



LABORATORY FOR **SPACE RESEARCH UTRECHT**  
OF THE  
NATIONAL INSTITUTE FOR SPACE RESEARCH

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To the Presidents of IAU Commissions

25 Stellar Photometry and Polarimetry,	Dr. F.G. Rufener,
27 Variable Stars,	Dr. B. Szeidl,
29 Stellar Spectra,	Dr. G. Cayrel-de Strobel,
35 Stellar Constitution,	Dr. D. Sugimoto,
36 Theory of Stellar Atmospheres,	Dr. K. Kodaira,
37 Stellar Clusters and Associations,	Dr. D.C. Heggie, and
44 Astronomy from Space,	Dr. Y. Kondo.

re: Proposal for an IAU Symposium on Evolved Massive Stars in Galaxies,  
to be held in Indonesia, in summer 1989.

Utrecht, 20 November 1986

Dear Dr. *Szeidl*,

This is to inform you that we [K.A. van der Hucht (The Netherlands), J.P. Cassinelli (USA) and B. Hidayat (Indonesia)] are, since 1985, in the process of preparing a proposal to the IAU Executive Committee for an IAU Symposium on Evolved Massive Stars in Galaxies, to be held in Indonesia in summer 1989. Our motivation is the following.

Although the proceedings of the 1985 IAU Symposium on luminous stars (no. 116) appeared only recently, planning ahead takes easily a couple of years.

In the last year already numerous important studies have appeared, dealing with various aspects of different classes of evolved massive stars in the Milky Way, the Magellanic Clouds, and other galaxies. Next to many new high resolution optical spectra of high photometric accuracy, and high time-resolution photometry and polarimetry, all thanks to the availability of modern detectors, we see

thanks to groundbased IR and radio observations:

- that IR photometry and spectroscopy of massive stars allows us now to study not only overall IR characteristics like free-free and forbidden line radiation by stellar winds and thermal radiation by heated dust, but also long- and short-term variations in these processes, related to the various stages of evolution of these massive stars;
- and that (sub-) mm and cm radio observations are now providing important clues on the presence of (variable) non-thermal radio flux sources, either of intrinsic origin or related to binary interaction of massive stars.

and thanks to UV, X-ray,  $\gamma$ -ray and IR satellite observations:

- that the amount of (IUE) UV data of various types of massive stars is still increasing, providing crucial information on temperatures, abundances, mass loss, and continuum and/or line variations of evolved massive stars;
- that X-ray data (Einstein and Exosat) of evolved massive stars are only now being fully analyzed, providing indications of non-isothermal stellar atmospheres, and, in the case of massive binaries, of colliding winds and/or accretion;
- that the 1.8 MeV  $\gamma$ -ray flux (HEAO-3 and SMM) from the galactic center has recently been related to the possible  $^{26}\text{Al}$  abundance in Wolf-Rayet stellar winds;
- that the full thrust of IRAS observations of massive stars and their environment is just beginning to show: the observed cool outer regions of stellar wind envelopes are being recognized as providing crucial constraints on the interaction between their stellar winds and the ambient interstellar medium;

In the meantime, theoretical modelling of atmospheres and interiors of various types of evolved massive stars is approaching high stages of sophistication, but is also leaving up-to-now still big debates on, for instance:

- the importance of luminosity, rotation and magnetic fields as the drivers of stellar winds of evolved massive stars in their various evolutionary stages;
- the effective temperatures of Wolf-Rayet stars (of the order of 100.000K or 40.000 K?), very important for the effect of luminosity as possible driver of their stellar winds;
- the presence and extent of interior mixing processes like convective overshooting, to explain the possibility of heavy nucleosynthesis products at the stellar surfaces;
- the serious possibility, that WR stars are the progenitors of a sizeable fraction of the Type II supernovae. This possibility is supported by abundance determinations of some supernovae and (oxygen-rich) supernova remnants.

This all is most promising for the study and understanding of evolved massive stars in



galaxies in the next couple of years, and certainly justifies, in our view, an IAU Symposium on this subject in 1989. Earlier we thought even of 1988, but Dr. McNally informed us that this would not be practicle, because of the IAU General Assembly in the USA that year.

In the scientific justification of our proposal we can not and do not intend to make ourselves dependent on HST results. Of course, we hope that soon many HST observations will come about, which will have their impact on our understanding of evolved massive stars in remote galaxies. But such expectations can not be the foundation for any IAU symposium proposal now. Moreover, as soon as HST is operational, we can expect series of HST conferences, similar to the fruitful series of NASA/ESA IUE conferences. Besides, as indicated above, sufficiently much work has and will be done between 1985 and 1989, as to warrant an IAU Symposium on Evolved Massive Stars in 1989.

The scientific program of the IAU Symposium, which we propose, will comprise observations and theory of:

- interrelations between OB supergiants, Of stars, Ofpe/WN9 objects, Belp stars or B[e] supergiants or luminous blue (variable) emission line stars (LBELs or LBVs), Wolf-Rayet stars, hypergiants and pre-supernovae;
- their location in the HRD, i.e. the best possible determination of their effective temperatures and luminosities;
- what makes their mass loss rates vary between their subsequent stages of evolution;
- the meaning of their intrinsic (micro-) variability and (non)-radial pulsations as indicators of their evolutionary status;
- the impact of radiative energy, kinetic energy and heavy element emission by evolved massive stars into their immediate environment on the origin and evolution of (giant) HII regions and of OB clusters and associations;
- the galactic distribution of the various classes of evolved massive stars, as indicator of interrelations between them, and as indicator of trends with galactic gradients in metallicity and initial mass function;
- the presence of possibly enormous numbers Wolf-Rayet stars in certain galaxies as evidence of explosive massive star formation: again, relations with galactic parameters as metallicity and initial mass function.

At this moment we are in the process of forming an Scientific Organizing Committee, which will decide where focussing will take place.

With respect to the choice of location, the following may serve. At the conclusion of IAU Symposium No. 116 on "Luminous Stars and Associations in Galaxies" in Greece, 1985, an invitation was announced on behalf of Prof.Dr. Bambang Hidayat, to host the next IAU symposium concerned with evolved massive stars in Indonesia (ref: proceedings, p.528).

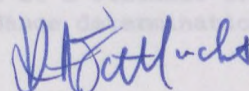
IAU Symp. No.116 can be regarded as the fifth in a series of IAU symposia on (Evolved) Massive Stars, after No.47 on "Wolf-Rayet and High-Temperature Stars" in Argentina (1971), No.83 on "Mass Loss and Evolution of O-type Stars" in Canada (1978), No.99 on "Wolf-Rayet Stars: Observations, Physics, Evolution" in Mexico (1981), and No.105 on "Observational Tests of the Stellar Evolution Theory" in Switzerland (1983).

After three of these symposia on the American continents and two in Europe, we think it is justified to have the next IAU Symposium on aspects of evolved massive stars in another part of the world. Therefore we would like to embrace the invitation of our Indonesian colleagues. Prof.Dr. B. Hidayat, director of the Observatorium Bosscha in Lembang (Java), and Dr. I. Radiman, chairman of the Astronomy Department of the Institut Teknologi Bandung (ITB) in Bandung (Java) are, since October 1985, in the process of raising goodwill, support and funds for this purpose, and they are investigating candidate locations in their country.

We realize that the topics of the here envisaged IAU Symposium will be of relevance for the IAU Commissions 25, 27, 29, 35, 36, 37, and 44. We would like to propose that we ask Commission 35 to be the sponsor, and the other Commissions to be the co-sponsors of this IAU Symposium.

In the first quarter of 1987, we will send you a formal request to this extent. This letter is meant to inform you now already of our activities since 1985, and of our intentions. If you have any comments on our activities and intentions at this stage, then certainly we would like to profit from those.

Yours sincerely,



Karel A. van der Hucht

cc: Vice-Presidents





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Dr. B. Szeidl, President  
IAU Commission 27  
Konkoly Observatory  
Box 67  
H-1525 BUDAPEST  
Hungary

re: Proposal for an IAU Symposium on "Interrelations between Wolf-Rayet Stars and Other Evolved Massive Stars in Galaxies", to be held in Indonesia, in summer 1990.

Utrecht, 13 February 1987

Dear Dr. Szeidl,

This is to ask you for the formal support of your IAU Commission No. 27 for a proposal towards the IAU Executive Committee for an IAU Symposium entitled "Interrelations between Wolf-Rayet Stars and Other Evolved Massive Stars in Galaxies", to be held in Indonesia in summer 1990. On 20 November 1986 we wrote to you about our intentions. Now we can give you more details of our proposal.

In summer 1985 we (J.P. Cassinelli, B. Hidayat, A.J. Willis and myself) started considering to propose and organize an IAU Symposium on evolved massive stars for 1988, and also at that time our Indonesian colleagues offered to accept the challenge of hosting such a symposium.

Initially, we wished to propose this Symposium for March 1988, but we learnt from the IAU Executive Committee that March 1988 falls just within the moratorium zone around the IAU General Assembly in Baltimore. Moreover, in the mean time we learnt that another group is in the process of proposing an IAU Colloquium on Physics of Luminous Blue Variables for summer 1988 near Baltimore. We have verified with this group that our plans are entirely complementary.

In view of this all we have decided to propose the Symposium on "Interrelations between Wolf-Rayet Stars and Other Evolved Massive Stars in Galaxies", as foreseen by us, for Summer 1990.

The scientific program.

The outline of the intended scientific program is:

1. Outstanding problems of Wolf-Rayet Stars;
2. Interrelations between evolved massive stars in galaxies;
3. The effect of evolved massive stars on the ambient interstellar medium, on galactic enrichment, and on galactic evolution.

A more detailed list of topics of discussion is attached as ANNEX A. Of course, we will be open for any new developments between now and 1990, which will be reflected in the choice of invited reviews, to be made later.

We would very much appreciate to have your comments on this program, as a matter of course.

Looking forward to receiving your comments and your supporting letter.

Sincerely yours,



The Scientific Organizing Committee.

As the candidate Scientific Organizing Committee, we would like to propose:

D.A. Allen	(Australia)	P. Massey	(U.S.A.)
J.P. Cassinelli	(U.S.A.)	F. Matteucci	(Italia/ESO)
✓ A.M. Cherepashchuk	(U.S.S.R.)	V.S. Niemela	(Argentina)
C. Doom	(Belgium)	M. Rosa	(Germany/ESO-ECF)
W.A. Hagen	(U.S.A.)	M. Rosado	(Mexico)
B. Hidayat	(Indonesia)	B.S. Shylaja	(India)
K.A. van der Hucht	(Netherlands)	N.R. Walborn	(U.S.A.)
✓ M.J. Jerzykiewicz	(Poland)	A.J. Willis	(U.K.)

I myself am willing to chair this committee.

The location.

With respect to the choice of location, the following may serve. At the conclusion of IAU Symposium No. 116 on "Luminous Stars and Associations in Galaxies" in Greece, 1985, an invitation was announced on behalf of Prof. Dr. Bambang Hidayat, to host the next IAU symposium concerned with evolved massive stars in Indonesia (see: Proc. IAU Symp. 116, p.528).

After three IAU Symposia related to hot massive stars on the American continents (No. 49 in 1971 in Argentina, No. 83 in 1978 in Canada, and No. 99 in 1981 in Mexico), and two in Europe (No. 105 in 1983 in Switzerland, and No. 116 in 1985 in Greece), we consider it justified to propose the next IAU Symposium on aspects of evolved massive stars in Asia. Therefore we embrace the invitation of our Indonesian colleagues, who have developed in the past years a growing interest in Wolf-Rayet stars, X-ray binaries and OB associations.

As an impression of the travel costs, the price of a tourist return ticket to Indonesia from Europe is ~ US\$ 1000, from the US West Coast it is ~ US\$ 1500. Enclosed is a compilation of the attendance of previous IAU Symposia on massive stars, with an estimate for ours (ANNEX B).

Prof. Dr. B. Hidayat, director of the Observatorium Bosscha in Lembang (Java), and Dr. I. Radiman, chairman of the Astronomy Department of the Institut Teknologi Bandung in Bandung (Java) are already for 1.5 year in the process of raising goodwill, support and funds for the foreseen Symposium, and they have investigated candidate locations in their country.

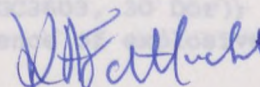
The reason that our SOC would very much like to have the approval for this Symposium from the IAU Executive Committee already in 1987, is that our LOC needs time to cut through various kinds of national red tape to do its job properly, and that the SOC and LOC need ample time to raise the necessary travel funds, i.e. funds in addition to those which the IAU hopefully will provide. Dr. Hidayat has already raised goodwill with the Indonesian Government and provincial and university authorities for this purpose, and he is now in the phase that formal documents are required to keep the momentum going.

We sincerely hope that your Commission will support our proposal, as a co-sponsor. We intend to seek the sponsorship of IAU Commission 35 (Stellar Constitution), and the co-sponsorship of IAU Commissions 25 (Stellar Photometry and Polarimetry), 27 (yours), 28 (Galaxies), 29 (Stellar Spectra), 36 (Theory of Stellar Atmospheres), 37 (Stellar Clusters and Associations), and 44 (Astronomy from Space).

If you need more information from us, we will be happy to answer your questions.

Looking forward to receiving your comments and your supporting letter,

Sincerely yours,



Karel A. van der Hucht



# INTERRELATIONS BETWEEN WOLF-RAYET STARS AND OTHER EVOLVED MASSIVE STARS IN GALAXIES

General outline / basic structure:

- I. OUTSTANDING PROBLEMS OF WOLF-RAYET STARS
- II. INTERRELATIONS BETWEEN EVOLVED MASSIVE STARS IN GALAXIES
- III. THE EFFECT OF EVOLVED MASSIVE STARS ON THE AMBIENT INTERSTELLAR MEDIUM, ON GALACTIC ENRICHMENT AND ON GALACTIC EVOLUTION

Tentative topics of discussion:

- I. OUTSTANDING PROBLEMS OF WOLF-RAYET STARS
  - \* effective temperatures:  $T_{\text{eff}}$  as high as  $10^5$  K or in  $2-5 \cdot 10^4$  K range, observations, models;
  - \* chemical composition: abundances of different isotopes of He, C, N, O, Ne, Al, Mg for WN, WC and WO stars, nucleosynthesis, observations, models;
  - \* origin, meaning and lifetimes of the sub-types;
  - \* mass loss: determination, physical cause, velocity plateau's, momentum problem;
  - \* binaries: increasing number of long period binaries, decreasing number of single-line binaries, reliable (polarimetric) inclinations;
  - \* variability, photometric, spectrophotometric, polarimetric: intrinsic (radial and non-radial pulsations), rotation- and companion-induced;
  - \* non-thermal radio and X-ray fluxes and magnetic fields: intrinsic and binary-induced;
  - \* Wolf-Rayet stars in galaxies: the WN/WC/WO ratio's, possible differences in the above mentioned parameters in different galaxies.
- II. INTERRELATIONS BETWEEN EVOLVED MASSIVE STARS IN GALAXIES
  - \* observational evidence of evolutionary relations between evolved massive stars, i.e. the stars at the upper border of the HRD: blue, yellow, and red super- and hypergiant stars, Of stars, LBVs, Wolf-Rayet stars, pre-supernovae;
  - \* spatial distribution and number ratios of evolved massive stars in galaxies;
  - \* mass loss from hot to cool massive stars: towards a consistent parameterization and theory;
  - \* the stability limit in the upper HRD, as defined by the most luminous cooler super- and hypergiants;
  - \* evolutionary models for massive stars, with mass loss, rotation, mixing, convective overshooting;
  - \* the relative importance of the various scenario's leading to the Wolf-Rayet phase in different galaxies;
  - \* dust formation: relations between dust formation processes in the outer atmospheres of late-type Wolf-Rayet stars, LBVs and cool supergiants.
- III. THE EFFECT OF EVOLVED MASSIVE STARS ON THE AMBIENT INTERSTELLAR MEDIUM, ON GALACTIC ENRICHMENT AND ON GALACTIC EVOLUTION
  - \* input of energy, gas and dust in the IS medium in different galaxies;
  - \* possible isotopes and  $\gamma$ -rays originating from WC stars;
  - \* ring nebulae and giant HII regions around evolved massive stars;
  - \* evolved massive stars as pre-supernovae: indications from N- and O-rich supernova remnants;
  - \* relation between metallicity, mass loss and populations of evolved massive stars;
  - \* origin of clusters of hot massive stars (NGC3603, 30 Dor);
  - \* Wolf-Rayet star dominated galaxies as evidence of explosive massive star formation.



PARTICIPATION IN IAU SYMPOSIA ON EVOLVED MASSIVE STARS

	No. 99 Cozumel Mexico '81	No. 105 Geneva Suisse '83	No. 116 Porto Heli Greece '85	Indonesia '90 (estimate)
Belgium	6	6	6	
Denmark		6		
France	4	14	3	
Italy	7	13	10	
W-Germany	6	10	9	
Greece	33	67	below 41	35
Netherlands	2	3	2	
Spain		1		
Sweden	2	4		
Switzerland	3	below	1	
U.K.	3	10	10	
Bulgary		1	4	
Hungary		2	1	
Poland			1	1
U.S.S.R.	2		3	2
Egypt		1		
South Africa		1	1	1
Canada	4	10	3	
Mexico	below 25	1 35	26	25
U.S.A	21	24	23	
Argentina	2		1	1
Chile	1	3	1	1
Australia	2	3	2	5
India		1		3
Indonesia				below
Japan		2		3
Malaysia				
Philippines				3
Singapore				
	— +	— +	— +	— +
	65	116	81	80
LOC country	21	22	12	10
	— +	— +	— +	— +
total	86	138	93	90

Handwritten signature and date: 19 July 87





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Dr. B. Szeidl,  
IAU Commission 27  
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Hungary

re: Proposal for an IAU Symposium

"Wolf-Rayet stars and interrelations with other massive stars in galaxies"

Bandung (Java) or Denpasar (Bali), Indonesia, 18 - 22 June 1990

re:  
Proposal for an IAU Symposium on  
"Wolf-Rayet Stars and interrelations with other Massive Stars in  
Galaxies", Bandung (Java) or Denpasar (Bali), Indonesia, 18 - 22 June  
1990.

Utrecht, 23 June 1987

Dear Dr. Szeidl,

Thank you very much for your letter of 27 February 1987.

We are very pleased that your Commission 27 supports the proposal  
mentioned above as co-sponsoring Commission. Please find enclosed a copy  
of the submitted proposal.

We expect to hear from Dr. McNally by the end of September this  
year, and we will inform you of the result right away.

Thanking you again for your support,

With my best wishes,  
Yours sincerely,

Karel A. van der Hucht

cc: Dr. M. Breger,  
Vice-President IAU Commission 27

Scientific rationale:  
- that IR photometry and spectroscopy of Wolf-Rayet stars allow one to study  
not only overall IR characteristics like free-free radiation and forbidden line  
radiation by stellar winds and thermal radiation by heated dust, but also  
long- and short-term variations, possibly related to the different physical  
processes at the various stages of evolution of these hot massive stars;  
- and that sub-mm, mm and cm observations are now providing important clues as  
to the presence of (variable) non-thermal radio flux sources, either of  
intrinsic origin or related to binary interaction of massive stars;  
and thanks to UV, X-ray,  $\gamma$ -ray and IR satellite observations;  
- that the amount of (IR) UV data of various types of hot massive stars is  
still increasing, providing crucial information on temperatures, abundances,  
mass loss rates, and line and continuum variations of massive stars;



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Dr. D. McNally,  
Assistant General Secretary  
INTERNATIONAL ASTRONOMICAL UNION  
University of London Observatory  
(University College London)  
Mill Hill Park  
LONDON, NW7 2QS, U.K.

re: Proposal for an IAU Symposium:

"Wolf-Rayet stars and interrelations with other massive stars in galaxies"  
Bandung (Java) or Denpasar (Bali), Indonesia, 18 - 22 June 1990

Utrecht, 23 June 1987

Dear Dr. McNally,

Thank you very much for your letters of 4 March and 28 April 1987. Please find enclosed our proposal for an IAU Symposium entitled: "Wolf-Rayet stars and interrelations with other massive stars in galaxies", which we propose to be held in Bandung or Denpasar, Indonesia, 18 - 22 June 1990.

In summer 1985 J.P. Cassinelli, A.J. Willis and myself started considering to propose and organize an IAU Symposium on interrelations between the various classes of massive stars at the upper border of the HR diagram. Also at that time our Indonesian colleagues offered to accept the challenge of hosting such a Symposium. Below we present the scientific rationale, the proposed scientific program, the candidate Scientific Organizing Committee, and the proposed location.

#### Scientific rationale.

Wolf-Rayet stars have been subject to intensive study ever since IAU Symposium No. 99 on Wolf-Rayet stars in 1981, resulting in more than 120 papers on them annually. These include numerous important studies, dealing with various aspects of Wolf-Rayet stars as evolved massive stars in the Milky Way, the Magellanic Clouds and other galaxies.

*In observations at optical wavelengths* one sees many new high resolution spectra of high photometric accuracy, and high time-resolution photometry and polarimetry, all thanks to the availability of modern detectors, resulting in an increasing number of variability studies, the discovery of more and more individual WR stars in some nearby galaxies, and the discovery of integral WR characteristics in other galaxies.

*In ground-based IR and radio observations* one sees

- that IR photometry and spectroscopy of Wolf-Rayet stars allow one to study not only overall IR characteristics like free-free radiation and forbidden line radiation by stellar winds and thermal radiation by heated dust, but also long- and short-term variations, possibly related to the different physical processes at the various stages of evolution of these hot massive stars;

- and that sub-mm, mm and cm observations are now providing important clues as to the presence of (variable) non-thermal radio flux sources, either of intrinsic origin or related to binary interaction of massive stars;

*and thanks to UV, X-ray,  $\gamma$ -ray and IR satellite observations:*

- that the amount of (IUE) UV data of various types of hot massive stars is still increasing, providing crucial information on temperatures, abundances, mass loss rates, and line and continuum variations of massive stars;



- that X-ray data (Einstein and Exosat) of Wolf-Rayet stars are only recently being fully analyzed, providing indications of non-isothermal stellar atmospheres, and, in the case of binaries configurations, of colliding winds and accretion;
  - that the 1.8 MeV  $\gamma$ -ray flux observed by the HEAO-3 and Solar Maximum missions towards the galactic center has recently been related to the possibly large  $^{26}\text{Al}$  abundance in the winds of possibly large numbers of Wolf-Rayet stars over there;
  - that the full thrust of IRAS observations of massive stars and their environment is just beginning to be felt: the observed cool outer regions of the stellar wind envelopes are being recognized as providing crucial constraints on the interaction between the strong stellar winds and the ambient interstellar medium.
- Theoretical modelling*, in the meantime, of atmospheres and interiors of various types of massive stars is approaching high stages of sophistication, but is still leaving big debates on, for instance:
- the importance of luminosity, rotation and magnetic fields as the drivers of stellar winds of various types of hot massive stars in their various stages of evolution;
  - the effective temperatures of Wolf-Rayet stars (of the order of 50.000 K or 100.000 K) and so their place in the HR diagram;
  - the presence and extent of interior mixing processes like convective overshooting, to explain the possible presence of heavy nucleosynthesis products at their stellar surfaces and thus in their strong stellar winds, which subsequently is of importance for galactic enrichment and evolution;
  - the presence of different kinds of pulsations, responsible for the observed variations and possibly also playing a role in the physical cause of the strong stellar winds;
  - the possibility that Wolf-Rayet stars are the progenitors of a sizeable fraction of (Type-II) supernovae, an hypothesis supported by abundance determinations of some supernova remnants.

In short we would like to see a discussion which reviews and tries to bring to order the numerous new studies of Wolf-Rayet stars in galaxies, their intrinsic properties, their effect on their local environment and on galactic evolution as a whole, and in relation to other classes of massive stars, with an open view to different opinions as to the physical processes which cause the Wolf-Rayet phenomenon and as to their evolutionary status. We think an IAU Symposium in 1990 will be a worthy and timely platform for such a discussion.

In an earlier proposed title for the Symposium we used the word *evolved*, but thanks to the valuable input of the IAU Commission Presidents supporting our proposal we thought it better to drop the word *evolved*, as to prevent any impression of bias and in order not to discourage the participation in the proposed Symposium of astronomers working on (pre-)Main Sequence massive stars.

Initially, we wished to propose this Symposium for March 1988, but we learnt from you (your letter dd. 8 October 1986) that March 1988 falls within the moratorium zone around the IAU General Assembly in Baltimore. Moreover, in the meantime we learnt that another group is in the process of proposing an IAU Colloquium on Physics of Luminous Blue Variables for summer 1988 near Baltimore. We have verified with that group that our plans are entirely complementary, and informed you about this in a joint letter to you, dated 14 April 1987. In that letter we also informed you that we are willing to postpone the Symposium proposed by us till 1990, provided of course that the IAU Executive Committee agrees with this delay.



The scientific program.

The outline of the intended scientific program is:

1. Outstanding problems of Wolf-Rayet Stars;
2. Interrelations between massive stars in galaxies;
3. The effect of massive stars on the ambient interstellar medium, on galactic enrichment, and on galactic evolution.

A list of proposed topics of discussion is enclosed as Annex A. Of course, we will be open for any new developments between now and 1990, which will be reflected in the choice of invited reviews, to be made later.

We realize that the suggested topics are of interest to many IAU Commissions, and we are very glad to have received supporting letters from the President of sponsoring IAU Commission 35 (Stellar Constitution) and from the Presidents of co-sponsoring IAU Commissions 25 (Stellar Photometry and Polarimetry), 27 (Variable Stars), 28 (Galaxies), 29 (Stellar Spectra), 36 (Theory of Stellar Atmospheres), 37 (Stellar Clusters and Associations), and 44 (Astronomy from Space). The supporting letters are enclosed as Annex B.

The Scientific Organizing Committee.

As the candidate Scientific Organizing Committee, we would like to propose:

D.A. Allen	(Australia)	M.J. Jerzykiewicz (Poland)	25
W. Hagen Bauer	(U.S.A.)	F. Matteucci (Italia/ESO)	37
J.P. Cassinelli	(U.S.A.)	V.S. Niemela	(Argentina)
A.M. Cherepashchuk	(U.S.S.R.)	M.R. Rosa	(Germany/ESO-ECF)
C. Doom	(Belgium)	M. Rosado	(Mexico)
C.D. Garmany	(U.S.A.)	B.S. Shylaja	(India)
B. Hidayat	(Indonesia)	N.R. Walborn	(U.S.A.)
K.A. van der Hucht	(Netherlands)	A.J. Willis	(U.K.)

Herein we have tried to combine expertise and geographical representation. All this persons have agreed to be named in this candidate SOC. The number after their names corresponds to the IAU Commission they intend to represent. A list of their addresses is attached as Annex C. If the IAU Executive Committee agrees, I myself am willing to chair this SOC.

The location.

With respect to the choice of location, the following may serve.

After three IAU Symposia related to hot massive stars on the American continents (No. 49 in 1971 in Argentina, No. 83 in 1978 in Canada, and No. 99 in 1981 in Mexico), and two in Europe (No. 105 in 1983 in Switzerland, and No. 116 in 1985 in Greece), we consider it justified to propose an IAU Symposium on aspects of massive stars in Asia. Therefore we embrace the invitation of our Indonesian colleagues, who have developed in the past years a growing interest in Wolf-Rayet stars, X-ray binaries and OB associations.

As an impression of the travel costs, the price of a tourist return ticket to Indonesia from Europe is ~ US\$ 1000 (i.e. less expensive than the travel costs to IAU Symposium No. 99 on Cozumel, Mexico), from the American continents the price is ~ US\$ 1500.

Enclosed is a overview of the attendance at previous IAU Symposia on massive stars, with an estimate for the one proposed here (Annex D).

Prof. Dr. B. Hidayat, director of the Observatorium Bosscha in Lembang (Java), and Dr. I. Radiman, chairman of the Astronomy Department of the Institut Teknologi Bandung (ITB) in Bandung (Java) are already for two years in the process of raising goodwill, support and funds for the here proposed Symposium. The campus of ITB in Bandung (the site of the 2nd Asian Pacific Regional IAU Meeting in 1981 and of IAU Colloquium No. 80 on "Double Stars, Physical Properties and Generic Relations" in 1983), is certainly a possible location. The alternative is a conference center in Denpasar, Bali, which city has the advantage of direct flights from Australia, Europe and U.S.A.



We very much hope that this proposal can get the approval of the IAU Executive Committee.

A. F. Schuch

**Enclosures:**

- the completed proposal form
- Annex A: list of scientific topics
- Annex B: supporting letters of IAU Commission Presidents
- Annex C: addresses of the candidate SOC members
- Annex D: attendance at previous IAU Symposia related to massive stars



## PROPOSAL FOR AN IAU SYMPOSIUM

Title : WOLF-RAYET STARS AND INTERRELATIONS WITH OTHER  
MASSIVE STARS IN GALAXIES

Date and duration : 18 - 22 June, 1990

Place : Bandung or Denpasar, Indonesia

Sponsoring Commission : IAU Commission 35

Co-sponsoring Commission : IAU Commissions 25, 27, 28, 29, 36, 37, 44

(N.B. Before Executive Committee approval is final, supporting letters from the Presidents of sponsoring and co-sponsoring IAU Commissions Must be available to the Assistant General Secretary. Preferably they should accompany a proposal).

Other ICSU body to co-sponsor :

COSPAR sub-commission E1 on Galactic and Extragalactic Astrophysics will be approached when IAU-sponsorship has been granted.

Contact Address :

SRON Space Research Laboratory Utrecht  
Beneluxlaan 21  
3527 HS UTRECHT, The Netherlands

Proposed Constitution of the Scientific Organising Committee :

(up to 10 names - non-IAU members can be included in special circumstances)

CHAIRMAN : K.A. van der Hucht (Netherlands)

OTHER MEMBERS :

Name	Country
D.A. Allen	(Australia)
W. Hagen Bauer	(U.S.A.)
J.P. Cassinelli	(U.S.A.)
A.M. Cherepashchuk	(U.S.S.R.)
C. Doom	(Belgium)
C.D. Garmany	(U.S.A.)
B. Hidayat	(Indonesia)
M.J. Jerzykiewicz	(Poland)
F. Matteucci	(Italia/ESO)
V.S. Niemela	(Argentina)
M.R. Rosa	(Germany/ESO-ECF)
M. Rosado	(Mexico)
B.S. Shylaja	(India)
N.R. Walborn	(U.S.A.)
A.J. Willis	(U.K.)

Proposed Chairman of the Local Organising Committee : Prof.dr. B. Hidayat

Proposed names of other LOC members : I. Radiman, W. Sutantyo, D.N. Dawanas

Proposed by : J.P. Cassinelli  
B. Hidayat

Date and Place : Utrecht, 23 June 1987

K.A. van der Hucht  
A.J. Willis

*V. B. H. H.*



General outline / basic structure:  
Proposed EDITOR of the Proceedings (if any) : K.A. van der Hucht and B. Hidayat

(Note that proceedings of Symposia are published by the IAU and Reidel Publishing Co., in accordance with a standing agreement).

Expected or maximum number of participants : expected 90, maximum 120

Steps taken to ensure attendance from all countries :

A discussion with the Indonesian Department of Foreign Affairs will be held as soon as IAU sponsorship has been granted.

Is, therefore, attendance from all countries guaranteed ?

It will be.

Supporting organisations, other than IAU and co-sponsoring ICSU organisations :

Institut Teknologi Bandung, Bandung, Indonesia

Indonesian Ministry of Education and Culture, Jakarta, Indonesia

Leids Kerkhoven-Bosscha Fund, Leiden, The Netherlands

Is an IAU financial grant for travel of participants requested ? Yes

How much ? Sw.Fr. 12.000,—

(Maximum amount presently : Sw.Frs. 12.000).

Topics in the preliminary scientific programme :

See Annex A

Please append a rationale on the proposal in the covering letter, etc.

Proposed by : J.P. Cassinelli  
B. Hidayat  
K.A. van der Hucht  
A.J. Willis

Date and Place : Utrecht, 23 June 1987

*V.A. Hucht*



# WOLF-RAYET STARS AND INTERRELATIONS WITH OTHER MASSIVE STARS IN GALAXIES

General outline / basic structure:

## I. OUTSTANDING PROBLEMS OF WOLF-RAYET STARS

- \* origin, meaning and lifetimes of the sub-types;
- \* effective temperatures and luminosities:  $T_{\text{eff}}$  in 100.000 K and/or in 20.-50.000 K range, observations, spherically extended and expanding NLTE model atmospheres;
- \* binaries: mass determination from binaries vs. mass luminosity relation, reliable (polarimetric) inclinations;
- \* chemical composition: element and isotope abundances of He, C, N, O, Ne, Al, Mg for WN, WC and WO stars, nucleosynthesis, observations, models;
- \* mass loss: determination, physical cause, momentum problem, velocity laws and plateaus, correlation with fundamental parameters, rotation and magnetic field strengths;
- \* variability, photometric, spectrophotometric, polarimetric: intrinsic (radial and non-radial pulsations), rotation- and companion-induced;
- \* non-thermal radio and X-ray fluxes and magnetic fields: intrinsic and binary-induced;
- \* WR stars in galaxies: the WN/WC/WO ratio's, possible differences in the above mentioned parameters in different galaxies.
- \* theoretical modelling: the relative importance of the different formation channels, models which can be tested with significance by observations.

## II. INTERRELATIONS BETWEEN MASSIVE STARS IN GALAXIES

- \* observational evidence of evolutionary relations between massive stars, i.e. the stars at the upper border of the HRD: O- and Of-type stars, LBVs or LBELs,  $\eta$  Car, yellow, and red super- and hypergiant stars, WR stars, pre-supernovae.
- \* spatial distribution and number ratios of massive stars in galaxies;
- \* mass loss from hot to cool massive stars: towards a consistent parameterization and theory;
- \* the stability limit in the upper HRD, as defined by the most luminous super- and hypergiants;
- \* dust formation: relations between dust formation processes in the outer atmospheres of late-type WR stars, LBVs and supergiants.
- \* evolutionary models for massive stars, with mass loss, rotation, mixing, convective overshooting;
- \* the relative importance of the various scenario's leading to the WR phase in different galaxies;

## III. THE EFFECT OF MASSIVE STARS ON THE AMBIENT INTERSTELLAR MEDIUM, ON GALACTIC ENRICHMENT AND ON GALACTIC EVOLUTION

- \* evolved massive stars in giant HII regions, ring nebulae and HI voids;
- \* input of energy, gas and dust in the IS medium in different galaxies;
- \* possible isotopes and  $\gamma$ -rays originating from WC stars;
- \* massive stars as pre-supernovae: indications from N- and O-rich supernova remnants, importance of WR stars and other massive stars in the chemical evolution of galaxies;
- \* relation between metallicity, mass loss and populations of massive stars in different galaxies;
- \* origin of clusters of hot massive stars (NGC3603, 30 Dor);
- \* WR star dominated galaxies as evidence of explosive massive star formation: the problem of the possibly very large numbers of WR stars in some dwarf galaxies.



## THE UNIVERSITY OF TOKYO. - 東京大学

Department of Earth Science and Astronomy

College of Arts and Sciences University of Tokyo

3-8-1 Komaba Meguro-ku Tokyo 153 JAPAN

BITNET: b89761%ccut.u-tokyo.junet@utokyo-relay.csnet

telex: 2426728 TODAIK J

20 May 1987

Prof. Derek McNally  
Assist. Gen. Secretary IAU  
Univ. of London Observatory  
Mill Hill Park  
London NW7 2Q5  
GREAT BRITAIN

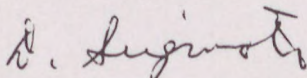
Re.: Proposed IAU Colloquium on "Physics of Luminous Blue Variables" (U.S.A. 1988), and IAU Symposium on "Interrelations between Wolf-Rayet Stars and Other Evolved Massive Stars in Galaxies " (Indonesia 1990)

Dear Professor McNally:

The above-mentioned Colloquium and Symposium are being proposed. The Organizing Committee of Commission 35 investigated and discussed them. It has decided to co-sponsor the Colloquium and sponsor the Symposium.

The scopes of topics have been discussed extensively by proposers, and now there do not seem appreciable overlaps any more. These meetings are separated by two years, during which expected is great progress in their topics. The Colloquium is to be convened in conjunction with the XXth General Assembly. Though Commission 35 has already decided to (co-)sponsor three IAU Colloquia in addition to it, there are practically no significant overlaps between them. It is a good thing that every participant to GA can find Symposia/Colloquia which he/she wants to attend in that occasion.

With best wishes,



D. Sugimoto, President, IAU Commission 35

cpy.: Drs. K. Davidson, K.A. van der Hucht, and A. Maeder



RÉPUBLIQUE  
ET CANTON DE GENÈVE



## OBSERVATOIRE DE GENÈVE

Ch. des Maillettes 51  
CH-1290 SAUVERNY  
SWITZERLAND

SAUVERNY, 12 March 1987

Dr. K. van der Hucht  
SRON Space Research Laboratory  
Beneluxlaan 21

NL 3527HS UTRECHT  
Pays-Bas

V./Réf.

N./Réf. fr/et

TÉL. (022) 55 26 11

TÉLEX 27 720 obsg ch

C.C.P. 12 - 2130-4

### Re.: Project IAU Symposium

Dear Colleague,

Upon consultation with members of our committee I do not have any objection or particular indications concerning your project of a symposium on "Interrelations between WR stars and other evolved massive stars in galaxies" to be held in Indonesia during the summer of 1990. On the contrary, several members of our commission would be very interested in presenting and exchanging new results on WR stars. The explosion of the supernova "Shelton" and the large number of observations on this event will certainly enrich the program of the symposium.

Thus I fully support your plans in the name of commission 25 which will co-sponsor the symposium.

With my best wishes of success for the preparation, I send you my very best regards.

Yours sincerely

F. Rufener



KONKOLY OBSERVATORY  
OF THE HUNGARIAN ACADEMY OF SCIENCES  
1525 BUDAPEST XII. BOX 67.  
HUNGARY

27 February 1987

Dr. Karel A. van der Hucht  
Laboratory for Space Research  
Beneluxlaan 21  
3527 HS Utrecht  
The Netherlands

Dear Dr. van der Hucht,

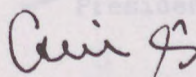
In spite of the fact that we have made a good progress in understanding the physics of the Wolf-Rayet and other evolved stars in the last few years we are still facing a lots of intriguing and unsolved questions, moreover some basic problems in connection with them. Therefore, I feel it is a good idea to organize a Symposium on "Interrelations between Wolf-Rayet Stars and Other Evolved Massive Stars in Galaxies".

The time of the proposed Symposium is well-chosen. It will be a straight continuation of the Geneva (IAU Symp. 105), Porto Heli (IAU Symp. 116) and Bloomington (IAU Coll. 106, to be held on "Evolution of Peculiar Red Giant Stars" in 1988) Conferences.

Commission 27 is in favour of the proposed meeting and gives a wholehearted support to it. Some of the colleagues in the list of the proposed Scientific Organizing Committee are well-known authorities on variable star research (and acknowledged members of Comm. 27), thus I think Comm. 27 is well-represented in the SOC.

I wish you much success in organizing this Symposium.

Sincerely yours



Béla Szeidl

President of Comm.27





# Kapteyn Laboratorium

der Rijksuniversiteit te Groningen - Zernikegebouw  
Landleven 12 - Postbus 800 - 9700 AV Groningen - Nederland  
telefoon (050) 634073 - telex 53572 stars nl

Groningen, Monday February 23, 1987.

Dr.D.McNally,  
University of London Observatory,  
University College London,  
Mill Hill Park,  
LONDON, NW7 2QS,  
England, U.K.

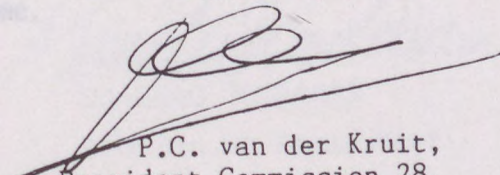
Re.: Symposium on "Interrelations between Wolf-Rayet Stars and Other Evolved Massive Stars in Galaxies".

Dear Dr.McNally,

Dr. K.A.van der Hucht has asked Commission 28 to act as co-sponsor of the proposed IAU Symposium detailed above. There is no particular reason and it is also not necessary for commission 28 to be the principal sponsor and I agree that this should be commission 35 as proposed. The subject of the meeting and the timing and place are fine. I recommend the Executive Committee to accept this proposal and to have commission 28 be one of the co-sponsoring commissions.

As always the case in co-sponsoring an IAU symposium I want to insist that Commission 28 be represented in the Organizing Committee. In the proposal there is no such person and I therefore propose that someone from the Organizing Committee of Commission 28 is also invited. I suggest that Dr.J.Lequeux is a suitable candidate.

Sincerely yours,

  
P.C. van der Kruit,  
President Commission 28.

cc. Dr.K.A. van der Hucht, ✓  
Dr.G.A. Tammann.



SERVATOIRE DE PARIS - MEUDON  
MENT D'ASTROPHYSIQUE FONDAMENTALE

5, Place Janssen  
92195 - MEUDON PRINCIPAL CEDEX  
Tél. (16 - 1) 534-75-70  
Télex 201 571

MEUDON, le April 17th

1987.

Dr. K.A. van der Hucht  
Laboratory for Space Research UTRECHT  
Budeluxlaan 21  
3527 NS Utrecht  
The Netherlands

March 4, 1987

Dr. Derek Mc Nally  
University of London Observatory  
Mill Hill Park  
London NW7 2QS - United Kingdom.

Dear Dr. van der Hucht,

I am pleased to inform you that Commission No. 36  
Re : Proposal for an IAU Symposium on "Interrelations between Wolf-Rayet  
Stars and other evolved massive stars in galaxies", to be held in  
Indonesia in Summer 1990.

On this occasion I would like to mention that one member  
of the Organizing Committee of Com. No. 36 strongly  
claimed that this symposium should take also various aspects  
about the nature of the Wolf-Rayet stars itself into con-

This letter is to inform you, that as President of IAU Com. 29, I support  
the proposal for an IAU Symposium on "Interrelations between Wolf-Rayet stars  
and other evolved massive stars in galaxies".

I received the preliminary programme from Dr. van der Hucht and letter of  
intent of other astronomers supporting such a conference.

I think that Com. 29 can cosponsor this symposium for "the spectroscopy of  
massive stars" which is part of its programme.

Best wishes,

Very sincerely,

Giusa Cayrel de Strobel

Giusa Cayrel de Strobel

C.C. - Dr. KA. van der Hucht.



TOKYO ASTRONOMICAL OBSERVATORY

MITAKA TOKYO 181 JAPAN

Department of Astronomy  
James Clerk Maxwell Building, The King's Buildings, Mayfield Road, Edinburgh, EH9 3JZ.

Telex 727442 UNIVED G

Telephone 031-667 1081 ext 2936

Dr. K.A. van der Hucht  
Laboratory for Space Research UTRECHT  
Beneluxlaan 21  
3527 HS Utrecht  
The Netherlands

March 4, 1987

5 March 1987

Dear Dr. van der Hucht,

I am pleased to inform you that Commission No. 36 supports the proposed I.A.U. Symposium entitled

"Interrelations between Wolf-Rayet Stars and Other Evolved Massive Stars in Galaxies".

On this occasion I would like to mention that one member of the present Organizing Committee of Com. No. 36 strongly claimed that this symposium should take also various aspects about the nature of the Wolf-Rayet stars itself into consideration.

With best wishes,

sincerely yours,

*Keiichi Kodaira*

Keiichi KODAIRA

Com.No.36 President

D.C. Heggie  
President, IAU Commission 36





University of Edinburgh

NASA

## Department of Mathematics

James Clerk Maxwell Building, The King's Buildings, Mayfield Road, Edinburgh, EH9 3JZ.

Telex 727442 UNIVED G

Telephone 031-667 1081 ext 2936

electronic mail: d.c.heggie @ uk.ac.edinburgh

5 March 1987

Dr D.T. McNally,  
IAU Assistant General Secretary,  
University of London Observatory,  
Mill Hill Park,  
London NW7 2QS.

Dear Derek,

I am writing in support of a proposal, from Dr K.A. van der Hucht, for and IAU Symposium on "Interrelations between Wolf-Rayet Stars and other Evolved Massive Stars in Galaxies", to be held in Indonesia in summer 1990. This proposal has the warm support of Commission 37. When first proposed, this meeting was due to take place in 1988, and we were unsure a meeting was needed so soon after the meeting on a similar topic in 1985. However the new proposal, for a meeting in 1990, has reduced this worry completely. Massive stars play an important role in the formation, early evolution and chemical enrichment of star clusters and associations, and so this meeting will have a significant bearing on the work of Commission 37.

With best wishes.

Yours sincerely,

*Douglas C. Heggie*

D.C. Heggie  
President, IAU Commission 37

DCH:mmc



**Goddard Space Flight Center**  
Greenbelt, Maryland  
20771

Reply to Attn of:

1987 April 17

Dr. Karel A. van der Hucht  
SRON  
Beneluxlaan 21  
3527 HS Utrecht  
The Netherlands

Dear Karel:

Our Commission will be pleased to co-sponsor your proposed IAU symposium  
"Interrelations between Wolf-Rayet Stars and Other Evolved Massive Stars in  
Galaxies", to be held in Indonesia in the summer of 1990.

I would like to ask you to represent Commission 44 in the Scientific Organizing  
Committee.

Sincerely,

*Yoji*  
Yoji Kondo

President

IAU Commission 44 "Astronomy from Space"



-1-

## SOC ADDRESSES

Dr. David A. Allen, (—)  
Anglo-Australian Observatory  
P.O. Box 296  
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fax: 61-2-868 4261  
bitnet: daa@acepp.oz@seismo.ARPA

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Wellesley College  
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U.S.A.

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email:

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Dr. Claude Doom (—)  
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bitnet: xmkarelh@hutruu@  
home tel: 31-3438-18955



Dr. Mikolaj J. Jerzykiewicz (25,27c)  
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Dr. Francesca Matteucci (—)  
European Southern Observatory  
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B.R. Deutschland

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email:

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C.C. 67, Suc. 28  
1428 BUENOS AIRES  
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Dr. Michael R. Rosa (28,34)  
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Mexico

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Sarjapur Road  
BANGALORE 560034  
India

tel: 91-.. 566585/566497  
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fax:  
email:

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Space Telescope Science Institute  
Homewood Campus  
BALTIMORE, MD 21218  
U.S.A.

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email:

Dr. Allan J. Willis (34,44c)  
Department of Physics & Astronomy  
University College London  
Gowerstreet  
LONDON, WC 1E 6BT  
U.K.

tel: 44-1-3877050  
tx : 051 28722+ ucphys g  
fax:  
bitnet: ajw@star.ucl.ac.uk  
via mailer@ukacrl

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PARTICIPATION IN IAU SYMPOSIA ON EVOLVED MASSIVE STARS

	No. 99 Cozumel Mexico '81	No. 105 Geneva Suisse '83	No. 116 Porto Heli Greece '85	Indonesia (estimate) '90
Belgium	6	6	6	
Denmark		6		
France	4	14	3	
Italy	7	13	10	
W-Germany	6	10	9	
Greece	33	67	below 41	35
Netherlands	2	3	2	
Spain		1		
Sweden	2	4		
Switzerland	3	below	1	
U.K.	3	10	10	
Bulgary		1	4	
Hungary		2	1	
Poland			1	1
U.S.S.R.	2		3	2
Egypt		1		
South Africa		1	1	1
Canada	4	10	3	
Mexico	below 25	1 35	26	25
U.S.A	21	24	23	
Argentina	2		1	1
Chile	1	3	1	1
Australia	2	3	2	5
India		1		3
Indonesia				below
Japan		2		3
Malaysia				
Philippines				3
Singapore				
	— +	— +	— +	— +
	65	116	81	80
LOC country	21	22	12	10
	— +	— +	— +	— +
total	86	138	93	90

Atoll 19747



Beneluxlaan 21  
3527 HS Utrecht  
The Netherlands  
Tel. (0)30-937145  
Telex: 47224 astro nl

To the Presidents of IAU Commissions	
25 Stellar Photometry and Polarimetry,	Dr. F.G. Rufener
27 Variable Stars,	Dr. B. Szeidl
28 Galaxies	Dr. P.C. van der Kruit
29 Stellar Spectra	Dr. G. Cayrel-de Strobel
35 Stellar Constitution	Dr. D. Sugimoto
36 Theory of Stellar Atmospheres	Dr. K. Kodaira
37 Stellar Clusters and Associations	Dr. D.C. Heggie
44 Astronomy from Space	Dr. Y. Kondo

re: Proposal for an IAU Symposium on  
"Wolf-Rayet stars and interrelations with other massive stars in galaxies"  
to be held in Denpasar (Bali, Indonesia), 18 - 22 June 1990.

Utrecht, 8 October 1987

Dear *Dr. Szeidl*,

Please find enclosed a copy of a letter from the IAU Assistant General Secretary Dr. D. McNally, with the first respons of the IAU Executive Committee on our proposal for the above mentioned Symposium.

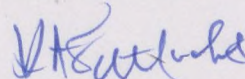
Thanks to the support of you and your Commission the EC has viewed our proposal favourably. Its letter couldn't be more positive, given the policy that the EC grants final approval not more than two years before a meeting.

This letter will be very useful for our LOC in taking the necessary steps to ensure the proper location and to start their fund raising efforts. Our SOC will get together during the General Assembly in Baltimore, in order to discuss all organizational aspects.

We will keep you informed of further messages from the IAU Executive Committee in this respect.

Thanking you again for your valuable support,

With my best wishes,  
Yours sincerely,



Karel A. van der Hucht  
chairman candidate SOC

cc: IAU Commission Vice-Presidents  
secretary NCA

Candidate SOC: D.A. Allen (Australia), W. Hagen Bauer (U.S.A.), J.P. Cassinelli (U.S.A.), A.M. Cherepashchuk (U.S.S.R.), C. Doom (Belgium), C.D. Garmany (U.S.A.), B. Hidayat (Indonesia), K.A. van der Hucht (Netherlands, chairman), M.J. Jerzykiewicz (Poland), F. Matteucci (Italia/ESO), V.S. Niemela (Argentina), M.R. Rosa (Germany/ESO-ECF), M. Rosado (Mexico), B.S. Shylaja (India), N.R. Walborn (U.S.A.), A.J. Willis (U.K.).  
Candidate LOC: B. Hidayat (chairman), W. Sutantiyo (secretary), S.D. Wiramihardja.



# INTERNATIONAL ASTRONOMICAL UNION

UNION ASTRONOMIQUE INTERNATIONALE

## EXECUTIVE COMMITTEE

President: J. SAHADE

General Secretary: J.-P. SWINGS

### Vice-Presidents:

A. BATTEN

R. KIPPENHAHN

R.P. KRAFT

P.O. LINDBLAD

M. PEIMBERT

Ya. S. YATSKIV

Assistant General Secretary: D. McNALLY

Secretary: B. MANNING

Assistant Secretary: D. LOURS

Professor K A van der Hucht  
Laboratory for Space Research  
Utrecht  
Beneluxlaan 21  
3527 HS Utrecht  
The Netherlands

18 September 1987

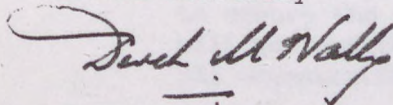
Dear Professor van der Hucht

I am writing further to you regarding your proposal for an IAU Symposium entitled "Wolf Rayet Stars and interrelations with other massive stars in galaxies" proposed for June 1990 in Indonesia. At its meeting in Santa Cruz last week the Executive Committee of the IAU would like to encourage your interest in organising this meeting as a worthwhile topic and it also recognises the immediate interest in this subject. Under the rules under which the EC operates, it cannot reach a decision until 1988.

I hope this is sufficient indication of EC thinking to encourage you further.

With very best regards,

Yours sincerely



D McNally

Assistant General Secretary

INTERNATIONAL ASTRONOMICAL UNION

Assistant General Secretary: Derek McNALLY

University of London Observatory (University College London), Mill Hill Park, LONDON, NW7 2QS, UK

Tel.: 01-959-7367 - Telex: 28722 UCPHYS G



# INTERNATIONAL ASTRONOMICAL UNION

UNION ASTRONOMIQUE INTERNATIONALE

## EXECUTIVE COMMITTEE

President: R. HANBURY BROWN

General Secretary: R.M. WEST

Vice-Presidents:

M.W. FEAST

R.P. KRAFT

L. KRESAK

M. PEIMBERT

R. WILSON

Ya.S. YATSKIV

To: Members of IAU Nominating Committee

*Bela Szeidl Hungary*

Assistant General Secretary: J.P. SWINGS

Secretary: B. MANNING

GSD/85/2585/ev/SNC

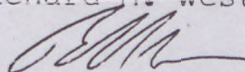
20 November 1985

Please find attached a voting form. The procedure was explained to you during the meeting of the Nominating Committee on 19 November.

This list of names resulted from the voting by Presidents of Commissions on 19.11, reducing the original 34 names to 12. The arrangement is by the number of votes obtained.

Please check up to 4 names and deliver your voting form at the IAU Secretariat before 22 November 16:00. Votes received after this deadline will not be counted.

Richard M. West



General Secretary  
INTERNATIONAL ASTRONOMICAL UNION

Att: 1 Voting Form



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M. PEIMBERT

Ya. S. YATSKIV

Dr. B. Szeidl

Konkoly Observatory

Box 67

H-1525 Budapest

Hongrie

Assistant General Secretary: D. McNALLY

Secretary: B. MANNING

Assistant Secretary: D. LOURS

Ref: P/86/629/bm/C27

December 10, 1986

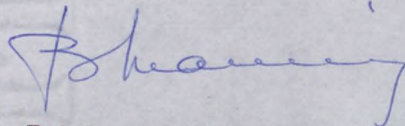
Dear Dr. Szeidl,

You will find enclosed a letter from Dr. W.S.G. Walker, answering our question about his belonging to Commission 27.

I looked through the archives of the IAU from 1970, and nowhere he appears to be a member of Commission 27. This is the reason why I put the question up to you. As President of Commission 27, you are the only who can decide of what is to be done.

Thank you very much for your cooperation.

Yours sincerely,



Brigitte Manning  
IAU Secretary

Encl.



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M. PEIMBERT

Ya S. YATSKIV

Assistant General Secretary: D. McNALLY

Dr. Bela Szeidl  
Konkoly Observatory  
Box 67  
H-1525 BUDAPEST  
Hungary

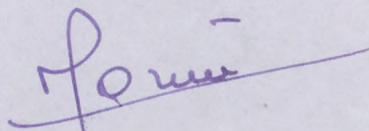
Paris, November 24, 1988

Dear Dr. Szeidl,

I hereby acknowledge receipt of your contribution to Transactions of IAU,  
Volume XXB.

Thank you very much for sending it within the required time.

Yours sincerely



Monique ORINE  
IAU Secretariat



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Ya S. YATSKIV

Assistant General Secretary: D. McNALLY

Dr. Szeidl

Konkoly Observatory  
of the Hungarian Academy  
of Sciences  
1525 Budapest XII. Box 67  
Hungary

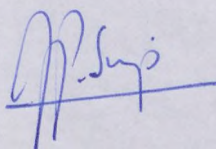
Paris, January 28, 1988

Dear Dr. Szeidl,

I duly received your letter dated January 8, and thank you for the care you and your colleagues take in the selection of the future President and Vice President of Commission 27. It will be my pleasure to forward the names of M. Breger and J. Percy to the Executive Committee.

With best regards, and looking forward to seeing you in Baltimore, I remain,

Sincerely Yours,



J.P. SWINGS.



International Astronomical Union  
**XIX General Assembly**

November 19-28, 1985, New Delhi, India

Prof. MGK Menon, FRS *Chairman*  
**National Organizing Committee**

**Dr. B. Szeidl**  
**Konkoly Observatory**  
**H-1525 Budapest Pf. 67**  
**HUNGARY**



**Member**

Planning Commission  
'Yojana Bhavan'  
Parliament Street  
New Delhi 110 001  
Tel: 382148  
Tlx: 31 61463 PLAN IN  
Telegram: PLANCOM

September 24, 1985.

We are very happy to learn that you will be attending the XIX General Assembly of the International Astronomical Union. Thank you for sending your registration form. On behalf of the National Organizing Committee, I have great pleasure in extending you and your registered guest a formal invitation to participate in the XIX General Assembly in New Delhi. We hope this formal invitation will assist you in obtaining visas and related permits.

Looking forward to meeting you at the General Assembly.

Yours sincerely,

REGISTERED GUEST :

**Members:** Abhyankar, KD  
Bhattacharyya, JC  
Daniel, RR

Lal, D  
Mitra, AP  
Pande, MC

Radhakrishnan, V  
Rao, UR  
Sreekantan, BV

Swarup, G  
Trehan, SK  
Varadarajan, S



## UNION ASTRONOMIQUE INTERNATIONALE

...



# INTERNATIONAL ASTRONOMICAL UNION

## UNION ASTRONOMIQUE INTERNATIONALE

A 1920

- 2 -

Observatoire de Bordeaux  
Observatoire de Lyon  
Observatoire de Marseille  
Observatoire de Nice  
Observatoire de Pic-du-Midi  
Observatoire de Strasbourg  
Institut National d'Astronomie et  
de Géophysique à Paris  
Centre d'Etudes et de Recherches Géodynamiques  
et Astronomiques à Grasse

Applications of a small number of promising astronomers should be forwarded by the National Committees of Astronomy to the General Secretary. The applications, sent in in duplicate have to be accompanied by curricula vitarum of the applicants and recommendations of the National Committees of Astronomy. Each applicant has to indicate the French astronomical institute he wishes to visit.

Deadline 24 February 1976

(b) The earlier resolution of the Executive Committee to award to young astronomers 20 grants of \$ 150 U.S. each has been changed to the effect that there will be distributed to young astronomers.

60 grants of \$ 100 each.

The grants are meant to cover the attendant's living expenses in Grenoble.

Deadline 24 March 1976 (preferably earlier)

ad (a) and (b): Recipients of grants (a) or (b) are exempt from the Participation Fee.

Eligible for receiving the grants, as above, are:

Promising astronomers, Members or potential Members of the IAU, whose participation in the General Assembly will stimulate their scientific work, and for whom the award will make a significant difference to their capacity of attending the General Assembly. The age of the applicants should not be above 35 years.

Each proposal should provide information on the applicant's studies, his present occupation and the titles and bibliographies of at least two of his more important papers or publications.



INTERNATIONAL ASTRONOMICAL UNION  
UNION ASTRONOMIQUE INTERNATIONALE

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- 3 -

3. Draft Budget of the IAU for 1977-1979.

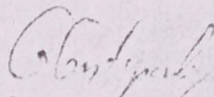
The Executive Committee prepared at its recent meeting the enclosed estimate of the budget for the period 1977-1979 for submission to the Finance Committee. An increase of the unit of contributions by 10% is proposed. The draft budget is accompanied by the comments of the General Secretary.

I would appreciate to receive your comments at your earliest convenience.

Many thanks for your cooperation,

With all good wishes,

Yours very sincerely,



G. Contopoulos  
General Secretary

Enclosures



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M. PEIMBERT

Ya. S. YATSKIV

Professor B Szeidl

Konkoly Observatory

Box 67

1525 Budapest XII

Hungary

Assistant General Secretary: D. McNALLY

Secretary: B. MANNING

Assistant Secretary: D. LOURS

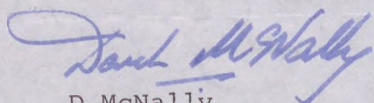
27 August 1987

Dear Professor Szeidl

Thank you for your letter of 17th August giving the support of Commission 27 as sponsor of the proposed Colloquium on "Pulsating Stars and Fundamental Problems in Astronomy". This will be very useful information to assist the Executive Committee in reaching a decision when they meet in September in Santa Cruz.

With very best regards,

Yours sincerely



D McNally

Assistant General Secretary

INTERNATIONAL ASTRONOMICAL UNION

Assistant General Secretary: Derek McNALLY

University of London Observatory (University College London), Mill Hill Park, LONDON, NW7 2QS, UK

Tel.: 01-959-7367 - Telex: 28722 UCPHYS G



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Assistant Secretary: D. LOURS

Professor B Szeidl  
Konkoly Observatory  
PO Box 67  
Budapest XII  
Hungary

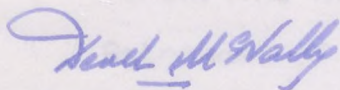
9 October 1986

Dear Professor Szeidl

Thank you for your telex of 18th September regarding the proposed Colloquium on Symbiotic Phenomena. This is very useful to have and unfortunately I have been delayed in acknowledging your telex because of the Executive Committee meeting of the IAU which in fact approved Symbiotic Phenomena as an IAU Colloquium. You may be interested to know that it has been assigned the number IAU Colloquium 103.

With all good wishes,

Yours sincerely



D McNally

Assistant General Secretary

INTERNATIONAL ASTRONOMICAL UNION



Prof. B. Szeidl  
Konkoly Observatory  
P.O. Box 67  
1525 Budapest XII  
Hungary

Dear Prof. Szeidl:

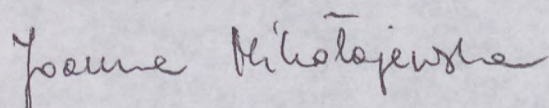
During the recent IAU Colloquium on Cataclysmic Variables in Bamberg and IAU Symposium on Circumstellar Matter in Heidelberg I met several people active in the field of symbiotic stars (int. al. Drs A.A. Boyarchuk, M. Friedjung, M. Kafatos, R.E. Stencel, R. Viotti) and we arrived at the conclusion that it is time to organize an international meeting (at best, an IAU colloquium) on "The Symbiotic Phenomenon" in September 1987, in Torun. The N. Copernicus University as well as The Committee of Astronomy of Polish Academy of Sciences support the idea of having such meeting in Torun. I have invited Drs A.A. Boyarchuk (Crimea, USSR), M. Friedjung (Paris, France), M. Hack (Trieste, Italy), M. Kafatos (Fairfax, USA), S.J. Kenyon (SAO-Cambridge, USA), S. Kwok (Calgary, Canada), B. Paczynski (Princeton, USA), R.E. Stencel (CASA-Boulder, USA) and R. Viotti (IAS-Frascati, Italy) to Scientific Organizing Committee and they have already confirmed their willness of participation in scientific preparation of the colloquium.

I have talked to Prof. J. Smak about the sponsorship of IAU Commission 42, but unfortunately, this Commission is already involved in so many meetings (in particular, an IAU Colloquium on Algols in summer 1988), that cannot be the No. 1 for another colloquium. In this situation, could the proposed colloquium be sponsored by Commission 27 (with several other Commissions being the co-sponsors)? I will also ask for sponsorship Commission 29.



The last IAU Colloquium on "The Nature of Symbiotic Stars" was held in August 1981, at the Observatoire d'Haute Provence (five years ago). Simultaneously, it was the last international meeting on this topic. During these five years many new interesting and important observational data have been obtained in all spectral regions, and many new models and theories have been proposed to explain these peculiar objects. Various new aspects of the symbiotic phenomenon, like radio jets observed at least in two systems or bipolar structure of several symbiotic nebulae, X-ray, EUV, optical, IR and radio monitoring of many interesting targets as well as numerous new polarimetric measurements should be discussed and confronted with existing models and theory. All this strongly argue that a next meeting on symbiotics should be organized in foreseeable future. Simultaneously, the organization of such colloquium in Poland will facilitate participation to many astronomers from the eastern Europe countries (also to young scientists), because their own institutes can cover expenses connected with travel and stay in Poland.

With very best regards,



Joanna Mikolajewska

Institute of Astronomy  
Nicolaus Copernicus University  
ul. Chopina 12/18  
PL 87-100 Torun, Poland

Torun, 31 July 1986



ul. Bartycka 18  
00-716 Warszawa, POLAND — ПОЛЬША

Tel.: 41-10-86, 41-98-28  
Telex: 81 3978 zapar pl

Warszawa, 28 April 1987 r.

Professor B. Szeidl  
Konkoly Observatory  
Box 67  
1525 Budapest XII  
Hungary

Dear Bela:

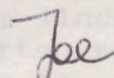
Many thanks for your letter of March 23.

I am enclosing a copy of my recent circular letter to members of the Organizing Committee of Commission 42. You may find some of its sections of interest to you. Regarding novae and novalikes, I agree with you that they can be included in Commission 42 and that you shouldn't worry about them. As for the various, numerous proposals for future meetings, my working rule was not to interfere with people's plans and - once a proposal is ready, or nearly ready - see if the IAU Executive Committee is willing to give their OK. There is one among them of common interest to Commissions 27, 42, and many others - namely the one proposed by van der Hucht et al. As far as I know, it is planned for 1989 in Indonesia which may be a strong factor in the eyes of the politically minded EC.

About the IBVS now. Let me tell you the truth: you are doing a magnificent job and - unless someone could really help - you don't need "comments" or "opinions". But I also know that it is a heavy burden. If any action, involving Commission 42, could be of any help -- please let me know. E.g. should we - jointly - ask for some money from the IAU? There is another point concerning the volume and quality of papers submitted to IBVS. Whenever you feel that something is below your standards don't hesitate acting as tough Editor-Dictator!

With best regards,

Sincerely,



J. Smak



8 April 1987

To: Members of the Organizing Committee  
of Commission 42 of the IAU

Dear Colleagues:

I wish to thank those of you who have already replied to my letter of 20 December 1986. So far, I failed to receive replies from four Colleagues (Cherepashchuk, Gibson, Rodonó, and Shaviv). I still hope to get them.

1. Future scientific meetings

Haifa. I have collected a number of comments and suggestions both from you and from other people. The most important conclusion from them was that the IAU Executive Committee is very unlikely to approve a meeting proposed for 1988 in a location far away from Baltimore. This, I believe, settles the problem at least as far as 1988 is concerned. Meanwhile...

White-dwarfs +. I learned from Giora Shaviv about plans by Gary Wegner for a colloquium on White dwarfs and cataclysmic variables in connection with the Baltimore's General Assembly. More recently Alan Batten was approached by Gary seeking our Commission's support for an IAU Colloquium with a somewhat different title: White dwarfs in detached binaries. Suspecting (I think quite rightly) that the CV's would also be involved, Alan wrote him: "... that I thought he had a much better chance of success if he excluded cataclysmics - in which case we were not necessarily the best commission to support his proposal ...".

Evolved Massive Stars. Bob Koch learned - via Commission 25 - about plans for an IAU Symposium on "Evolved Massive Stars in Galaxies", in Indonesia, in the summer of 1989. The three people involved in early planning are: K. A. van der Hucht (The Netherlands), J. P. Cassinelli (U.S.A.), and B. Hidayat (Indonesia). Following Bob's suggestion I have written to Dr. van der Hucht, declaring probable interest of our Commission (up to, possibly, co-sponsorship) and asking for more information. What is your opinion and to what extent should we get involved?



GR in CBS. Bob Koch considers organizing (as a part of the centennial celebrations in Philadelphia) an IAU Symposium on mechanical general relativistic effects in CBS, to be co-sponsored by Commissions 35, 40, and 42, and to be held in late-1988 or 1989. The subject certainly deserves a meeting. Again, what is your opinion?

## 2. Commission Report

After reading all your comments and suggestions I came up to two conclusions: (1) The time is ripe for a major revision of the format of the Report, but (2) There is hardly enough time to do it now! Consequently I propose that we discuss this at an OC meeting in Baltimore. Even if we decide to perform a major revolution, Bob Koch will then have enough time for its implementation in the next Report (1987-90).

Enclosed you will find my proposal for the present Report in which I have tried to include what you suggested or agreed with. Compared to the past there are three changes: (1) Former Sec.2 (Methods of LC Analysis) is combined with former Sec.3A to give new Sec.2A. (2) Former Sec.4C is removed, with an assumption that abundances can more meaningfully be discussed throughout (new) Sections 2, 4, and 6. (3) Section on evolution (new Sec.6) is split into two and given more space. Two new sections are likely to be added: (i) Alan Batten proposed that we have a special section on  $\epsilon$  Aur to be prepared by Yoji Kondo (I hope Yoji will agree to write it). (ii) Virginia Trimble volunteered to write a section on Binary Pulsars.

As you will note, there are several contributions in the "expected, needs confirmation" category. Could you, please, confirm your willingness to prepare those sections.

## 3. Candidates for President and Vice-President

Your replies leave no doubt that Bob Koch is our unanimously supported candidate for President.

I counted your votes for Vice-Presidential candidates (3-2-1 for the three nominees, in order of preference). The result is:

Kondo	11.5 points
Kitamura	10 points
Rodonó	10 points.

(The next nominee on the list scored 3 points). Therefore, assuming that all three candidates agree, I will submit their names to the General Secretary. As you recall, the final selection is to be made by the IAU Executive Committee.



#### 4. Composition of the Organizing Committee

The following of us declared willingness to retire in 1988: Abhyankar, Andersen, Batten, Kitamura, and Smak. At the present moment I don't think we should consider all these resignations as final (note, in particular, that Dr. Kitamura is one of our nominees for Vice-President; also, some of you argued that I should remain for another term). If 3-5 OC members retire, we will end up with 9-11 members (including the President and Vice-President) continuing beyond 1988. This will give us an option of electing either 3-5 new members (to keep the membership constant), or fewer - in order to make the OC smaller (with another such cut to be made three years later).

As for new members, the following proposals have already been made: Jens Viggo Clausen and Ron Hilditch (by Andersen), Colin Scarfe (by Batten), and A. Yamasaki (by Kitamura). I feel that we should also add few theoreticians, like Leon Lucy, or Ron Webbink. Since this is not urgent, I propose that we keep exchanging views and collecting candidates, while postponing final action till Baltimore.

#### 5. Commission members

Johannes Andersen quotes from the Wayman Committee Report: "Once during the the triennium existing members should be asked whether they are still active in the field and their continuation as members of the Commission thereby confirmed" and suggests a sharp procedure to deal with our non-active members. Here is my modification of Johannes' proposal:

(1) In my next circular letter to Commission members I intend to include this quote from Wayman Committee and say that anyone who does not confirm his/her continued interest risks being dropped.

(2) In Baltimore the OC reviews the list of those who failed to answer, considers their present activity in the field, and decides who should be dropped.

#### 6. XXth General Assembly: The Joint Discussion

Most of you responded favorably to the proposal by Dr. R. C. Smith to have a Joint Discussion on CBS. This means that we are ready to become a co-sponsor (with Commission 35 and, possibly, some other Commissions). I have conveyed this to Drs. Smith and Sugimoto together with an information that Kam-Ching Leung volunteered his help in this venture. I have also mentioned the possible danger of too much overlap with with the Colloquium on Algols.

The following is the latest information from Dr. Smith on the present status of preparations:

New title: "Evolution of Stars in Binary Systems".  
Organizing Committee: R. C. Smith (Chairman),



Charles, Krzemiński, E.Meyer-Hofmeister, Mochnacki, Plavec, Pringle, and Ruciński.

Topics: Common envelope binaries, Origin and fate of contact binaries, Evolution of CV's, Accretion flows, Binary origin of novae and supernovae, Quasi-periodic oscillations, and Milli-second pulsars.

#### 7. XXth General Assembly: Other meetings

Our minimum program for the GA should include: one, 2-hour business meeting, plus one, 2-hour scientific meeting (for presentation of short papers). In addition, I feel that our Organizing Committee should meet at least once, prior to the business meeting to deal with topics such as those outlined above.

I got a proposal from Virginia Trimble that we have either a Joint Discussion or a joint commission meeting on "Formation of Close and Wide Binaries". While another JD is unlikely to get an OK from the EC, a joint commission meeting is a possibility. I have written to Presidents of Commissions 26, 34, 35, and 37 (potential co-sponsors, proposed by Virginia) asking them for their opinion. Likewise, I would like to hear from you on this subject.

#### 8. Miscellanea

Dr. Janet Mattei, Director of the AAVSO, asked me to advertise the forthcoming special issue of the Journal of the AAVSO, containing proceedings of the AAVSO 75th Anniversary Meeting (August 1986) which will be available at \$30.

Dr. J. M. Kreiner (Cracow) considers publishing an Atlas of O-C Diagrams for eclipsing systems. At the present moment he seeks opinions about usefulness of such a publication and suggestions concerning its format. Should our reaction be positive, he would certainly be interested later in getting a more formal support from our Commission.

With very best regards,

Sincerely,

J. Smak, President  
IAU Commission No.42



# IAU COMMISSION 42 REPORT (1984-87)

Section	NPg	Author	Status
1. Introduction	4.0	Smak	+
2. Observational Data			
2A. Phot. Obs. and Solutions (incl. Methods of LC Analysis)	7.5	Koch	o
2B. Spectr. and Spectrophot. Obs.	6.5	Batten	+
2C. Polarimetric Studies	1.0	Cherepashchuk	o
2D. X-Ray Observations	2.0	Kondo	o
2E. Ultraviolet Observations	3.0	Hassall	?
2F. Radio Observations	2.5	Gibson	o
3. Derived Physical Data			
3A. Abs. Dimensions and Aps. Motion	2.0	Popper	?
3B. Prox. Effects and Limb Darkening	2.0	Kitamura	+
4. Structure and Models of CB's			
4A. Early Type Systems	3.0	Leung	+
4B. Algols and Related Systems	5.0	Plavec	?
4C. W UMa Systems	2.0	Leung	+
4D. Novae and Related Systems	3.0	Smak	+
4E. X-Ray Binaries	2.0	Shaviv	o
5. Statistical Investigations	2.5	Batten	+
6. Origin and Evolution			
6A. Origin of Binaries	2.0	Lucy	?
6B. Evolution of Close Binaries	3.0	Webbink	?

The Report is to cover the interval: 1 July 1984 - 30 June 1987.

It is recommended by the General Secretary of the IAU as well as by the Commission's Organizing Committee that the Report should consist of critical reviews, emphasizing the major highlights and the most crucial developments (and prospects) in the field, with references being given only to the most important papers (the only exceptions being references to be contained in the two tables: "Photometric Solutions" in Section 2A and "Spectroscopic and Spectrophotometric Studies" in Section 2B).

The FORMAT should follow as closely as possible that of the previous Report [cf. Trans. IAU, XIXA (1985)]. In particular, all references should be given in the text using the key given there.

NPg is the proposed, approximate number of pages, assigned to each Section, assuming that you are using an Elite typewriter (12 cpi) with a double-space (30 lines per page). For Pica (10 cpi) NPg should be multiplied by 1.2. I will put the entire material together (with as little editing as possible) and have it re-typed on Reidel sheets.

Status: + = contribution confirmed,  
o = expected, needs confirmation,  
? = contribution solicited, needs confirmation.

In order that I meet the strict deadline imposed by the General Secretary, all contributions should reach me by **31 AUGUST 1987**.

Thank you for your cooperation.

April 1987

J. Smak, President  
Commission 42, IAU



ul. Bartycka 18  
00-716 Warszawa, POLAND — ПОЛЬША

Tel.: 41-10-86, 41-08-28  
Telex: 81 3978 zapran pl

Warszawa, 3 July 1986 19..... r.

Prof. B. Szeidl  
Konkoly Observatory  
P.O. Box 67  
1525 Budapest XII  
Hungary

Dear Bela:

This will concern interaction and cooperation between our Commissions; more specifically: future meetings of common interest. I am enclosing a list of prospective future meetings under consideration either by Commission 42 or, at least, by some of its members. As you can see, there are quite many prospective proposals. In many cases you will be asked (or have been asked already) to agree to a co-sponsorship of Commission 27, but this will be done by people directly involved (such as Mirek Plavec in the case of "Algols").

Dr. Joanna Mikołajewska is going to write to you soon about another colloquium not yet included in my list. As you know, she is very active in the field of symbiotic stars (I am sure you remember several of her contributions published in IBVS). During the recent IAU Colloquium on CV's in Bamberg she met with several symbiotic people and they came up with an idea of having an IAU Colloquium on this topic in 1987, in Toruń (the last IAU Colloquium on symbiotics was held in 1981, so it is certainly time for another one). She talked to me about the sponsorship and co-sponsorship by specific IAU Commissions. My feeling is (and I told her so) that Commission 42 is already involved in too many meetings to be the No.1 for another colloquium. In particular, a proposal will soon be submitted by Mirek Plavec for "Algols" and the EC preliminarily promised to give an IAU label; another proposal - for symbiotics - submitted nearly simultaneously under sponsorship by Commission 42 would have little chance of success. As an alternative, I suggest that the proposed colloquium on symbiotics be sponsored by Commission 27, or - jointly - by Commissions 27 and 29 (with several other Commissions being the co-sponsors; 42 would most likely be one of them). Since Dr. Mikołajewska herself is going to write to you and to give all the details, I won't try to summarize what I heard from her. As a final remark: she is very energetic and full of enthusiasm and I am sure that she will handle in a very competent way the local organization as well as much of the scientific planning.

Best regards,

Joe  
J. Smak



Future Meetings  
of Interest to IAU Commission 42

*"Science is what the best scientists want to do" -  
- Otto Struve*

Listed and briefly discussed below are meetings under consideration or in the planning stage (including one which has already been aborted!) of which I am aware as of June 1986. The list is obviously incomplete.

IAU Coll. #97. "Wide Components in Double and Multiple Systems", Brussels, 8-12 June 1987, co-sponsored by Commissions 24 and 26. For details cf. IAU Inf. Bulletins.

Symposium. Listed in IAU Inf. Bull. #55, as "under consideration", was a Symposium on "Circumstellar Matter in CBS", to be held in Victoria, in June 1987. A proposal, prepared by Alan Batten (then the President of Commission 42), in cooperation with other people, was reviewed by the IAU Executive Committee during the GA in New Delhi and did not get their approval. The EC considered our preliminary program as too broad and partly overlapping with IAU Coll. #93 and IAU Symp. #122. At the same time, however, according to Alan Batten who was involved in negotiations, "we were advised to try for a colloquium in 1988" (cf. "Algols" - below).

COSPAR/IAU. According to a letter from Dr. N. E. White (ESOC, Darmstadt), he was "asked to organise a COSPAR/IAU Symposium on the Physics of Compact Objects: Theory vs. Observations". The preliminary program includes six topics: Neutron Stars, Cataclysmic Variables, Radiative Transfer and Environment, Active Galactic Nuclei and Cosmology, Accretion Disks, Results from New Missions. Time and place: Summer of 1987, Bulgaria.

Algols. Well under way are now plans for an IAU Colloquium on Algols, with Mirek Plavec acting as the "spiritus movens" and the future Chairman of the SOC, and several of us (including Alan Batten and myself) trying to cooperate under his leadership. The most likely time and place: Summer of 1988 (in connection with IAU GA in Baltimore), Victoria. It is almost certain that a formal proposal, to be prepared by Mirek Plavec later this year, will meet with an approval by the EC. Yoji Kondo told me earlier this month in Bamberg that Commission 44 is ready to be a co-sponsor. Few other Commissions should likewise be asked for co-sponsorship.

Haifa. Giora Shaviv told me in Bamberg about his plans to organize in Haifa, in the summer of 1988, a small workshop on white dwarfs and an IAU Colloquium on Cataclysmic Variables. I have no doubts that all CV people will be quite enthusiastic about this and that Commission 42 should be ready to sponsor this Colloquium but I am not so sure about the EC attitude towards "another meeting on CV's".



NAWorkshop. The next North American Workshop on Cataclysmic Variables (I lost the count!) will take place in Mexico in 1987. I don't know any details, except that Bill Friedhorsky is in charge of it.

Bologna. Dr. A. Guarnieri told me in Bamberg that he and his colleagues from Bologna plan to organize a Symposium on CBS in Bologna, in 1988, in connection with the 900-th Anniversary of the Bologna University. He added that - as we all know, or should know - Algol was discovered (or re-discovered!) by Montanari in Bologna (in 1667 if I remember it right). He asked what would be the reaction of our community and of the EC and I told him that they can certainly count on a positive response (and participation) of many CBS people and - most likely - on support by Commission 42, but that in view of so many (too many?) meetings the EC may be reluctant to give the IAU label. Considering all this I suggested that they go ahead with their plans by soliciting cooperation of other CBS people in Italy and outside of Italy and forming an SOC that will eventually prepare a proposal to be submitted to the EC. Even if the EC attitude turns out to be negative they can still go ahead with a "non-IAU" Symposium, provided with a strong support from prospective participants and from the local authorities in Bologna. As a post-script to this I should mention that during a later meeting involving Yoji Kondo, Ron Polidan, and myself, Ron came up with a suggestion that we could consider combining two initiatives: Algols+Bologna by simply choosing Bologna as the place for the IAU Coll. on Algols. It will be interesting to hear from Mirek Plavec and Alan Batten on this subject.

No!

June 1986

J. Smak, President  
IAU Commission # 42





INDIANA UNIVERSITY

DEPARTMENT OF ASTRONOMY

Swain Hall West 319

Bloomington, Indiana 47405

(812) 335-6911

August 5, 1988

August 5, 1988

Bela Szeidl (Hungary), Commission 27 (Variable Stars)  
Guisa Cayrel-de Strobel (France), Commission 29 (Stellar Spectra)  
Daichiro Sugimoto (Japan), Commission 35 (Stellar Constitution)  
Keiichi A. Kodaira (Japan), Commission 36 (Theory of Stellar Atmospheres)  
Robert F. Garrison (Canada), Commission 45 (Stellar Classification)

Dear President:

Although you will have been replaced as president of your commission by the time you receive this, I address this letter to you because you were instrumental in bringing IAU Colloquium 106: Evolution of Peculiar Red Giant Stars to fruition. Your wholehearted support for this conference and quick response to the deadline for the IAU executive committee meeting are deeply appreciated.

Thanks again for your support.

Sincerely,

Hollis R. Johnson

(On behalf of the Scientific Organizing Committee)

HRJ:br

cc: Members of the Scientific Organizing Committee

M.W. Feast (South Africa) (representing IAU Comm. 27)  
B. Gustafsson (Sweden) (representing IAU Comm. 36)  
C.O. Jaschek (France) (representing IAU Comm. 29)  
H.R. Johnson (U.S.A.) (Chairman)  
J.B. Kaler (U.S.A.)  
R.D. McClure (Canada) (representing IAU Comm. 45)  
A. Renzini (Italy)  
V. Straizys (Lithuania, U.S.S.R.)  
A.V. Sweigart (U.S.A.) (representing IAU Comm. 35)  
T. Tsuji (Japan)  
P.R. Wood (Australia)  
B.M. Zuckerman (U.S.A.)

R.K. Honeycutt, Chairman, Local Organizing Committee





INDIANA UNIVERSITY

DEPARTMENT OF ASTRONOMY

Swain Hall West 319  
Bloomington, Indiana 47405  
(812) 335-6911

August 5, 1988

Fellow Members of the Scientific Organizing Committee  
IAU Colloquium 106: Evolution of Peculiar Red Giant Stars

Dear Colleague,

As you know, IAU Colloquium 106: Evolution of Peculiar Red Giant Stars was held 27-29 July 1988 in Bloomington, Indiana, U.S.A. We deeply appreciate your efforts, support, contributions, and attendance. From many comments, both written and spoken, the conference was a major success. Enclosed is a summary of the conference which I wrote (with considerable help from Peter Wood and David Alexander) at the request of IAU. If you attended the General Assembly, you have already seen some version of it, perhaps accompanied by a picture.

The proceedings (invited papers, panel discussion, and abstracts of contributed papers) will be published by Cambridge University Press. Response in providing manuscripts has been excellent. Most of the manuscripts of the invited papers are already in hand, and others are promised very soon; Ben Zuckerman and I are already reading them. Abstracts have been revised where necessary; they are now essentially in final form. Typing of the panel discussion of the last day will begin immediately. Our goal is to put the entire camera-ready manuscript in the hands of the publisher as soon as possible.

Thanks again and best wishes.

Sincerely,

A handwritten signature in cursive script, appearing to read "Hollis".

Hollis R. Johnson

HRJ:br

Enclosure

cc: Presidents and Vice Presidents, IAU Commission 27, 29, 35, 36, 45  
Derek McNally, Assistant General Secretary, IAU  
R. Kent Honeycutt, Chairman, Local Organizing Committee

Members of the Scientific Organizing Committee:

M.W. Feast (South Africa) (representing IAU Comm. 27)  
B. Gustafsson (Sweden) (representing IAU Comm. 36)  
C.O. Jaschek (France) (representing IAU Comm. 29)  
H.R. Johnson (U.S.A.) (Chairman)  
J.B. Kaler (U.S.A.)  
R.D. McClure (Canada) (representing IAU Comm. 45)  
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V. Straizys (Lithuania, U.S.S.R.)  
A.V. Sweigart (U.S.A.) (representing IAU Comm. 35)  
T. Tsuji (Japan)  
P.R. Wood (Australia)  
B.M. Zuckerman (U.S.A.)



Summary of IAU Colloquium 106:  
Evolution of Peculiar Red Giant Stars

IAU Colloquium 106 was held at Indiana University, with a long tradition of research in red-giant stars. Nestled among wooded hills, it provided a comfortable and stimulating setting for this conference. Arising from a suggestion of the Working Group on Peculiar Red Giant Stars of IAU Commission 29, the conference was endorsed by IAU commissions 27, 29, 35, 36, and 45 and received financial support from IAU and Indiana University. The Scientific Organizing Committee consisted of Feast, Gustafsson, Jaschek, Johnson (Chairman), Kaler, McClure, Renzini, Straižys, Sweigert, Tsuji, Wood, and Zuckerman. A strong international flavor was evident among the 120 attendees. The Local Organizing Committee, which all agreed did an excellent job, was headed by Honeycutt.

Our goal was to trace and explain the evolutionary status and history of the many groups of peculiar red-giant stars (PRG's) - M, MS, S, SC, C, Ba, R, CH, CH-like, and other stars. In particular, we were interested in determining the properties -- luminosity, temperature, and composition -- of each group of stars and then relating these to initial mass and composition.

IRAS color-color diagrams were used by several investigators to obtain the space density of both M and C stars. Several controversial interpretations of the results as well as more straightforward explanations were offered. Together with mass-loss rates derived from circumstellar molecular emission, IRAS data was used to estimate that rates of mass return to the interstellar medium from C and M stars on the AGB are approximately equal, and the total is in rough agreement with observations.

Opacities and model atmospheres for the molecule-dominated PRG stars are slowly approaching reality. Advances noted at the conference were dynamic



envelopes for pulsating red giant stars, atmospheric models for M miras with spherical symmetry, and an opacity sampled treatment of water vapor. The introduction of periodic shocks in an envelope/atmosphere greatly distends the atmosphere.

Chemical composition and isotopic abundances tend to support the view that the main evolutionary path is M-MS-S-SC-C stars. Specifically, there is a good correlation between the  $^{13}\text{C}/^{12}\text{C}$  ratio and the carbon enhancement (C/O) in all types of AGB stars, as would be expected from the third dredge-up, and the oxygen isotope ratios further support this picture. The s-process isotope ratios observed in S stars are in solar ratios, although the absolute abundances are, of course, enhanced. The presence of Tc seems to be an excellent tracer of the commencement of dredge-up and is not found in "spectroscopic" PRG stars.

Radial-velocity observations over a decade have yielded binary companions for 18 of 20 Barium stars, 11 of 12 CH stars, and only 4 of 15 R stars. All but the last of these groups are therefore "spectroscopic" or "accidental" PRG stars which apparently owe their chemical peculiarities to mass transfer from the present white-dwarf companion when that companion was itself an AGB star. Orbital information confirms that the masses of the companions are  $\sim 0.6 M_{\odot}$ , as expected for white dwarfs.

Despite much effort on the part of theoreticians, half the famous carbon star mystery (the lack of bright carbon stars in the LMC) is still with us. None of the various possibilities - they are hidden by massive dust shells, they have been converted back to M stars by hot bottom burning, or they have ejected their envelopes as planetary nebulae - can be ruled out. Several theoreticians have been able to produce carbon stars at the low luminosities observed in the LMC ( $M_{\text{bol}} = -4.2$ ), but the codes differ in opacity, mixing length, and mass loss. Theories for carbon star formation were discussed at length, with several



radically new ideas presented. Whether carbon stars can form with  $M > 3M_{\odot}$  was argued enthusiastically but was not resolved.

Variable stars were reviewed and the relation of variability to evolution was explored but not settled. Separating multiperiodicity and randomness (chaos) among the irregular variables will be very difficult and can only be answered by long time series of photometric observations.

Essentially all PRG stars have chromospheres, as evidenced by the appearance of bright Mg II lines in the ultraviolet spectra, but the strength of these lines differ greatly from one type of star to another. The decline in Mg II emission in the cooler stars may partly be due to absorption. Acoustic energy deposition seemed favored over magnetic excitation, with the effects of shocks uncertain.

Mass loss is one of the characteristic features of PRG stars, and some evidence indicates that rates have been underestimated in the past. Increasing numbers of observations of microwave lines now allow the first general conclusions to be drawn. This is especially true when used in conjunction with IRAS data and the growing number of visual identifications of the underlying stars. Considerable work has been done using IRAS and molecular observations to trace the time dependence of mass loss and central-star evolution from AGB to planetary nebulae.

After 20 invited papers and 50 poster papers, the meeting closed with a lively panel discussion. The proceedings will be published by Cambridge University Press.

Hollis R. Johnson

29 July 1988





INDIANA UNIVERSITY

DEPARTMENT OF ASTRONOMY  
Swain Hall West 319  
Bloomington, Indiana 47405  
(812) 335-6911

August 25, 1986

Dr. Bela Szeidl  
IAU Commission 27  
Konkoly Observatory  
P.O. Box 67  
H-1525 Budapest  
HUNGARY

Dear Dr. Szeidl:

Prompted by a suggestion from the Working Group on Peculiar Red Giants (chaired by Carlos Jaschek & Philip C. Keenan) of IAU Commission 29 (Stellar Spectra), several of us are busily organizing a conference on The Evolution of Peculiar Red Giant Stars to be held in conjunction with the IAU Meeting in 1988. Interest and support for holding the conference has come from the Universities of Illinois, Indiana, and Ohio State, and the meetings will be held at one of these institutions, probably Indiana University.

We are seeking to have the conference recognized as an official colloquium by the IAU. To achieve that goal a broad base of support is desirable. Already Commission 45 (Spectral Classification) has agreed to co-sponsor the conference, and we are seeking support from Commission 27 (Variable Stars), Commission 35 (Stellar Constitution), and Commission 36 (Theory of Stellar Atmospheres) as well as Commission 29. Since the IAU Executive Committee will consider such requests at their September meeting, it is important to move quickly. Please reply by Telex regarding your interest and any questions you have, so I can complete and send the forms (which I already have) to the IAU.

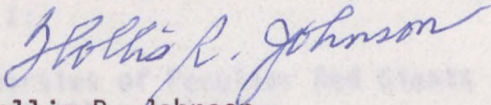
At the moment we are assembling the scientific organizing committee (SOC), the local organizing committee, and the scientific program for the conference. Robert McClure, DAO, has agreed to represent Commission 45 and Canada on the SOC. James Kaler, University of Illinois, has also agreed to serve on the SOC. There appears to be considerable enthusiasm for the conference, and it will be easy to organize the committees and program. But time is against us.



While I realize this provides only a sketchy basis for a decision, time is of the essence. We intend to invite at least one member of each interested commission to serve on the SOC and would appreciate any suggestions you have in this regard. Our aim is to organize a conference for about 150 people of the highest standards and greatest interest. As the organization of the meeting proceeds, I will keep you informed of our progress.

Thanks for your consideration.

Sincerely yours,

A handwritten signature in blue ink that reads "Hollis R. Johnson". The signature is written in a cursive, flowing style.

Hollis R. Johnson  
(on behalf of the SOC)

HRJ:mc



# Evolution of Peculiar Red Giant Stars

## Schedule of Topics (Tentative)

### Day 1:

Properties of Peculiar Red Giants (PRG)  
PRG in other galaxies  
Binarity in PRG

### Day 2:

Variability in PRG  
Evolution and mixing on the AGB  
Winds and Mass Loss

### Day 3:

Atmospheres and chromospheres of PRG  
Chemical composition of PRG

25 August 1986





## INDIANA UNIVERSITY

DEPARTMENT OF ASTRONOMY

Swain Hall West 319

Bloomington, Indiana 47405

(812) 335-6911

October 30, 1986

Bela Seidl (Hungary), Commission 27 (Variable Stars)  
Guisa Cayrel-de Strobel (France), Commission 29 (Stellar Spectra)  
Daichiro Sugimoto (Japan), Commission 35 (Stellar Constitution)  
Keiichi A. Kodaira (Japan), Commission 36 (Theory of Stellar Atmospheres)  
Robert F. Garrison (Canada), Commission 45 (Stellar Classification)

Dear President:

This is another progress report regarding the Conference on Evolution of Peculiar Red Giant Stars, which is scheduled to be held 27-29 July 1988 in Bloomington, Indiana. Your wholehearted support for this conference and quick response to the deadline for the IAU executive committee meeting are deeply appreciated.

The favorable decision of the IAU is shown on the enclosed letter from Dr. Derek McNally, Assistant General Secretary. Our conference is officially designated IAU Colloquium No. 106.

All members of the Scientific Organizing Committee, listed below, have accepted enthusiastically. We will perhaps add a few additional members.

Thanks again for your support. We will keep you informed of our progress toward what we plan to make an unusually pleasant and beneficial conference.

Sincerely yours,

Hollis R. Johnson

(On behalf of the Scientific Organizing Committee)

HRJ:ppj

cc: Members of the Scientific Organizing Committee:

M. Feast (South Africa) (representing IAU Comm. 27)  
B. Gustafsson (Sweden) (representing IAU Comm. 36)  
C. Jaschek (France) (representing IAU Comm. 29)  
H.R. Johnson (U.S.A.) (Chairman)  
J.B. Kaler (U.S.A.)  
R. McClure (Canada) (representing IAU Comm. 45)  
A. Renzini (Italy)  
V. Straizys (Lithuania, U.S.S.R.)  
A.V. Sweigart (U.S.A.) (representing IAU Comm. 35)  
P. Wood (Australia)

R.K. Honeycutt, Chairman, Local Organizing Committee



# INTERNATIONAL ASTRONOMICAL UNION

UNION ASTRONOMIQUE INTERNATIONALE

## EXECUTIVE COMMITTEE

President: J. SAHADE

General Secretary: J.-P. SWINGS

Vice-Presidents:

A. BATTEN

R. KIPPENHAHN

R.P. KRAFT

P.O. LINDBLAD

M. PEIMBERT

Ya. S. YATSKIV

Assistant General Secretary: D. McNALLY

Secretary: B. MANNING

Assistant Secretary: D. LOURS

Professor H R Johnson  
Department of Astronomy  
Indiana University  
Swain Hall West 319  
Bloomington  
Indiana 47405  
USA

29 September 1986

Dear Professor Johnson

I am writing to tell you following the IAU Executive Committee meeting in Liege, September 19-22, that they have accepted your proposal for a Colloquium "Evolution of Peculiar Red Giant Stars" to be held in 1988 in association with the General Assembly. It is noted that your preferred dates are July 27-29.

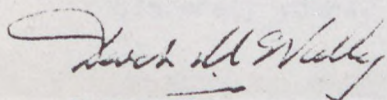
I shall be preparing the formal papers in respect of the Colloquium within the next fortnight and will be forwarding them to you.

I will look forward to hearing the progress of this interesting proposal.

In connection with the Colloquium, I had a most interesting visit from P Keenan. It was a great pleasure to me to meet with someone who had played such a role in the development of spectral classification with W W Morgan.

With very best regards,

Yours sincerely



D McNally

Assistant General Secretary

INTERNATIONAL ASTRONOMICAL UNION

\* *Chapman 156*

Assistant General Secretary: Derek McNALLY

University of London Observatory (University College London), Mill Hill Park, LONDON, NW7 2QS, UK





INDIANA UNIVERSITY

DEPARTMENT OF ASTRONOMY  
Swain Hall West 319  
Bloomington, Indiana 47405  
(812) 335-6911

September 19, 1986

- ✓ Bela Szeidl (Hungary), Commission 27 (Variable Stars)
- Guisa Cayrel-de Strobel (France), Commission 29 (Stellar Spectra)
- Daichiro Sugimoto (Japan), Commission 35 (Stellar Constitution)
- Keiichi A. Kodaira (Japan), Commission 36 (Theory of Stellar Atmospheres)
- Robert F. Garrison (Canada), Commission 45 (Stellar Classification)

Dear President:

This is a progress report on the Conference on Evolution of Peculiar Red Giant Stars, which is tentatively scheduled for 27-29 July 1988 in Bloomington, Indiana.

Support from several commissions is indeed gratifying, and we greatly appreciate your quick response. Widespread enthusiasm for the conference argues well for its success.

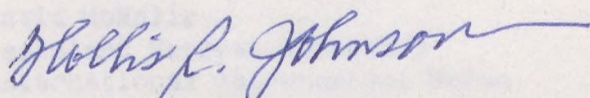
For your information I enclose a copy of the cover letter for the formal application for recognition of our conference as an official colloquium by the IAU. The IAU executive committee is, in fact, in session just now. Our application arrived (we trust) at the last minute, and was not as complete as one might have desired, but was nevertheless quite strong and sufficient for a meeting still two years in the future.

In the past week, since that letter was sent, there has been additional progress. (1) IAU Commission 36 (Theory of Stellar Spectra) has notified us and the IAU General Secretary by telex of their support. Our conference is therefore supported by five IAU Commissions. Commission 36 recommends as its representative on the Scientific Organizing Committee (SOC) Bengt Gustafsson (Sweden), who is already a member of the SOC. (2) Commission 35 (Stellar Constitution) has recommended Allen Sweigart (U.S.A.) as its representative on the SOC, and he has agreed to serve. (3) Written acceptances to serve on the SOC have been received from Michael Feast (South Africa) and Alvio Renzini (Italy) so that they are no longer "provisional". (4) Most of the huge Indiana Memorial Union Building on the campus of Indiana University has been reserved for the period 27-29 July 1988. The facilities there are excellent, and our local organizing committee, headed by Prof. R. Kent Honeycutt, is already at work.



Thanks again for your support. We will keep you informed of our progress toward what we plan to make an unusually pleasant and beneficial conference.

Sincerely yours,



Hollis R. Johnson  
(On behalf of the Scientific Organizing Committee)

HRJ:ppj

cc: Members of the Scientific Organizing Committee:

M. Feast (South Africa) (representing IAU Comm. 27)  
B. Gustafsson (Sweden) (representing IAU Comm. 36)  
C. Jaschek (France) (representing IAU Comm. 29)  
H.R. Johnson (U.S.A.) (Chairman)  
J.B. Kaler (U.S.A.)  
R. McClure (Canada) (representing IAU Comm. 45)  
A. Renzini (Italy)  
V. Straizys (Lithuania, U.S.S.R.)  
A.V. Sweigart (U.S.A.)  
P. Wood (Australia)

R.K. Honeycutt, Chairman, Local Organizing Committee



September 15, 1986

David McNally  
Assistant General Secretary  
International Astronomical Union  
University of London Observatory  
Mill Hill Park  
London NW7 2QS  
United Kingdom

Dear Dr. McNally:

Prompted by a suggestion from the Working Group on Peculiar Red Giants, chaired by Carlos Jaschek (France) and Philip C. Keenan (U.S.A.), of IAU Commission 29 (Stellar Spectra), several of us are busily organizing a conference on the Evolution of Peculiar Red Giant Stars to be held in conjunction with the IAU meetings in 1988. Interest and support for holding the conference has come from the Universities of Illinois, Indiana, and Ohio State, and the meetings will be held at one of these institutions, probably Indiana University. The conference is tentatively scheduled to be held immediately before or immediately following the General Assembly of the IAU in Baltimore (2-11 August 1988). This is a progress report on that meeting and a request that this conference be recognized as an official IAU colloquium.

Stellar evolution continues to be a topic of great interest. The opening of the ultraviolet, infrared, and radio regions of the spectrum have allowed scientists to begin to model in much more realistic fashions the earliest and latest stages of a star's life. Much of this new knowledge has been exploratory, but the goal of realistic, detailed modeling lies at hand. It is therefore timely for such a conference and desirable to have a meeting sufficiently large that many workers can become informed of current progress.

Topics of particular interest in our conference follow. (1) What are the properties of the various types of peculiar red giant (PRG) stars -- including M giant and supergiant stars, Barium stars (real and marginal), CH stars, stars along the sequence M-MS-S-SC-C, and R stars? (2) What are the quantitative chemical compositions of each type? (3) How did each type arise from normal giants or main-sequence stars? (4) What is the role of binarity in producing PRG stars? (5) What types of variability arise and how is variability related both to interior evolution and surface abundance changes? (6) How do properties of chromospheres change as a star evolves along the AGB (asymptotic giant branch)? (7) What can we say about grain formation in the atmosphere of PRG stars? (8) What role do shock waves play in chromospheric excitation and mass loss? (9) How is mass loss related to variability? (10) How is the AGB terminated by superwinds or ejection of planetary nebulae? (11) What research is needed to push back the frontier in the future?

In some ways this conference can be viewed as a descendant of the conferences "Physical Processes in Red Giants", of the second workshop held at Erice, Italy 3-13 September 1980 and "Cool Stars With Excesses of Heavy



Elements", held at Strasbourg, France, 3-6 July 1984. (Proceedings of both these meetings were published by Reidel.)

Because several other important and related meetings have been held or are scheduled to be held, it is worthwhile to compare and contrast these. (1) A workshop on "Late Stages of Stellar Evolution" was held in Calgary, Canada, 2-5 June 1986. An unusually productive conference, the meeting featured the IRAS results and tended therefore to focus on circumstellar matter and motions of late-type stars and the transition to planetary nebulae. Variability and chemical composition of red-giant stars were largely ignored. (2) IAU Colloquium 122: Circumstellar Matter, held at Heidelberg, Germany, 22-26 June 1986, provided a forum for discussions of radiative transfer, modeling of photospheres and circumstellar regions, and dust formation and properties. (3) A conference is scheduled in Japan for 1-4 September 1987 to examine "Atmospheric Phenomena as Manifestation of Internal Evolution of Stars". This appears similar to our meeting, but since it will cover all stages of stellar evolution and all types of stars from RS CVn stars to Wolf-Rayet stars to supernovae, there will be little time for discussion of the red-giant stars of prime interest to us. (4) A meeting on "Planetary Nebulae" is scheduled for September 1987 in Mexico City. While there will undoubtedly be some overlap with our meeting on "Evolution of Peculiar Red Giant Stars" and each of the meetings mentioned, the overlap will surely be small and beneficial. None of these meetings will cover a substantial part of the science on which we will focus nor provide answers from current research to more than a few of the questions noted. The presence on the Scientific Organizing Committee of our conference of international scientists who are involved in the planning of these other meetings will further enhance the value of the projected conference.

At the moment we are assembling the scientific organizing committee (SOC), the local organizing committee, and the scientific program for the conference. There appears to be considerable enthusiasm for the conference, and it will be easy to organize the committees and program. At present the scientific organizing committee (SOC) consists of the following members: M Feast\* (S. Africa), B. Gustafsson (Sweden), C. Jaschek (France), H.R. Johnson (U.S.A.) (Chairman), J. Kaler (U.S.A.), R. McClure (Canada), A. Renzini\* (Italy), V. Straižys\* (Lith. SSR), and P. Wood (Australia). (\*Denotes a provisional member.) A few more members will be added as we progress.

The local organizing committee consists of H.N. Cohn, M.L. Craig, R.H. Durisen, R.K. Honeycutt (Chairman), P. Jentgens, H.R. Johnson, P.M. Lugger.

We are seeking to have the conference recognized as an official colloquium by the IAU. Already Commissions 27 (Variable Stars), 29 (Stellar Spectra), 35 (Stellar Constitution) and Commission 45 (Spectral Classification) have agreed to co-sponsor the conference, and three of these have nominated representatives to the SOC. We also expect support from Commission 36 (Theory of Stellar Atmospheres). Some of these are verbal expressions, some have come in telegrams, and some are in letters to me or to the Assistant General Secretary of the I.A.U.

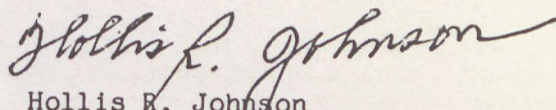
Enclosed is a tentative outline of the topics of the meeting. While the above information provides only a sketchy basis for your decision, time is of the essence. Our aim is to organize a conference for about 150 people of the



highest standards and greatest interest. Although many details are yet to be worked out and some decisions are still to be made, the enthusiasm and support already available assure the success of what we fully expect to be a very useful and successful international scientific conference.

Thanks for your consideration and support.

Sincerely yours,



Hollis R. Johnson  
(on behalf of the SOC)

Astronomy Department  
Swain West 319  
Telex: 272279  
Telephone: (812) 335-4172 (office)  
(812) 334-0478 (home)

encl:

cc: Members of the SOC

M. Feast (South Africa) (representing IAU Comm. 27)  
B. Gustafsson (Sweden)  
C. Jaschek (France) (representing IAU Comm. 29)  
H.R. Johnson (U.S.A.) Chairman  
J. Kaler (U.S.A.)  
R. McClure (Canada) (representing IAU Comm. 45)  
A. Renzini (Italy)  
V. Straizys (Lithuanian S.S.R.)  
P. Wood (Australia)



Barnes

New delivery unit



# Harvard-Smithsonian Center for Astrophysics

60 Garden Street, Cambridge, MA 02138

(617) 495-7000



Mail Stop 20

January 19, 1988

Dr. B. Szeidl  
Konkoly Observatory  
Box 67  
H - 1525 Budapest  
Hungary

Dear Dr. Szeidl,

In planning the scientific meetings of IAU Commission 30 ("Radial Velocities") at the Baltimore General Assembly, we have agreed that a subject deserving a review of recent progress and strategies for the future is that of the study of pulsating stars. In my view, one of the areas in which the recent great improvement in precision and limiting magnitude of radial velocity observations is beginning to have a major impact is in the study of pulsating stars and the refinements and wide-spread application of Baade-Wesselink analyses. Recent results on especially RR Lyrae stars and Cepheids seem to offer great promise. A discussion of results and outstanding problems should be most rewarding.

Thus, I should like to propose a joint meeting with your Commission on this subject. Although I am aware that an IAU Colloquium just after the General Assembly will address the same area, I still believe that a summary session during the General Assembly itself would be valuable. Possible representatives from Commission 30 who could participate in organizing this session include Gilbert Burki, Geneva (a candidate for Vice-President), and Bruce Carney, Univ. of North Carolina.

I must confess that I have not had time to consult with these colleagues way before making this proposal (I leave today to observe in Chile until February 6), but I am informing them by a copy of this letter. I should be grateful to hear your reaction to this proposal when I return, so I can inform the General Secretary of our plans by the March 2 deadline.

With best wishes for 1988, I remain,

Sincerely yours,

Mail Stop 20  
Teleph.: (617) 495 7411  
Telefax: (617) 495 7467/7356  
Telex : 921428 SATELLITE CAM  
BITNET : JABN@CFA1

*Johannes Andersen*

Johannes Andersen  
President, IAU Commission 30

8230





# Harvard-Smithsonian Center for Astrophysics

60 Garden Street, Cambridge, MA 02138

(617) 495-7000



Mail Stop 20

February 26, 1988

Dr. B. Szeidl  
Konkoly Observatory  
Box 67  
H - 1525 Budapest  
Hungary

Dear Dr. Szeidl,

Thank you again for your support for a joint meeting on the Baade-Wesselink method. For your information, I enclose a copy of the meeting request form I have sent to the IAU General Secretary, and will send one to Dr. Burki also.

I am glad that we shall be able to have this review in Baltimore; I do think that this is one of the fields in which the great improvement in limiting magnitude and precision of modern radial-velocity observations will have the most significant overall impact.

Looking forward to meet you in Baltimore,

Sincerely yours,

Johannes Andersen  
(President, IAU Commission 30)



# COMMISSION MEETINGS AT THE XXTH GENERAL ASSEMBLY

(One meeting per form only)

Commission and Meeting No..... 30/4

( ) Business

(X) Scientific

Duration (in units of 1.5 hours) ..... 1

Approx. No. of participants ..... 30

Jointly with Commission(s) ..... 27

Chairman ..... G. Burki

Topic of Meeting ..... The Baade-Wesselink method: Recent achievements and future goals.

Invited paper(s) (Title and Speaker) .. T.B.A.

Preferred time (e.g. 5-3) ..... 5-1

Second Choice of time ..... Not critical

Audio-visual requirements

(X) 5 x 5 cm slide projector

(X) Overhead projector

( ) Other :

## Requirements for non-coincidence :

This meeting must not coincide with :

( ) Other Commission's meetings.

Give No.(s) :

( ) Joint Discussions.

Give No.(s) :

Date : February 23, 1988

Signature : J. H. K. Auld  
President, Commission 30





# Harvard-Smithsonian Center for Astrophysics

60 Garden Street, Cambridge, MA 02138

(617) 495-7000



Mail Stop 20

March 13, 1988

Dr. B. Szeidl  
Konkoly Observatory  
Box 67  
H - 1525 Budapest  
Hungary

Dear Dr. Szeidl,

Thank you very much for your letter of February 24 and the copies of your correspondence with Drs. Burki, Barnes, and Carney.

Dr. Burki has already informed me that he accepts with pleasure the "unpleasant task" of chairing the SOC, and Dr. Carney has also indicated his willingness to serve. I am sure that the organization of this meeting is now in the best of hands (but will periodically inquire about the progress!) and look forward to meeting you again for an exciting session in Baltimore.

With best wishes,

Sincerely yours,

Johannes Andersen  
President, IAU Commission 30