

On the Chairman pointing out that past decisions gave e a special meaning for different spectral classes the recommendation, as printed, was carried *nem. con.*; this was, however, without much enthusiasm, the Secretary recording only one audible "aye".

Upon objection by Mr Wright, the letter e was inserted before the w in the nomenclature defined in Recommendation 3, the vote being 5 to 2 in favour of this insertion.

Recommendation 4 was adopted unanimously.

In the second line of Recommendation 5, the words "notation of the Draper Catalogue" were added. The recommendation was adopted.

Recommendation 6 was adopted.

In Recommendation 7 it was agreed to use the sign em instead of fe as suggested by Miss Payne.

Recommendation 8 was adopted with a slight modification and the reference to stars of type S was struck out of the Report.

The remainder of the Report was then discussed. Messrs Stratton and Shapley advised the removal of the discussion of gaseous nebulae from this Report and its reference to Commission 28.

The next session was taken up with the passing of the resolution changing the name of the Commission, and with the discussion and adoption of the important change in the Report consequent on the acceptance of the Harvard memorandum. The recommendations to be sent to the General Assembly were also discussed, and two new ones, 9 and 10, on spectrophotometry and the change of name for the Commission, were adopted.

A request from the Commission on Solar Parallax, concerning the spectra of Eros and its comparison stars was considered.

The following action was taken:

The Spectrum of Eros was defined as dGo.

The question of the Colour of Eros was referred to the Photometric and Stellar Parallax Commissions, and also to Messrs Hertzsprung and Lindblad.

The question of the spectra of the comparison stars was referred to Professor Shapley and the Harvard Observatory.

Commission 30. (VITESSES RADIALES STELLAIRES.)

In the absence of the President, Dr W. W. Campbell, the chair was taken by Dr J. S. Plaskett. Dr H. Spencer Jones acted as Secretary.

The following Reports of radial velocity determinations in progress or in view in the near future at the Simeis, Potsdam, Pulkovo and Cape Observatories were read.

(a) From G. Shajn, Astronomer of the Simeis Observatory.

May I be allowed to give a brief summary of the radial-velocity determinations now in progress, or in view for the near future at the Simeis Observatory? This is a copy of a brief report sent to Professor Campbell, the Chairman of Commission No. 30, according to his request (a letter of 29 March).

The Simeis Observatory welcomes every beginning with reference to future co-operative plans for the systematic extension of radial-velocity determinations and all the problems

connected with this branch, and is willing and ready to do all that is in its instrumental power.

The 40-inch reflector in the Cassegrain combination is devoted to spectrographic investigations with the single and three prism spectrographs. The Simeis Observatory has not succeeded completely in developing the radial-velocity determinations—the principal programme of the instrument. Up till now we have been able to use the spectrographs of relatively large dispersion (loaned by Professor Belopolsky), and not suitable for radial-velocity determinations of faint stars. The single prism spectrograph of Mellon type is only ready for use just now.

In 1927 we have secured the spectrograms of bright stars to be studied with the self-registering Koch's microphotometer. We have it in view to prepare on the base of the study of the contours of lines a list of spectral lines of late type stars suitable for radial-velocity work. The criterion is the symmetry of the line contour. The preliminary work with the single prism spectrograph is very promising, and now this investigation is continued with the three prism spectrograph and long camera. We will be glad to pay special attention to the lines recommended by the Commission of the International Union on Standard Wave-Lengths. We hope that any trace of possible blending effect may be thus recognized. It is to be expected that this programme will be completed within eight months.

The single prism spectrograph of Mellon type, which is now ready for use, will be devoted during the coming months to the observations as follows:

(1) The systematic radial-velocity survey of spectroscopic binaries brighter than 6.0 for which there are no orbits. (2) The radial-velocity determinations of individual stars brighter than 6.0–6.2 with some special attention to the brighter moving clusters (Praesepe, Com. Berenic.), the wide pairs with common motion and the components of double stars. (3) Some Cepheid variables for the determinations of the velocity-curves from groups of lines of different chromospheric heights, and some Eclipsing variables for the investigation of the rotational effect. (4) The standard stars recommended by the Sub-Committee of Commission No. 30 in order to test the systematic errors and the systematic difference between the results obtained with different telescopes and spectrographs.

The spectrographic work carried out at Simeis will be supplemented by the spectrophotometric study with the self-registering Koch's microphotometer. In the spectrographic work are engaged J. Shajn, V. Albitzky, and in future, maybe, the other members of the staff.

(b) *From Professor H. Ludendorff, Direktor des Astrophysikalischen Observatoriums, Potsdam.*

In Beantwortung Ihrer Anfrage teile ich Ihnen folgendes mit: Das Potsdamer Observatorium besitzt zur Zeit nur einen modernen Sternspektrographen, und zwar einen solchen mit einem Prisma und kurzer Kamera (35 cm.). Derselbe ist hauptsächlich für Sternspektren mit verwaschenen Linien geeignet, und es ist geplant, im wesentlichen solche damit aufzunehmen. Sterne, die schwächer als $5^m.5$ sind, auf unser Programm zu setzen, empfiehlt sich nicht wegen der ungünstigen atmosphärischen Bedingungen, die bei uns in der Regel vorherrschen.

Ein definitives Programm ist für den Spektrographen noch nicht aufgestellt worden, und ich bin gern bereit, etwaige Wünsche der Kommission zu berücksichtigen.

(c) *From Professor A. Belopolsky, Pulkowo Observatory.*

J'ai reçu de M. Campbell une lettre dans laquelle il me propose d'annoncer, quelles étoiles on observe à Pulkowo spectroscopiquement pour déduire les vitesses radiales, et de vous envoyer une liste des étoiles, dont nous prenons les spectrogrammes avec le spectrographe à trois prismes, attaché au 30 P. Ces étoiles sont comme il suit:

Standard velocity stars:

		additionnelles			
ancienne liste		α		δ	
		h	m	°	Type Mag.
α Cassiopeiae	ι Aurigae	4	50	+33.0	Ko 2.9
α Arietis	ε Leonis	9	40	24.2	Gp 3.1
α Persei	ε Boötis	14	41	27.5	Ko 2.7
α Tauri (difficile)	(β Herculis)	16	25	21.7	Ko 2.8
β Geminorum	ζ Herculis	16	38	31.8	Go 3.0
η Leonis	(ε Cygni)	20	42	33.6	Ko 2.6
α Boötis	β Pegasi	22	58	+27.5	Ma 2.6
α Herculis (difficile)					
α Lyrae					
γ Aquilae					

Outre ceci nous observons régulièrement les étoiles suivantes:

α' Geminorum	η Aquilae
α Canum Venatic.	β Cephei
Polaris	γ Boötis
β Aurigae	δ Cassiopeiae
ζ Geminorum	γ Herculis

(d) From Dr H. Spencer Jones, *His Majesty's Astronomer, Royal Observatory, Cape of Good Hope.*

Radial-velocity determinations were terminated at the Cape Observatory in 1926 in order that a programme of stellar parallaxes might be undertaken with the 24-inch refractor. The results of the completed radial-velocity observations are now in the hands of the printer. It is proposed to carry on the parallax observations for a minimum period of ten years. In the meantime, the future of the radial-velocity field of work at the Cape will be considered. With the large dispersion hitherto employed, stars of suitable spectra which could be photographed in exposures up to 90 minutes have been observed with few exceptions. Beyond the continued observation of stars with variable radial velocity, the field in which useful work is possible with existing equipment is largely worked out.

For observations of fainter stars and of stars of early type with few or diffuse lines, a smaller dispersion is desirable. The question of modifying the equipment in this direction, with a view to a resumption at a later date of radial-velocity observations, is under consideration.

The question of the appointment of a small Sub-Committee to undertake the functions specified in Section I of the President's Report (see p. 169) was taken into consideration. There was general agreement that such a Sub-Committee would prove of considerable value in securing co-ordination of work amongst different Observatories, in helping to prevent unnecessary duplication and in disseminating information. The appointment of a Sub-Committee consisting of Dr J. H. Moore, Lick Observatory (Chairman); Professor Joy, Mount Wilson Observatory; and Professor Harper, Dominion Observatory, was agreed upon.

The desirability of the appointment of a Sub-Committee to study and report upon the problem of replacing the Rowland system of wave-lengths by the International System in all radial-velocity determinations and to prepare a corresponding list of wave-lengths for the lines observable in stellar spectra of Classes O, B and A, as recommended in Section II of the President's Report, was considered. Some doubt was expressed whether such a Sub-Committee could serve any useful purpose. It was finally decided to appoint a Sub-Committee, consisting of Dr J. S. Plaskett, Dominion Observatory (Chairman); Dr W. S. Adams,

Mount Wilson Observatory; and Professor Frost, Yerkes Observatory, to consider the whole question and to submit a Report to the President of the Commission before the next meeting of the Union.

The Report of the Sub-Committee appointed, in accordance with a resolution adopted at the meeting of the Union held at Cambridge in July 1925, to prepare a short list of stars to serve as standards of comparison in the determination of radial velocities of other stars was considered and adopted with some slight amendments.

Commission 31. (DE L'HEURE.)

PRESIDENT	PROFESSOR R. A. SAMPSON
VICE-PRESIDENT	GENERAL FERRIÉ
GENERAL SECRETARY	M. BIGOURDAN
SECRETARY TO THE MEETING	M. R. MADWAR

First Meeting, July 7th

The President gave a short résumé of the work and constitution of the Bureau de l'Heure; he also drew the attention of the Commission to the necessity of revising the existing regulations and emphasized that such regulations when finally drawn and accepted should be strictly observed. The existing system presented substantial advantages. The French signals are emitted and paid for by the French Government, they are more numerous than those emitted from any other source; and the Commission in association with General Ferrié decided on the type and emission of these signals. Then the publication of a journal in the form of a Bulletin is of great importance to all concerned in time determination. The Bureau de l'Heure is also a laboratory for methods of time determination, but this is a work for the future, and its function as an experimental laboratory has not so far been fulfilled.

The President then asked the Commission to give a certificate to the Executive Committee with regard to the accounts of the Bureau, viz. that

"The President has examined the details of expenditure for the past three years and certifies that all is in order according to the Regulations."

This was carried.

Owing to the financial position a supplementary grant is required. There is in view at the end of the current year a deficit of 13,000 frs. The President therefore asked the Commission to send to the Executive Committee a request in the terms of the following resolution:

"The funds allowed for the past triennium have been exceeded and an increase of subvention is required. The sum asked is 75,000 frs. for each of the three years 1929, 1930, 1931, together with a supplement of 13,000 frs. for the current year."

This was carried.

The General Secretary began a report in detail on the work of the Bureau de l'Heure; he enumerated the various signals emitted, the position of the personnel, which with regard to the Director is not well defined, and other matters. The *Bulletin Horaire* owes its existence to the new Bureau under his directorship.

The statement was not concluded when the Commission adjourned at 11 a.m.