measurable parallax. Our list was based upon Porter's Catalogue of Proper Motion Stars, and it was our aim to take up all the stars therein contained, which showed an annual motion as great

as 0″.5 excepting such as had already been observed for parallax.

It was hoped that among so large a number, nearly a hundred, some very near neighbors should be found, but in case the results should prove wholly negative it would afford some satisfaction to know that there are probably no more stars in the northern skies within a certain distance of us.

This research was begun in the summer of 1892, soon after Porter's Catalogue appeared, and has been the problem of chief attention on my part since that time. There were 86 stars in my list and 13 in Dr. Elkin's, of which I have completed the observations of 84 and Dr. Elkin 8. The original plan was to observe each star on three different nights near each of the two epochs of maximum parallactic effect. For each star when possible two suitable companion stars were chosen on opposite sides of the principal star and as nearly as possible at the same angular distance from it. The observations were made in the customary symmetrical order *S*1, *S*2, *S*2, *S*1, *S*1 denoting the angular distance from one companion star and *S*2 the distance from the other.

At first it was intended to use the known proper motions in the reductions, and it was thought that three observations at each of the two epochs would be sufficient to show any parallax as great as 0″.2, and any such cases were to be further investigated. Later it seemed to us to be desirable to eliminate the effect of proper motion independently, which can be quite thoroughly accomplished by repeating the observations through two more epochs in the reverse order, and at the same time this enlarged number of observations should furnish a pretty fair approximation to the true value of the parallax.

The plan thus modified would give us twelve complete observations for each star, which number was secured in nearly every case. Each of these complete observations furnishes an equation of condition of the form:

$$x + by + cz = n$$

where x represents the required correction to the assumed scale value, y the parallax, z the correction to the assumed annual proper motion, b the parallax factor depending upon the positions of the stars and that of the earth at the time, $c = t -$ 1895.0 (1895.0 being about the middle of the period covered by the observations) and n equals the difference $S1 - S2$ minus an assumed value for this difference.

The normals from these equations of condition have all been formed and a preliminary solution has only just been finished. As to the results I may say that a little disappointment was felt that no very large parallaxes were found. However there were two stars viz: 54 Piscium and Weisse 17^h 322, which show a parallax of nearly 0″.25 and which, therefore, if the results are confirmed by further observation, will place them among the first ten or twelve nearest stars so far as at present known. I have selected for each of these stars two new pairs of comparison stars and have nearly completed a more extended series of observations of them. The final parallax will in each case depend upon 56 complete observations instead of 12 as at present.

A preliminary classification, according to the magnitude of the parallax formed, may be of some interest and is given in the following table:

Parallax.	*No. Stars.*
0″.20 to 0″.25	2
0 .15 " 0 .20	6
0 .10 " 0 .15	11
0 .05 " 0 .10	24
0 .00 " 0 .05	34
—0 .05 " 0 .00	8
—0 .10 "—0 .05	5
—0 .15 "—0 .10	2

The probable error of a single observation

comes out to be on the average about $\pm$ 0″.170. Taking the average weight of the parallax to be 30.0 the average probable error of the values of the parallax found would be $\pm$ 0″.031. In this no account has been taken of the systematic error of the observer which has not yet been discussed for this problem. It should also be borne in mind that the parallax here found is only the relative parallax to which should be added that of the comparison stars employed.

It is our purpose further to classify the results. 1st, according to the magnitudes of the stars, and 2d according to the amount of the proper motion which may perhaps lead to interesting conclusions. The results here given may perhaps be slightly modified in the fuller discussion, but in their present form they may serve to give some idea of a piece of work, which we hope will contribute something to our present knowledge of the stellar universe.

The Velocity of Meteors as Deduced from Photographs at the Yale Observatory: By W. L. ELKIN.

The instruments in use at the Yale Observatory for the photographic observation of meteors have been equipped with an arrangement for the determination of the velocity of meteors. The idea of using photography for this purpose seems to have first been suggested as long ago as 1860 by J. Homer Lane, the well known physicist and discoverer of 'Lane's law.' In 1885 a well planned attempt in this direction was made by Zenker, in Berlin on the occasion of the expected shower of Andromedids, but apparently without success, and lately the suggestion has again been made by Professor Fitzgerald.

The Yale apparatus consists of a wheel (a bicycle wheel) rotating in front of the cameras and carrying a number of opaque screens. There are at present 12 of these interceptors and the rotation is effected at the rate of 30 to 50 turns per minute by means of a small motor worked by 3 or 4 bichromate cells. It will be advisable to increase the number of occultations in the future, however. At each revolution a record is made at the chronograph so that the wheel's velocity at any instant is always known.

The length of the interruption of a meteor trail and the resulting velocity are easily derived from the plates, if the meteor is also recorded on a plate at our second station at Hamden, distant about 3 km. The first attempt was made at the August period last year, and subsequent ones at the Leonid, Andromedid and Geminid epochs in November and December last. In all so far five such trails have been obtained with corresponding records at Hamden and the time and identification also secured. These have been carefully measured and reduced and the resulting data are brought together in the following table of which the headings explain themselves sufficiently:

Meteor No.	Date 1899	Greenwich Mean Time	Apparent Radiant 1875.0 R. A.	Apparent Radiant 1875.0 Decl.	Appar'nt Velocity (km. per sec.)	Approximate Altitude (in km.)
		h. m. s.	° ′	° ′		
1	July 31	17 4 30	28 55	+ 57 31	50.4	88 to 75
2	Aug. 7	14 25 25	288 12	− 6 20	12.2	50 to 45
3	Aug. 8	16 32 47	43 55	+ 56 33	50.3	101 to 94
4	Nov. 24	16 31 25	27 43	+ 40 33	20.2	93 to 90
5	Dec. 12	21 43 0	113 44	+ 33 36	36.5	90 to 86

If we now correct the values for the apparent radiant and velocity for the effect of the attraction of the earth and its diurnal rotation by Schiaparelli's formulæ, we derive the 'corrected' radiant and velocity, in the following table and hence the 'true' velocity of the meteors relative to the Sun. The last columns of this table contain the 'true' and 'apparent' velocities which a parabolic orbit, or, in the case of the November 24 meteor, an elliptic orbit of 6.62 years period should have produced.

Meteor No.	Corrected Radiant 1875.0. R. A. Decl.	Corrected Apparent Velocity. (km. per sec.).	True Velocity. (km. per sec.).	Parabolic or Elliptic Velocity (km. per sec.).	
				True	appa'nt
1	29°50′ +57°40′	49.1	34.4	41.8	58.3
2	289 44 −27 58	5.0	32.0	41.8	27.1
3	45 12 +56 35	49.0	32.4	41.8	60.3
4	23 52 +39 46	16.8	39.8	39.3	19.6
5	112 22 +33 2	34.7	34.0	42.4	49.5

A comparison of these two last columns with the corresponding ones of the observed values shows that except in the case of the Andromedid meteor on November 24th, both the apparent and true observed values of the velocity are much smaller than those derived on the assumption of a cometary velocity. The former (the observed) velocities lead to orbits of a very improbable character having periods of from 1.25 to 1.80 years, so that it would seem an almost certain conclusion that the atmospheric retardation has amounted to from 8 to 15 km. per second for the four meteors. On the other hand the Andromedid of November 24th furnishes the following orbit, by the side of which is placed that of Biela's comet according to Hubbard:

Meteor Nov. 24, 1899.		Biela Comet.	
$\pi = 108°48'$		$\pi = 109°8'$	
$\Omega = 242\ 22$	1875.0	$\Omega = 245\ 51$	1852.0
$i = 12\ 4$		$i = 12\ 33$	
$e = 0.7923$		$e = 0.7559$	
$a = 4.110$		$a = 3.526$	

Rather unfortunately this Andromedid trail is at the very edge of the plate, and therefore somewhat ill-defined, so that the length of the single interruption available is somewhat uncertain. If this be changed by 19″ from the original measurement, or about $\frac{1}{15}$ of a millimeter on the plate, a quantity which is, perhaps, admissible under the unfavorable circumstances, an exact agreement with the cometary elements 'a' and 'e' can be brought about.

This remarkable circumstance makes it, therefore, again somewhat questionable whether the small velocities found for the other four meteors may not after all be somewhere near the cosmic values and the truth will have to await accumulated evidence. Especially valuable will be a long trail with considerable change in altitude and a large number of sharp interruptions. The only one of our trails which has more than two such breaks is the one of August 7th, where three values of the velocities can be deduced. These are, in the order of the meteor's progress, and descent, 12.33, 12.11 and 12.09 km. per second, which, while showing an increased retardation, hardly admit of any definite conclusions. As I have just said, more data are necessary and we hope to secure them and also increase the accuracy in the near future.

Recent Astronomical Work at Columbia University: By Harold Jacoby.

Professor Rees, director of the Columbia University Observatory, being absent at Paris as a member of the international jury for instruments of precision, it devolved upon Professor Jacoby to present a very brief account of Columbia's research work in astronomy during the past year. The University possesses no adequate observatory, so that the work in observational astronomy has been perforce confined very largely to the measurement and discussion of celestial photographs. The only long series of direct observations upon the sky itself is that made during the last seven years with the zenith telescope by Professors Rees and Jacoby and Dr. Davis, who was a member of the observatory staff until last year. This series of observations was discontinued in May, 1900, because a similar one, upon a much more extensive scale, has been commenced by the International Geodetic Association. It is hoped that the Columbia observations, together with a corresponding set made at Capodimonte, Italy, will furnish a valuable contribution to our knowledge of the constant of aberration and the variations of terrestrial latitude.

The measurement and discussion of as-

tronomical photographs has included work upon Rutherfurd negatives and upon negatives made at Helsingfors, Finland, and at the Cape of Good Hope. In connection with the Rutherfurd plates, the observatory has just published Dr. W. C. Kretz' paper on the 'Stars in the Coma Berenices Cluster.' This paper was offered by Dr. Kretz last year as his dissertation for the degree of Ph.D. It will be distributed very soon. Dr. G. N. Bauer's paper, also a dissertation for the degree of Ph.D., contains a determination of the parallax of μ Cassiopeiæ from Rutherfurd measures of position angle. It is now in course of publication, as is also a paper by Professor Jacoby on the 'Pleiades.' This latter contains the results of further computations that have been made in recent years, using the same Rutherfurd measures discussed in Professor Jacoby's former paper on the 'Pleiades,' published in 1892. The new discussions bring out the excellence of Rutherfurd's work even more clearly than before. Several other sets of Rutherfurd star plates have been measured and reduced, but it has not yet been possible to prepare the results for printing.

An attempt was made last year to photograph the November meteors, and one trail was secured by Mr. C. A. Post and Professor Rees, at the former's observatory in Bagport.

Dr. Caroline E. Furness has completed the discussion of four photographs of the stars immediately surrounding the north pole of the sky. These photographs were made at Helsingfors some years ago, and measured at the Columbia University observatory. Dr. Furness has deduced from these measures a photographic catalogue of precision including the stars within one degree of the pole, and has been able to show also that the optical distortion of the Helsingfors telescope is confined within very small limits, so far as such distortion depends on position angle. These researches are in course of publication by the observatory of Vassar College, and have formed the subject matter of a dissertation for the degree of Ph.D., conferred upon Miss Furness this year at Columbia University.

A similar series of negatives of the south pole was made some years ago at the Cape of Good Hope, and these have been in course of measurement during the past year at Columbia. It is hoped that they can be completed during the present summer, and that the results can be computed and published within a year.

The attempt to secure an independent determination of the constants of nutation and aberration by photographing close polar star trails has made considerable progress. A special 'fixed' polar telescope has now been mounted by Dr. Donner in a suitable new building at Helsingfors, at which place it is intended to make the observations, in order to take advantage of the high altitude of the pole, and the consequent diminution of atmospheric refraction. This fixed telescope will be used with the object glass of the present Helsingfors astro-photographic refractor. We shall thus secure the important adventage of using a glass whose optical distortion has been most carefully investigated. It is hoped that the actual work of making the negatives can begin at Helsingfors as soon as the nights become a little longer, and that measurements can commence at Columbia before the year is out.

Photometric Observations of the Asteroid Eros: By HENRY M. PARKHURST.

My simple formula for the diminution of the light of an asteroid in proportion to the angle at the asteroid between the sun and the earth, seems to be substantiated by Professor Müller, within ordinary limits, but the new asteroid Eros extends the angle so far as to create uncertainty. For the old asteroids the extreme value of this angle seldom exceeds 30 degrees; whereas its

smallest value with Eros in the present opposition is only 28 degrees, and its greatest value more than twice that amount. In the observations of the oppositions of our moon the formula of simple proportion is appreciably changed before reaching that extent. If the formula depends upon the diminution of light in arithmetical progression, the variation is in one direction, whereas if it depends upon diminution of light measured in magnitudes, or in geometrical progression, the variation is in the opposite direction. It has seemed to me desirable that special pains should be taken to observe Eros photometrically, in order to learn what we can of the true law of diminution, and if possible its cause.

I desire especially to call attention to this desirability, for the reason that a tall building is in process of erection so close to my observatory that should it be completed early in the present year, it may prevent my photometric observation of Eros at the times essential to this investigation; in which case we must rely wholly upon such observations as may be made elsewhere. I had already made preliminary observations in anticipation of this investigation before the building was commenced; and I still hope that I may be able to complete my work before my observation of that part of the sky is cut off.

Standards for Faint Stellar Magnitudes: By E. C. Pickering.

It is believed that the following extract from the report of Professor Cross, the Chairman of the Rumford Committee of the American Academy, will be of interest to members of the Astrophysical Society.

An appropriation of five hundred ($500) dollars has been made from the Rumford Fund to be expended under the direction of Professor Pickering, for the purpose of carrying out an investigation on the brightness of faint stars by co-operation with certain observatories possessing large telescopes. This appropriation results from a communication made to the Council of the American Astronomical and Astrophysical Society held in New York last January. It was represented that the most urgent need of astronomy in America was adequate endowment of the great telescopes of the country so that they could be kept actively at work. It was shown that while the two largest telescopes of the country, and of the world, were kept constantly at work the means for the reduction and publication of the observations is wholly inadequate, while some of the largest telescopes in the country, representing a plant costing hundreds of thousands of dollars, are nearly idle and therefore useless. Observations of the greatest value can be obtained with these instruments at small expense, and it is hoped that the beginning now made will justify its permanent continuance on a large scale. The problem undertaken is the determination of the light of faint stars, selected as standards. These will furnish points of reference to which other photometric measures may be referred. Five photometers have been constructed in which by interposing a photographic wedge of shade glass, an artificial star is reduced in brightness until it appears equal to a real star, as seen in a large telescope. Thirty-six regions have been selected in different parts of the sky, in each of which a series of standards is to be measured. Five stars of about the twelfth magnitude, five of the fifteenth, five of the sixteenth, and five of the seventeenth, are to be chosen in each of these regions. The faintest stars will be selected and measured with the Yerkes 40-inch and Lick 36-inch telescope. Those of the sixteenth magnitude will be measured with the 26-inch telescope of the University of Virginia and perhaps the Princeton 23-inch telescope. The stars of the fifteenth magnitude will be measured with the 15-

inch Harvard telescope. All of these stars will be compared with the stars of the twelfth magnitude, whose absolute magnitudes will be determined with the 12-inch Harvard meridian photometer. Their relative brightness will also be determined more accurately with the Harvard 15-inch telescope. After the work is fairly started it is believed that it can be reduced to a simple routine, by which great results may be attained with a moderate expenditure. By the time this report is presented it is expected that observations with the Yerkes, Lick, University of Virginia and Harvard telescopes will be in progress.

Registration of Astronomers: By E. C. PICKERING.

A plan for the registration of astronomers desiring positions was proposed to the Society at its meeting at the Harvard Observatory in 1898. It was hoped that in this way suitable candidates could be found for vacant positions, and at the same time good positions could be found for those qualified for them. As however, the members present did not desire that the Society should undertake this work, it has been carried out by, and at the expense of, the Harvard College Observatory. Blanks of the form appended have been distributed, and during the last eight months, thirteen men and six women have applied for positions. Requests for assistants have been received from four institutions, but in only one or two cases were the vacancies filled. The number of candidates for positions is therefore abundant and it is hoped that institutions will avail themselves more freely of this register in filling positions. No charge is made either to institutions or individuals, and, if desired, communications are regarded as confidential.

GEORGE C. COMSTOCK,
Secretary.

(To be Concluded.)

AMERICAN MATHEMATICAL SOCIETY.

FOLLOWING its usual custom, the American Mathematical Society held its Seventh Summer Meeting in affiliation with the American Association for the Advancement of Science, at Columbia University, June 27th–29th. The Society is one of, at present, sixteen scientific bodies which have responded to the general invitation of the Association to meet simultaneously with it, their relation to the Association being described by the very flexible term 'affiliation.' These societies contribute greatly to the importance and interest of the meeting, frequently furnishing a large proportion of the total attendance and of the scientific output. In many cases a more intimate relation between them and the Association would be mutually beneficial, and plans for such a strengthening of ties are already under consideration. But, at present, the affiliated societies receive scanty official recognition. They have no representation in the councils of the Association; no official reception is given them at the meeting; they receive none of the general circulars of information issued by the Association; and the notices of the societies printed in these circulars have been, in at least one instance, unauthorized and incorrect. In short, the societies are left mostly to their own devices, and enjoy all the advantages and disadvantages of this condition.

The unusually early date of the meeting involved some conflict with the academic duties of many members, and reduced the period of preparation and accumulation of material from four to two months. But in spite of this and the uncomfortable weather, the occasion was a pronounced success. Fifty-six members of the Society were in attendance, a number which has never been exceeded. Professor Simon Newcomb, ex-President of the Society, presided at the opening of the first session, on Wednesday afternoon, and was succeeded in the chair