vindual motions of stars, or of the lesser star clusters are local and under the control of a more general movement of the body of aura which contains them.

According to the kinetic theory of gases, the pressure in a gas is that due to the momentum of the colliding molecules themselves as finally reflected from the containing walls of an enclosure. Without a limiting wall, the given mass of gas would expand indefinitely until its molecules ceased to collide and there would be no pressure. In a galactic mass, on the contrary, the individual stellar units do not collide, and the compression is not produced by the onward motion of the stellar "particles", or of their least component atoms; but it is produced in the containing medium by an internal mechanism within the atom itself, thus in an entirely different way. Nevertheless, as in the case of the theory of gases, it is difficult to see how there can be any pressure unless there is a retaining wall. Such a cell wall for the gravitational pressure is presumably a discontinuity in the aura produced by its vortical motion. Thus the aural cell may be likened to a gigantic "vortex atom".

REPORTS OF COMMITTEES

REPORT OF THE COMMITTEE ON STELLAR PARALLAXES.
FOR THE YEAR ENDING JUNE 30, 1917.

As in previous years the cooperating observers have kept each other informed as to additions to the observing lists, stars abandoned, etc. There has also been much helpful correspondence concerning methods, arrangement of the observing programs, choice of stars to be observed, and the like. Short reports from the individual observatories follow.

Allegheny Observatory. During the year 2500 successful parallax plates were secured and 2100 were measured. We have adopted the policy of not beginning to measure the plates for any one star until all the necessary plates have been secured. Accordingly the measuring is now up to date. More than two hundred parallaxes have been determined, of which eighty-one are in the hands of the printer, to appear in the publications of the Observatory. Experiments have been made (chiefly by Dr. Trümpler) with Kapteyn's recently proposed method for avoiding guiding error in the "wholesale" determination of parallaxes (that is, the relative parallaxes of all the stars that appear in a small field), and this method is now being tried on the Selected Areas in the +30° zone. Other methods for the same purpose have
also been tried. Experiments have also been made to determine the
best method for reducing the light of stars too bright to enable us to
employ the rotating sector alone. During the year 175 stars have been
added to the observing program. (FRANK SCHLESINGER).

Dearborn Observatory. Our two measuring engines are being con-
stantly employed for the measurement of parallax plates. The new
Gaertner engine arrived in August 1916 and has been giving satisfac-
tory service since that time. We are devoting the greater part of our
time to this work but we are handicapped by diminution of our staff
on account of the war. The observing is being kept up and we now
have about 2600 plates with 40 fields ready for the machine. During
the year 800 plates were obtained. We have now completed the deter-
minations for seventeen stars with an average probable error of 0'009.
Three stars have been added to the observing list during the year.
(PHILIP FOX).

Greenwich Observatory. Our parallax work during the year is very
meagre. We have not published any definitive parallaxes and have
added no stars to our observing program. First exposures have
been given on 86 plates, and second exposures on 150. Only 35 plates
have been measured during the year. (FRANK WATSON DYSON).

McCormick Observatory. A total of 4200 parallax plates have been
secured here up to July 1, 1917. The parallaxes of 83 stars have been
published in POPULAR ASTRONOMY, Vol. 25, page 23. Some of the stars
there given, whose results were obtained from plates secured in three
seasons only, were again put on the observing list in order to free the
results for parallax and proper motion as much as possible from the
chance of systematic error. Among such stars is 70 Ophiuchi. The
complete account of the parallax work at this observatory will shortly
be published by Columbia University as an Ernest Kempton Adams
Research. We have added 52 stars to our program during the year.
(S. A. MITCHELL).

Mount Wilson Observatory. Since the last report 412 plates with
554 exposures have been secured for the direct determination of
parallaxes with the 60-inch reflector; 52 fields have been completed,
most of them of stars of small proper motion with advanced types of
spectrum. The exceptions are 6 Cygni and 61 Cygni, two Wolf-Rayet
stars (B.D. + 35°4001 and + 35°4013) and the planetary nebula
N. G. C. 7662. The results of this material have been discussed for
probable and systematic error, and the publication is now with the
printer. With the use of about 16 exposures the probable error is less
than 0''.006. There is considerable evidence that the systematic error must be small, perhaps not exceeding 0''.003. During the year the observing program has been modified greatly. It now contains three lists of objects: 52 small proper motion stars with advanced types of spectrum; 28 stars of special interest, such as novae, variables, and members of the Taurus group; and 39 nebulae, most of which are planetaries.

For the spectroscopic determination of parallaxes the observing list is nearly identical with that for radial velocities and hence is an extensive one. It may be summarized as follows, stars of types A and B being omitted: (1) Stars with measured trigonometrical parallaxes, brighter than magnitude 9.5. (2) Stars of very large proper motion, the list used being that published by van Maanen in the Astrophysical Journal, Vol. 41, 1915. (3) The star list of the American Ephemeris. (4) About 70 stars of very small proper motion, most of which have been or are now under observation by van Maanen. (5) A list of about 200 stars of types G and K for which the radial velocities are being determined. The spectroscopic parallaxes of about 500 of these stars will be published within a short time by Adams and Joy. Preliminary determinations are available for several hundred others. The spectral parallax results for 21 stars were published in the Publications of the Astronomical Society of the Pacific, December, 1916. (W.S. Adams).

Sprout Observatory (Swarthmore College). We have added six stars to our observing list and abandoned 21. The parallaxes of 50 stars have been published in Sprout Observatory Publication, Number 4; 25 additional regions have been completed and 27 others lack only the last epoch. Some of these fields will be held over for a year on account of the extremely poor observing conditions this spring. For the same reason we have obtained only 529 plates during the year. In spite of the fact that our standard has been raised and that we now discard plates that would formerly have been measured, the percentage of rejected plates has been cut in half. (John A. Miller).

Van Vleck Observatory (Middletown). The double slide plate holder is finished, and experiments have been started to see what sort of parallax results can be obtained with the old 12-inch lens. There is no prospect of getting the 18½-inch lens until after the war. (F. Slocum).

Yerkes Observatory. Part I of Volume IV of the Publications of the Yerkes Observatory is in press and contains the data for 132 stellar parallaxes thus far obtained with the 40-inch telescope. The