

THE volume of *Mitteilungen* of the Berne Scientific Society for 1910 contains an interesting attempt by P. Gruner to render the principle of relativity intelligible to the less mathematical reader. The twenty-one pages of "elementary" presentation still offer a formidable array of complex arguments, many of which are by no means easy to follow. Gruner imagines the inhabitants of earth and Mars as engaged in an attempt to unify and connect their respective time and space scales without the aid of astronomical observations of any other bodies, but with the free use of wireless telegraphy for mutual communications. He shows how, owing to relative motion, the scales must differ, and deduces Einstein's transforming equations in a simple manner. The scheme and argument could, no doubt, be still further simplified, and the simpler the better. Even this simplification tends to bring out the essential weakness of the theory, which assumes that successive light waves from a moving source are not concentric, and at the same time postulates, on the basis of Michelson's experiment, that this eccentricity cannot be discovered. Everything would be so much simpler if the speed of the body were added to the speed of the light it emitted, a supposition which, indeed, does not appear to contradict any astronomical observations.

ALTHOUGH the "exploring electrode" method of determining the distribution of electrical potential in the kathode dark space of a vacuum tube through which an electric discharge is passing has been suspected for some time, and has recently been superseded by the measurement of the deflection of a beam of kathode rays shot transversely through the discharge, it is important that the reason for the divergent results obtained by the former method should be ascertained. Prof. Wehnelt shows in a paper in the *Verhandlungen der Deutschen Physikalischen Gesellschaft* for July 30 that any small obstruction placed in the kathode dark space acquires a positive charge, and its potential is therefore higher than that of the point at which it is placed. Between the kathode and the obstruction the rise of potential is linear, but between the obstruction and the kathode glow it is curved, showing that electric charges are present in this portion of the discharge.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES FOR SEPTEMBER:—

- Sept. 2. 22h. om. Saturn stationary.
 4. 4h. 37m. Uranus in conjunction with the Moon (Uranus $4^{\circ} 35' N.$).
 9. 3h. om. Mercury in inferior conjunction with the Sun.
 13. 1h. 48m. Saturn in conjunction with the Moon (Saturn $4^{\circ} 22' S.$).
 14. oh. 39m. Mars in conjunction with the Moon (Mars $4^{\circ} 32' S.$).
 15. oh. om. Venus in inferior conjunction with the Sun.
 17. 9h. 28m. Neptune in conjunction with the Moon (Neptune $5^{\circ} 46' S.$).
 20. 23h. 11m. Venus in conjunction with the Moon (Venus $13^{\circ} 14' S.$).
 23. 16h. 18m. Sun enters sign of Libra.
 25. 2h. om. Mercury at greatest elongation W. of the Sun ($17^{\circ} 52'$).
 " 12h. om. Mercury in perihelion.
 " 16h. 5m. Jupiter in conjunct on with the Moon (Jupiter $2^{\circ} 11' N.$).

BROOKS'S COMET, 1911c.—During several of the clear evenings which obtained at the latter end of last week, Brooks's comet was faintly visible to the naked eye of an observer who knew where to look for it. Ordinary opera-glasses showed it as a distinct nebulosity, and in the field of a $3\frac{1}{4}$ -inch refractor it was a really brilliant object, some $5'$ or $6'$ in diameter, having a distinct nucleus. On Sunday night, at Gunnersbury, Mr. W. E. Rolston found the

comet, as seen with opera-glasses, to be no less conspicuous than ω^1 Cygni (mag. 5.6), which it immediately preceded.

ENCKE'S COMET, 1911d.—Observations of Encke's comet, made by Dr. Gonnessiat at the Algiers Observatory, are recorded in No. 4518 of the *Astronomische Nachrichten*. On August 1, under excellent atmospheric conditions, the comet was seen before ninth-magnitude stars which were rising at the same time, and if seen in a dark sky would probably have equalled in brightness stars of the seventh or eighth magnitude.

Dr. Backlund briefly discusses the recent observations, and gives an ephemeris extending to September 21. At present the comet is apparently about 2° south-east of ν Leonis, and is travelling south of, and almost parallel to, the ecliptic, down through Virgo towards Libra; on September 14 it will be some 5° south of Spica.

THE ASPECT OF NOVA LACERTÆ.—On a photograph taken with fifty minutes' exposure on August 11, Herr Kostinsky found that the image of Nova Lacertæ was surrounded by a well-defined luminous aureole (black on the negative) similar to that which surrounded the images of Nova Persei in 1901. This aureole is not to be seen on similar negatives secured in January and February; therefore Herr Kostinsky deduces it may be taken as an indication that the nova has now become a gaseous nebula in the spectrum of which only bright radiations of hydrogen and the nebula lines are represented. The photographic magnitude of the nova on August 11 was about 10.5 (*Astronomische Nachrichten*, No. 4518).

KIESS'S COMET, 1911b.—An improved set of elements and an ephemeris are given for comet 1911b, by Dr. Kobold, in No. 4518 of the *Astronomische Nachrichten*. The comet reached its most southerly point on August 24, and is now travelling northwards slowly. For the next fortnight its apparent path lies through the constellation Telescopium. This comet was discovered independently by Herr Raimond Moravansky in Moravia on August 5, and the observation sent to Kiel; but this was nearly a month later than the discovery by Mr. Kiess.

THE EARLY VISIBILITY OF THE NEW MOON.—From calculations based on the data given by Mr. Horner for his remarkably early detection of the new moon, on February 10, 1910, Mr. Whitmell finds, after correcting for parallax, &c., that the difference in altitude between sun and moon at the moment of observation was only $3^{\circ} 16'$, the moon being $1^{\circ} 46'$ above, and the sun $1^{\circ} 30'$ below, the horizon. The corrected azimuth difference was only $9^{\circ} 8'$, and the moon's age sixteen hours, so that this observation is probably unique in its detection of the crescent so soon after "new moon" (*The Observatory*, No. 438).

VARIABLE STARS.—Observers of variable stars will find part ii., vol. iv., of the *Annals of the Harvard College Observatory*, prepared by Miss Cannon, useful. It contains a table in which are set out the maxima and minima of a large number of variable stars. For each variable the elements and the dates of observed maxima and minima are tabulated, with a special column showing the differences between the observed and calculated dates.

In No. 4515 of the *Astronomische Nachrichten* Herr Max Mündler publishes the results of a number of observations of variable stars made by him, with a 6-inch comet seeker, at Mundenheim during 1909–10.

WATER SUPPLY IN THE UNITED STATES.

TO its excellent series of pamphlets on water supply the United States Geological Survey has just added three papers, one (No. 270) descriptive of the hydrographical features of the Great Basin, an immense tract of country 208,000 square miles in area (just as large as Germany), and extending over parts of the States of Utah, Nevada, Idaho, Oregon, and California; the other two, practical manuals entitled, respectively, "Underground Waters" (Paper No. 258) and "Well-Drilling Methods" (Paper No. 257).

Of the first pamphlet, it is only necessary to remark that it follows on the same lines as those adopted for similar reports, recently reviewed in these columns, on other of the dozen districts into which the United States