Government, with Prof. Nefedjew of Perm in charge; also work was to be started at Lembang in Java, near the equator, and there was a hope that observations might soon be commenced at Adelaide and La Plata, two southern stations in the same latitude, and with a longitude difference of nearly 12 hours.

The Commission on Shooting Stars decided to compile a new catalogue of radiants of meteor showers and to develop the photographic study of meteors. The Commission on the Carte du Ciel reported that the completion of the work was in sight, and the financial support of the Union was considerably increased with the view of hastening its completion. The reports of the Commissions on Stellar Parallaxes and Photometry showed plenty of important work done and in hand, but proposed no serious changes in present work. The Commissions on Double Stars and Radial Velocities were concerned in selecting lists of stars for co-operative or special observation. The Commission on Variable Stars secured several small grants for catalogues and for the publication of observations, and asked for more systematic observations of the spectra of variable stars. The Commission on Nebulæ and Stellar Clusters adumbrated several important schemes to complete the survey of the heavens before starting a fresh catalogue and scheme of classification; also it is examining how to secure accurate positions of nebulæ, to serve as a background against which a rotation of the galaxy might be shown.

The Commission on Stellar Classification, in order to widen the scope of its activities and to apply many physical criteria which modern spectral analysis and spectrophotometry are rendering of importance, has changed its name to the Commission on Stellar Spectra. The Commission on the Bureau de l'Heure asked for an increased grant, which led to a motion being put to the general assembly by the executive committee expressing the hope that some reorganisation of the Bureau would be possible and that after 1931, the end of the present convention, the Union might be relieved of the present charge upon its income involved in maintaining the Bureau de l'Heure.

The Commission on Stellar Statistics is undertaking the execution of tables of conversion of equatorial co-ordinates and proper motions into galactic ones. Finally, the Commission on the Solar Parallax has arranged for the necessary observations, including photometric and spectroscopic ones, to be made in connexion with the approaching conjunction of Eros. Fresh commissions have been appointed to act until the next general assembly; the commission on solar rotation has been absorbed into that on solar physics, and a new commission on stellar constitution, with Prof. Eddington as chairman, has been appointed.

The next meeting of the Union is, on the invitation of the American delegates, to be held early in September 1932, in the eastern United States. The date and place are chosen partly to fit in with a total eclipse of the sun through Canada and the eastern United States on Aug. 31, 1932. As the present convention ends in 1931, there will have to be an intermediate extraordinary assembly of the Union between now and then. The new executive is charged with the tasks of appointing a committee to revise the present statutes, of modifying the present practice limiting membership of the Union to members of various commissions, of preparing fresh regulations for the Bureau de l'Heure, and of securing a new lease of life for the Union after 1931. The new executive committee consists of Sir Frank Dyson (president), Prof. Schlesinger, Prof. Abetti, Prof. Andoyer, Prof. Norlund, and Prof. Nušl (vice-presidents), and Lieut.-Col. Stratton (general secretary).

The final meeting of the general assembly closed with thanks to the Union's hosts, and especially to Prof. de Sitter, who combined the double task of chief host and president at this most successful meeting, and has ruled over the Union through a difficult period of its life.

The Carbon-Nitrogen Ratio in Wheat.

SINCE the publication in 1918 of Kraus and Kraybill's fundamental work on the vegetation and reproduction of the tomato, the carbon-nitrogen ratio has been recognised as a factor of prime importance in the growth and reproduction of the plant. Recently some careful work by Phyllis A. Hicks on the carbon-nitrogen ratio in wheat has confirmed and somewhat extended the conclusions of the two American workers referred to above (*New Phytologist*, vol. 27, No. 1).

It is pointed out that the primary value of the relation lies in the fact that the growth of the plant is dependent on the balance between the metabolic processes of carbon assimilation and respiration on one hand, and nitrogen assimilation on the other. In the present work, pure lines of three strains of wheat were used, two spring and one winter variety, and the carbon-nitrogen ratios were determined at close intervals in the life-histories of the plants by microchemical analysis. 'Carbon' is taken as embracing all forms of carbon in the plant, and 'nitrogen' all forms of nitrogen.

It was found that a low carbon, medium nitrogen, and low carbon-nitrogen ratio encourages vegetative growth. Vegetative activity reduces nitrogen percentage steadily, but the carbon rises to a maximum about half-way through the life-history and again falls considerably before blooming. This is taken to explain the double carbon maxima for apple spur results, since carbon maxima in themselves have nothing to do with flower formation. The carbon-nitrogen ratio rises steadily throughout the vegetation period, and when a sufficiently high ratio obtains, flowering occurs. Strong support is given to the contention of Kraus and Kraybill that fruitfulness is associated neither with highest nitrates nor with highest carbohydrates, but with a condition of balance between them.

Every cultural strain has its own distinctive carbon-nitrogen ratio, at which flowering occurs, but in every case it represents the maximum of the ascending ratio curve. In this relation an interesting difference between the spring and winter strains of wheat is noted. A ratio of 14-17 covers the range of conditions favourable for flowering in both spring varieties, whereas a ratio of 31 is required for the winter variety. This agrees with the conclusions of Hedlund, that varieties of wheat with a higher percentage dry weight are more winter hardy; and the higher percentage dry weight is due to high carbon content, which compensates for the longer seedling life under winter conditions. Senescence is accompanied by a high carbon-nitrogen ratio, and senescent changes can be prevented at the expense of flowering by controlling nitrogen content. It is suggested that it may be possible to apply nitrogen to annual plants in such proportions and at such periods as would first of all allow of flower and seed production, and then prevent senescence of the tissues or induce rejuvenescence.