segments of the 14 chromosome group and that no single unpaired chromosome would be present in the reduction divisions.

If the 14 and 21 chromosome species are the result of reduplication we might expect a considerable number of characters in the Emmer and Vulgare groups to be dependent on multiple factors. Although many characters of these groups are apparently dependent on single factors there are a number of characters dependent on two or more factors. The red color of grain may be determined by one, two or three factors, and pubescence of chaff and color of chaff have also been found to be dependent on several factors in some cases. A comparatively large number of multiple factors affecting the same qualitative characters are reported in wheat.

If the Vulgare group, the Emmer group, and Einkorn differ only in chromosome combination of 7×3, 7×2, and 7×1, why should the different groups result in sterile or partially sterile F_1 plants and why should the different groups vary so greatly in morphological characters? Morgan has suggested that for similar cases in other plants that changes may occur in the individual chromosomes in the course of time so that the original chromosomes would come to differ in many factors. If the 14 and 21 chromosome species have originated by reduplication of the 7 chromosome group such changes must have occurred. The species within each group overlap considerably, but each group is relatively distinct in morphological characters.

KARL SAX

MAINE AGRICULTURAL EXPERIMENT STATION,
May 6, 1921.

ASTRONOMICAL MEETING AT THE POTSDAM ASTRONOMICAL OBSERVATORY

THE following is an abstract of a German press report of the international astronomical meeting held at Potsdam, August 24–27 last.

After a lapse of eight years the Astronomical Society met again at Potsdam, under the presidency of Professor Strömgren of Copenhagen. Representatives from sixteen nations were present. About two hundred attended the meeting; from Scandinavia, Professor Bohlin, Stockholm; Professor v. Zeipel and Amanuens Asklöff, Upsala; Professor Strömgren and assistant Miss Vinter-Hansen, Copenhagen; from Christiania, observer Lous, and from Finland Furuhjelm; from Holland Professor Kapteyn as well as Van Rhejn and Father Esch; from England Professor Eddington, also Father Cortie, S.J.; among others were Professors Bauschinger, Hartwig, Einstein, Grossman, Nernst, Runge, Schorr, Wiechert, Prey, and Kienle.

Professor Strömgren in his address referred to the continuance of the communication of astronomic phenomena during the years of stress through the instrumentality of the Copenhagen observatory, instead of from Kiel. Copenhagen served also as a medium for the exchange of astronomic and scientific literature.

The scientific program contained many papers showing the progress which astronomy has made of recent years into details of which we can not here enter. However, from Father Hagen we learn of the immense masses of dark nebulæ; from Kühl (Munich) explanation was given of many hitherto unexplained astronomical phenomena shown in the telescope as well as on the photographic plate; from Zeipel we learn of the determination of the masses of the stars in the globular clusters and that they obey the same laws as the molecules in a so-called ideal gas.

Rosenberg reported on the improvement of the photo-electric method for the determination of brightness of stars. The accuracy of measurements approaches the 10,000th of a magnitude. v. Tamm (Sweden) surprised the meeting with an ingenious and simple method for the determination of the color of stars photographically with a single exposure. Professor Oppenheim (Vienna) presented an interesting theory on the movement of the stars. Dr. Moll of Utrecht spoke of a new microphotometer for the measurement by means of a thermopile of the distribution of brightness in stellar spectra.

A committee was appointed in connection with an expedition for observing the solar eclipse next year in the Dutch East Indies. It is intended to repeat the experiment of Professor Eddington in connection with the theory of relativity.

A visit was paid to the observatories in Potsdam and Neubabelsberg. They were shown also the Einstein tower, a new structure to further test the effect of relativity, the details of which were explained by Professor Freundlich. Professor Guthnick has been appointed director in succession to

would pair with entire chromosomes or larger

the lamented late Professor Struve. The observatory at Potsdam was shown by Professor Ludendorff, who recently has been appointed director of the Astrophysical Observatory.

A visit was paid also to the Geodetic Institute. At the wireless station the guests had the opportunity of listening to the wireless time signals from Annapolis.

One afternoon was devoted to an excursion on the Havel to the Wannsee and Nikolskee. At a tea in the library an opportunity was afforded for viewing Professor Darmstädter's collection of letters of celebrated naturalists and autographs of noted astronomers.

A feature of the meeting was the gathering in the large dome of the Potsdam Observatory, where refreshments were served and a social evening spent, the success of which was in a large measure due to the ladies of the observatory staff and others.

The four-days sessions are said to have passed without a jarring note and all parted with satisfaction at the scientific results that had been brought forth at the meeting and at the pleasure of having again renewed old friendships together with gratitude for the hospitality extended to them at Potsdam. The next meeting is to be held at Copenhagen.

AMERICAN MATHEMATICAL SOCIETY

The twenty-eighth summer meeting of the American Mathematical Society was held at Wellesley College, September 7–9, 1921, in conjunction with the meeting of the Mathematical Association of America. The attendance included ninety-one members of the Society. Eleven new members were elected, and thirty applications for membership were received.

Two joint sessions were held with the Mathematical Association of America, at which papers were read by Professor James Pierpont, on *Some mathematical aspects of the theory of relativity;* and by Professor A. C. Lunn, on *The place of the Einstein theory in theoretical physics.* The following papers were read at the regular sessions of the Society:

Einstein static fields which admit a continuous group G_2 of transformations into themselves: L. P. Eisenhart.

On the class of a certain type of Einstein spreads: John Eiesland.

The solar gravitational field and certain other fields completely determined by light rays: Edward Kasner.

Prime-power groups containing only one invariant subgroup of every index which exceeds this prime number: G. A. Miller.

General mean value relations: G. D. Birkhoff.

On plates of variable thickness: G. D. Birkhoff.

Application of least squares to the problem of apportionment: E. V. Huntington.

The summation by series by means of generating functions: I. J. Schwatt.

The expansion of any power of a multinomial: I. J. Schwatt.

The operator $(r(d/dr))$ on $F(r)$: I. J. Schwatt.

Geometric characterization of special singly infinite families of heat curves: Eugenie C. Hausle.

On the stability of a bicycle with a light frame: J. L. Synge.

Note on the definition of a linear functional: C. A. Fischer.

Certain theorems concerning simple closed and open curves: J. R. Kline.

A theorem concerning connected sets which become totally disconnected upon the removal of a single point: J. R. Kline.

Concerning connectedness im kleinen and a related problem: R. L. Moore.

The probability function for the sum of certain functions, with applications to the theory of errors: E. L. Dodd.

On power series with positive real part in the unit circle: T. H. Gronwall.

Some theorems on transformations with invariant points: J. W. Alexander.

Theorem on the interior of a simply connected closed surface in three-space: J. W. Alexander.

A fundamental class of geodesics on closed surfaces of genus greater than unity: H. M. Morse.

On the problem of steering an automobile around a corner: A. G. Webster.

On the principles of mechanical integrators for differential equations, especially those of exterior ballistics: A. G. Webster.

On the Fourier's series of non-integrable functions: C. N. Moore.

A generalization of Laguerre's rule of signs: C. F. Gummer.

The functions analogous to Lebesgue constants for a series of Hermite polynomials: R. E. Gilman.

Theory of invariant elements: O. E. Glenn.

On the location of the roots of the jacobian of two binary forms: J. L. Walsh.

The power of a modern gun and of thunder: J. E. Rowe.

Spurious correlation applied to urn schemata: J. R. Musselman.

The significance of the partial correlation coefficient in the comparison of ordered statistical series possessing rectilinear trends: W. L. Crum.

A tentative substitute for the standard deviation in the examination of the dispersion of an ordered statistical series: W. L. Crum.

The value of a sample. Second paper: B. H. Camp.

A form of series for potential problems: Norbert Wiener.

Some hydrodynamic aspects of group theory: S. D. Zeldin.

Two-way series for Lebesgue integrals: M. B. Porter.

R. G. D. Richardson,
Secretary