

MINUTES OF THE MEETINGS OF THE ICNV HELD IN MEXICO CITY AUGUST 1970

1ST MEETING OF THE ICNV

10th August 1970 - Medical Center

(29 present)

2/1 The President gave a general description of the state of the ICNV, and announced that the elections to the EC would be held at the end of the last Meeting. Nominations should be in writing and bear two signatures.

2/2 Dr. Hansen's proposals were submitted to the vote (see E3/4) :

1. Deletion of rule 13

rejected unanimously

2, Dr. Hansen's system of nomenclature

rejected unanimously

2/3 Proposal of the EC on the 50% replenishment of the EC at main meetings of the ICNV every 3 or 4 years

carried unanimously

2/4 Report of the subcommittees (see above E3/5).

2/5 Examination of the data sheets, as modified by the EC. All the proposals were adopted, with minor modification.

2/6 Proposal from Dr. Lwoff : "The attention of plant virologists is called on the following points :

a) The group names they have adopted are in contradiction with the rules concerning generic names.

b) Unless these rules are changed, the group names proposed will not be accepted as generic names.

c) It is suggested that plant virologists should, as soon as possible, select group names which could become generic names

For : 23

Against : 2

The proposal was carried.

OPEN MEETING OF THE ICNV

11th August 1970, in the evening
Hotel Maria Isabel (29 present)

The purpose of this meeting was to inform virologists about the aspirations and progress of virological taxonomy and nomenclature and to receive criticisms and constructive ideas from those outside the membership of the ICNV.

The President started the discussion by outlining our difficulties and divergences of opinion and indicated where the common ground lay. He explained the business already going on in Mexico City.

There was then an informal discussion on various forms of nomenclature including that of Dr. Hansen. Some present were critical about the apparent neglect of important virus groups and it was explained that much still remained to do.

The meeting was not productive of new ideas.

2ND MEETING OF THE ICNV

13th August 1970 - Medical Center
(31 present)

2/7 The presentation of the data sheets with the exception of the data concerning families, was concluded. The whole work was approved by the ICNV.

2/8 The creation of a new co-ordinating subcommittee and the modification of the Cryptogram Subcommittee in order to broaden its scope was announced.

2/9 The proposals of the EC concerning the families (E3/15) were submitted to the ICNV for approval.

For : 17
Against : 13 (carried)

2/10 The data concerning the families, presented by the EC, were approved.

2/11 The proposal of the EC concerning the deletion of rule 9 (nonsense names) were put to vote

For the suppression : 6
Against : 19
Rule 9 is maintained.

2/12 Dr. Harrison's proposal on abolition of rule 7 (new sigla) was put to vote

For : 10
Against : 18
Rule 7 is maintained.

2/13 The question of representation of other Societies on the ICNV was raised by Dr. Harrison. This can be done within the framework of the new section of Virology, the President of which is Dr. J.L. Melnick. Dr. Melnick agreed to look into the matter,

2/14 The President presented the question of elections. The President and Vice-President will resign, as will four members of the EC. Furthermore, the nomination of the Secretary for Plant Viruses must be confirmed by the ICNV at its plenary session.

2/15 Prof. P. Wildy, who retired without seeking re-election, was elected life member by acclamation.

2/16 Election of the Plant Virus Secretary : Dr. Valenta previously nominated by the EC was elected unanimously.

2/17 Election of a President : Dr. Fenner, proposed by H.G. Pereira and J.L. Melnick, was elected unanimously.

2/18 Election of a Vice-President : there were two candidates :

1. Dr. Ginsberg (proposed by S.Ya Gaisamovich and A. Lwoff)
 2. Dr. Melnick (proposed by B. Harrison and H.G. Pereira).
- Dr. Ginsberg was elected (17/14).

2/19 Election of members : as Dr. Fenner had been elected President, and as four members of the EC retired, five new members had to be elected

- Dr. E. Norrby proposed by J. Maurin and C. Vago
- Dr. Maramarosch A. Kirn (France) & A. Kohn (Israel)
- Dr. Rhodes J.L. Melnick & N.Oker-Blom
- Prof. Van der Want B.D. Harrison & A.J. Gibbs
- Dr Zhdanov S.Ya Gaidamovich & A,Lwoff

The five nominated members were elected unanimously without discussion.

(a) FINANCES

The sums of money received from CIOMS over the past four years have been distributed to the three ICNV offices (Birmingham, Braunschweig and Paris) whence disbursements have been made from time to time. I show the accounts separately since dollars have perforce been changed into other currencies and with fluctuating world markets this is the only clear form of presentation.

You will note that the German account is unsatisfactory because, owing to Jurgen Brandes' death, we have been unable to find out the details of spending.

The Birmingham account is made up to 31st July 1970. There are outstanding bills not included in it. These are as follows :

- (1) Expenses in connexion with the London meeting, 1970
Hire of room and refreshments £21 0. 3.
- (2) Expenses in connexion with preparation of materiel for
this meeting (Mexico Congress) £24 1. 6.

In addition, I wish to pay an honorarium to Miss P. Thornton-Bassett who has given us four years' devoted service in Birmingham. With the exception of the preparation of the data sheets for which I have recompensed her at the standard rate, she has received no payment. I suggest that £50 would be a suitable sum.

Travel to this meeting still has to be met. Drs. Bradley, Ginsberg, Vago and Gibbs have indicated that they require assistance for their fare, in whole or in part. My fare has been paid entirely from ICNV funds, We must now allocate such money as we are able to help these people.

Travel for Drs. Gaidamovich, Maurin and Pereira has been provided by W.H.O. I am sure that the Excecutive Committee would wish me to write a grateful letter on their behalf.

I have requested Dr. Gibbons to submit for a further \$1,250 for us next year.

Statement of Accounts, Birmingham Office of the ICNV
(1967 to July 31st 1970)

RECEIPTS

PAYMENTS

			£	S	d				£	S	d
1967	CIOMS	\$100	35	7	11	Postage & stationery	9	0	0		
						Bank charges, cheque book	2	7	6		
1968	CIOMS	\$2,000	827	10	5	Postage & stationery	16	16	6		
	"	\$1,000	414	2	11	Bank charges, cheque book -		11	4		
	"	\$500	208	8	5	Telephone & cable	8	3	2		
						Travel (Gaidamovich)	80				
						" (Fenner)	418				
						" (Gibbs)	580				
						" (Valenta)	40				
						Costs of meeting	24	3	10		
						Reprints	20	16	11		
1969						Postage & stationery	18	2	8		
						Telephone	2	13	5		
						Cost of meeting	52	16	3		
1970 (To 31: July)											
CIOMS	\$1240		516	0	10	Postage & stationery	28	1	5		
						Bank charges		5	0		
						Telephone	2	13	5		
						Travel Wildy)	23	12	0		
						" "	278	8	6		
						" (Harrison)	23	4	0		
						Cost of meeting	50	0	0		
TOTAL		£2001	10	6		TOTAL	£1680	16	1		
BALANCE :	£320	14	5								

Etat des depenses, bureau de Paris de ICNV

(1967 au 31 juillet 1970)

		RECETTES		DEPENSES	
		\$	F		F
1967	CIOMS	800	3920	Main-d'oeuvre secretaires 624.00 Materiel de secretariat et frais d'envoi de courrier	1.032,72
1968				Main-d'oeuvre secretaires 380.00 Materiel secretariat et frais d'envoi de courrier 655,68 Voyage Londres M. VAGO	250,00
1969				Main-d'oeuvre secretaires Materiel secretariat et frais d'envoi de courrier Voyage Londres M. VAGO Voyage Londres M. MAURIN	64,00 451,00 420,42 185,70
1970	CIOMS	500	2.565,72	Voyage Londres M. VAGO Voyage Londres M. MAURIN	419,00 289,00
	Total	1.300	6.485,72		4.771,52

Reste en caisse : 1.714,20 F.

Statement of Account, Braunschweig Office of the ICNV

RECEIPTS		PAYMENTS
Cioms	100

(b) THE SECRETARIES REPORT

Dr. MAURIN

The second circular was sent to the Members of the Executive Committee, the 25th October 1967;

A reprint of the paper 'Virus Classification, Nomenclature and the ICNV' published in "Progress in Medical Virology" has been sent to all the members (1968).

Participation in the meeting of the Executive Committee London, April 1968; The minutes of this meeting have been sent to all the members of the ICNV (red document).

The voting paper on the 8 proposals of the EC, was sent in February 1969. The result of the ballot was circulated (May 1969).

Participation in the two meetings of the Chairmen of the Subcommittees: London, May 1969 and July 1970.

Active correspondence with the chairmen of the Subcommittees.

Dr. VALENTA

1, I could start the activities as ICNV Secretary with a considerable delay, especially because the materials left by the late Dr. Brandes were forwarded to me from Braunschweig as late as in May, 1970,

2. A circular letter has been mailed to all member societies of the IAMS with the request to confirm the members of ICNV. Answers are dropping in slowly. A preliminary list of ICNV members has been sent to the members and to the Secretary of IAMS, Dr, Gibbons, A final list with complete addresses will be prepared and circulated as soon as possible.

(c) PRESIDENT'S REMARKS

(1) General Remarks

We have a limited time and much to discuss and approve. I am therefore asking you all to co-operate in achieving something positive.

We are all aware of differences of opinion amongst ourselves. Indeed I have recently sent out a circular to the ICNV to enable us to sample current opinion on certain controversial matters. I shall report the result later. We shall then all know the majority opinion and I do not want further discussion on these matters.

(2) Suggested Procedure

In order to get through as much business as possible I wish to proceed as follows

(a) At the moment we have a complex organization and our method of achieving results is cumbersome. A virus grouping or name is suggested by a Subcommittee (or a study group) It must be approved successively by a sizeable number of virologists working in the field, the Subcommittee concerned, the EC ICNV and finally, the ICNV before it can be finally approved.

This cumbersome procedure can be streamlined if we retain the need for approval by the four bodies mentioned but do away with the need for the succession. That is to say, any proposal can be considered by any of the bodies and approved subject to the approval of the other three. When all four bodies have approved the proposal the item is automatically approved. In the event that one of the bodies does not approve a proposal, the proposal can be modified (or rejected) and referred back.

In addition to speeding up our work this will provide feedback of information and attitudes between Committees.

(b) In order to achieve this, I have prepared (with Dr. Maurin and the Chairmen of Subcommittees) a set of working papers, or data sheets, on virus groups. These show factual information in descriptions of groups and individual cryptograms. They also show which bodies have approved the groups so that a running assessment of the state, of progress for each can be seen at a glance.

(c) I hope that by adopting this procedure we shall make substantial progress at this Congress and I propose that at the end we should publish the matter so that the virological world can see what we have achieved.

(d) The actual procedure will be that we go through these data sheets, approving as much as we can with or without minor modification. Any items that we cannot quickly deal with will be set aside for subsequent discussion.

(e) We shall then discuss the accumulated items which could not be approved outright to which we add the following

- (i) Can we improve the definition of the 'genus'?
- (ii) Do we yet require families ? Or even higher taxa ?
- (iii) Should the ICNV define what in a virus ? and any others.

Report of Recent Events

(a) Since we met in April 1968 we have transacted a little business by post. The most important has been a report of the Chairman of the Plant Virus Subcommittee listing 16 groups of plant viruses. This was voted on by the EC ICNV along with the proposal that Dr. Pereira represents us on the Animal Virus Characterization Board, with results you will know. It has since been to the ICNV and I present the results of votes cast upon it. The result is (i) that Dr Pereira is elected to represent the ICNV on the Animal Virus Characterization Board. In this connexion I present the comments of Dr. York, which EC ICNV should know. (ii) The plant virus groupings are therefore approved by the ICNV. On the other hand, the report has not been approved in toto since the names are unacceptable to sufficient numbers of the ICNV. (iii) At the same time, I sampled opinions on nomenclature and it is quite clear from the results that the ICNV wishes to maintain our effort towards latinized binomial nomenclature and wishes to have names descriptive of the properties of viruses, e.g. Nepovirus

(b) Because I was concerned that each Subcommittee was so engrossed in its own business that it was unaware of the general problem, I convened two meetings of Chairmen of Subcommittees last summer and this. These were attended by Chairmen of Subcommittees, Dr. Maurin and myself. The meetings have done much to unify the direction of the work and has enabled us in some measure to consider the difficult areas where Subcommittees overlap. The final product of these meetings has been the data sheets which we shall be considering.

(c) I have received a volume from Dr. Hansen entitled "Contribution to the Systematic Plant Virology". I imagine he will have sent this to others as well. He also sent some comments on the Plant Virus Subcommittee's proposals. Finally, he asked that the book (and/or the comments) be considered seriously at this Congress. I propose to make time available for him at the Open Meeting

The Results of the Second Circular to the ICNV were as follows

	For	Against	Neither	did not vote
1) That Dr. Pereira should represent the ICNV on the Animal Virus Characterization Board	42	0	1	2
2) Groupings put forward by the Plant Virus Subcommittee,	38	2	1	4
3) Proposals of Plant Virus Subcommittee approved in toto	20	17	1	7
4) Opinions on rules of nomenclature.				
In favour of				
(a) Unabbreviated English names	4	27	3	11
(b) Abbreviated English names	2	31	2	10
(c) Latinized names as part of a binomial nomenclature	21	10	4	10
(d) Names proposed by PCNV	9	19	7	10
(e) Names derived from the properties of viruses e.g. Nepovirus	22	9	2	12

Notes

- Total valid voting papers received by 31 July 1970 was 45.
- 2 qualified favourable answers were given to Question 4 (d).
- 3 qualified favourable answers were given to Question 4 (c).

(D) VERTEBRATE VIRUS SUBCOMMITTEE REPORT TO THE ICNV JULY 1970

Informal discussions were held at the 1st International Congress for Virology held in Helsinki in 1968. Following these, correspondence with members of the subcommittee established that there was agreement on the following matters

(I) The names picornavirus and papovavirus to be used as proposed at the Montreal Congress in 1962.

(II) The term togavirus to be used to cover the A and B Groups of 'arbovirus' and others which might later prove to be similar, with icosahedral symmetry.

(III) Coronavirus to be the name for infectious bronchitis virus of fowls and related viruses including some human pathogen and mouse hepatitis.

(IV) Rhabdovirus to be the name for bullet-shaped viruses resembling vesicular stomatitis virus. There would have to be further discussion as to the inclusion of similar viruses infecting insects and plants.

(V) Parvovirus, not picodnavirus, to be the name of the small DNA viruses of which the latent rat virus is typical.

These proposals were circulated to ICNV members and received little adverse criticism. They were published in Virology in April 1970 and require final approval at the Mexico meeting.

Further correspondence with members of the subcommittee obtained general agreement to the use of the following names Leukovirus for viruses related to those causing tumours and leukosis in fowls, rodents, and other species; Iridovirus for those resembling the iridescent Tipula virus (probably including African swine fever virus and some frog viruses); Arenovirus for LCM and viruses of the Tacaribe group. These later proposals have not yet been circulated to the ICNV.

For all the genera above it will be necessary to designate type species and to publish descriptions of distinguishing generic characters. To accomplish this, further help from study groups will probably be needed.

The arbovirus study group has proposed that the names alphavirus and flavivirus should be applied to the A and B arbovirus groups, perhaps as subgeneric names. (It might well be convenient to depart from the rule prevalent in zoology and botany whereby a typical subgenus bears the same name as the genus).

C.H. Andrewes Chairman
H.G. Pereira - Vice--Chairman

(E) INVERTEBRATE VIRUSES SUBCOMMITTEE REPORT TO THE ICNV JULY 1970

The Subcommittee constituted by the Executive Committee meetings in 1966 was initially composed of six members : C. Vago (France), Chairman.. X. Aizawa (Japan), F. Bird (Canada), M. Martignoni (USA), L. Tarasevitch (USSR), T. Tinsley (GB). Later C. Ignofio (USA) was co-adopted and F. Bird resigned.

The activity of the Subcommittee was continuous and consisted in a close correspondence based on 26 circulars from the chairman. A delay of two months was adopted in replying, but in most cases all answers reached us within a few weeks.

Although general meetings of all members from different continents were not realizable, the chairman could meet all the Subcommittee members on several occasions, some of them several times. Also, partial meetings of three or four members could be organized.

The work of this Subcommittee was particularly difficult owing to the fact that from the first steps of the invertebrate virology till today the classification of viruses was essentially based on the presence and localization or on the absence of inclusion bodies that characterize most of invertebrate viruses. Thus, the system adopted in 1960 by the former Subcommittee for the Nomenclature of Viruses, has been established on this principle.

So, in the beginning of the activity of our Subcommittee there was not any group of invertebrate viruses corresponding to the principles adopted by the ICNV.

In order to organize, the work of the Subcommittee, the field of invertebrate viruses was divided into problems concerning

- DNA occluded viruses
- Densonucleosis viruses
- Invertebrate pox viruses
- Iridescent viruses
- Sigma viruses
- RNA occluded viruses
- RNA non occluded isometric viruses.

For the study of these problems, the Subcommittee appointed by ballot twenty "advisers" among the best known specialists.

Delegates of the Subcommittee participated in the activities of the working groups on

- parvoviruses,
 - rhabdoviruses
- of the Vertebrate Virus Subcommittee.

The Subcommittee made the following recommendations concerning the constitution of "groups" and "subgroups" of viruses ; genera or subgenera will be designated later after further work by the ICNV. Type species are also proposed to help the characterization of groups or of subgroups.

(a) A group is proposed for rod shaped enveloped viruses containing double stranded DNA, sensitive to heat and lipid solvents and often occluded in proteinic crystals. The group name :

Baculovirus (baculum - rod) and the type species virus of nuclear polyhedrosis of Bombyx mori are suggested. So far this group of virus is represented only in invertebrates.

This group include several types:

- Many virions occluded in a polyhedral shaped proteinic crystals. Type species : virus of nuclear polyhedrosis of Bombyx mori.
- One or, rarely, virions occluded in a granular shaped proteinic crystal. Type species : virus of granulosis of Christoncura fumiferana.
- Virions occluded in other types of proteinic crystals. - Virions not or slightly occluded.

(b) Densonucleosis viruses, small (20-23 nm), isometric, heat and ether stable, non enveloped DNA viruses, could be included in the group of Parvoviruses if the monostrandness of the DNA in the virions of the densonucleosis virus is demonstrated. The name : Densovirus and the type species : densonucleosis virus of Galleria mellonella are proposed.

(c) The constitution of a subgroup among poxviruses is suggested for oval shaped large DHA viruses (300-350 nm x approximately 250 nm) surrounded by an envelope, with a beaded surface and occluded in proteinic crystals. This type of poxviruses has been found so far only in insects. The name : Entomopoxvirus and the type species : virus of the spheroidosis of Melolontha melalontha are proposed.

(d) The virus "sigma" of Drosophila should be included in Rhabdovirus group near VSV. The name : Sigmavirus and the type species : virus of the CO₂ sensitivity of Drosophila melanogaster are proposed.

(e) Viruses of iridescent diseases of insects should form a group of icosahedral double stranded DNA viruses. They are large (110 to 180 nm), have a tendency to form regular arrangement *in vivo* and *in vitro*, and are possibly enveloped. This last point should be definitely specified before defining relations with African swine pest or other viruses. The name Iridovirus and the type species : virus of iridescent disease of Tipula paludosa are proposed.

(f) Cytoplasmic polyhedrosis viruses with icosahedral symmetry, approximately 60 nm in diameter, non enveloped and containing double stranded RNA, should be placed near reovirus despite their peculiarities : -the frequent occlusion in polyhedral proteinic crystals and the presence of large knobs on the five-fold axes. The type species : cytoplasmic polyhedrosis virus of Bombyx mori is proposed.

(g) Most of the RNA viruses presenting cubical symmetry and non occluded in proteinic inclusion bodies need further study to be included in a proposal.

These recommendations are now circulating among the invertebrate virologists for remarks and suggestions.

The Subcommittee participated also in the constitution of the sheets on virus groups by drawing up for every group corresponding to the definitions given here above a description including characters, the species, subgroups and cryptograms.

The programme of future works of the Subcommittee should include, in addition to the participation in the definition of genera and subgenera, studies on the affinities of Iridoviruses, Densovirus and Entomopoxviruses with some vertebrate viruses, and attempts to recognize types among not occluded RNA viruses with cubical symmetry formerly joined in a provisional group that appears actually very heterogeneous.

C. Vago – Chairman

(f) PLANT VIRUS SUBCOMMITTEE REPORT TO THE ICNV AUGUST 1970

Membership of the Subcommittee

With the death of Dr. Jurgen Brandes in 1968, the PVS lost a greatly respected member who had contributed much to its work. His job as Secretary of PVS, was taken over by Dr. V. Valenta. Dr. C. Wetter was co-opted to PVS.

Subcommittee Meeting

A meeting was held at the time of the International Congress of Plant Pathology in London in 1968. The following resolutions were made:

1. The Subcommittee recommends the experimental introduction of names for groups of plant viruses that are approved by the Subcommittee (unanimously agreed).
2. The Subcommittee opposes the introduction, at present, of latinized binomial names for individual plant viruses. (Agreed with one abstention).

The analysis of the data on about 50 properties of 150 plant viruses was discussed and proposals for 16 groups of viruses drafted for 12 of the groups were also propose.

Final Proposals on Grouping and Naming of Groups

The draft proposals sent to a large number working plant virologists for consideration and comment. Replies were received from about fifty individuals or laboratories. There was overwhelming support for the proposals on grouping and about two thirds of the replies supported the proposals on naming. Some with suggestions for modifications. There was no substantial support for any other names or system of naming. The final proposals, including some of the modifications suggested, were incorporated in a paper entitled "Sixteen groups of plant viruses", which was submitted to the ICNV.

The proposals on grouping were later approved by the ICNV and by its Executive Committee. The proposals on naming were favoured by a small majority of the ICNV in a postal vote ; the Executive Committee was equally divided on their approval. The Plant Virus Subcommittee nevertheless hopes that the practical value of these names will be tested by using them for an experimental period.

Standardized Abbreviations of Virus Names

A list of abbreviations of names of plant viruses (for example, TMV) was prepared by Dr. R. W. Fulton and is being considered by the Subcommittee.

Future Tasks

The future programme of PVS will no doubt involve the recognition, description and naming of additional virus groups. Perhaps the most difficult task will be the grouping of plant viruses

which seem superficially similar to viruses of invertebrates or vertebrates (for instance, lettuce necrotic yellows and wound tumor virus).

B.D. Harrison Chairman.

- 2-DNA
6. Polyhedral with non-contractile tail.
Tail-less, icosahedral, apical capsomeres, contains lipid.
- 1-RNA
7. Icosahedral, tail-less, no apical capsomeres.

These forms are well-defined and it is suggested that their principle characteristics should constitute the definition of a species within a Genus.

The formation of names

It has been agreed by the ICNV that "an effort will be made towards a latinized binomial nomenclature". It is therefore suggested that genera and species of bacteriophages should be named on a latinized basis, such that the basic definition of the phage is conveyed. Possible names are suggested in the following scheme which contains appropriate definitions and typical examples. The suffix "-virus" has been agreed by the ICNV.

Genus 1. Monodbactivirus Definition : Bacterial viruses containing 1-DNA.

Species.

- a. sphaeroformis (type species)
Definition : Capsid icosahedral with apical capsomeres, size about 25 nm,
has no tail.

Normal host species : *Escherichia coli*, *Salmonella*

Principle isolates : □X174, S13, □R, α3, St-1.

- b. globosus
Definition Capsid icosahedral - with no apical capsomeres, size about 60
nm, has no tail.

Normal host species : *Bdellovibrio* spp.

Principle isolate : HDC-1

- c. filiformis
Definition : Capsid filamentous, flexible, length 800-1300 m.
Normal host species : *Escherichia coli*, *Salmonella* ___ spp., *Pseudomonas*
aeruginosa, *Xanthomonas* spp., *Vibrio parahaemolyticus*.

Principle isolates : fd, M-13, If1, Pfl

Provisional specification, exact geometrical form and nucleic acid type need confirmation

Genus 2. Diplodnabactivirus

Definition : Bacterial Viruses containing 2-DNA

Species.

- a. myocaudata (type species)
Definition Capsid polyhedral, regular or irregular with Contractile tail.
Normal host species : Wide range of Gram + and Gram - species.
Principle isolates : T2, T4.

b. caudata

Definition : Capsid Polyhedral, regular or irregular with non-contractile tail.

Normal host species : wide range of Gram + and Gram - species.

Principle isolates : T3, T5, lambda.

c. sphaeroformis

Definition : Capsid. icosahedral with apical subunits and no tail, virion contains lipid.

Normal host species : Marine *Pseudomonas* spp.

Principle isolate : PM2.

Genus 3. Monornabactivirus

Definition : Bacterial viruses containing 1-RNA

Species.

a. sphaeroformis (type species)

Definition : Capsid icosahedral with no tail.

Normal host species : *Escherichia coli*, *Pseudomonas*, *Caulobacter* spp.

Principle isolates : MS2, R17,

APPENDIX

Bacteriophage genera based on morphology

This scheme was considered by the Subcommittee and was circulated to a number of phage workers who overwhelmingly rejected it.

Genus 1. Myobactivirus

Definition : contains 2-DNA, possesses a polyhedral capsid with a contractile tail.

Main characteristics : shape of heads variable, both symmetrical and asymmetrical. Tails vary in structure from simple to complex. Head size and tail length variable : heads 50 nm - 140 nm, tails 90 nm - 240 nm. Grows over a wide range of Gram + and Gram - bacteria.

Latin derivation : "Myo" for contractile.

Type species : coliphage TV

Genus 2. Caudabactivirus

Definition : contains 2-DNA, possesses polyhedral capsid with a noncontractile tail.

Main characteristics : shape of heads variable both symmetrical and asymmetrical. Tail structure varies from simple very short rod to long rod with fibres or knobs at the tip. head and tail dimensions variable: heads 55 nm - 100 nm, tails 12 nm - 300 nm. Grows over a wide range of Gram + and Gram - bacteria.

Latin derivation : "Cauda" = tail.

Type species : coliphage lambda.

Genus 3. Lipobactivirus

Definition : contains 2-DNA, possesses regular polyhedral capsid with no tail but containing lipid. Main characteristics : shape of capsid icosahedral with apical subunits. Size about 60 nm. The single member grows on a marine *Pseudomonas*.

Latin derivation : "Lipo" to indicate presence of lipid in the capsid.

Type species : Marine *Pseudomonas* phage PM2

Genus 4. *Bullabactivirus*

Definition : contains 1-DNA, possesses a regular polyhedral capsid but no tail.

Main characteristics : shape of capsid icosahedral one representative having apical subunits and one not. Size either 25 nm or 60 nm. There are two basic forms, the smaller with apical subunits, the larger without. The smaller form grows on *Enterobacteriaceae* and the larger on *Bdellovibrio*.

Latin derivation : "Bullall = knob for the appearance of the apical subunits on the type species.

Type species : coliphage \square X174.

Genus 5. *Levibactivirus*

Definition : contains 1-RNA, possesses a regular polyhedral capsid but no tail.

Main characteristics : shape icoahedral. Two basic forms, one with 92 and one with 32 capsomercs. Size about 25 nm. Both forms grow on *Escherichia coli* and some less studied isolates on *Pseudomonas* and *Caulobacter*.

Latin derivation : "Levis" = smooth.

Type specios : coliphage f2

Genus 6. *Filobactivirus*

Definition : contains 1-DNA, in the form of a long flexible filament.

Main characteristics : two forms of different lengths about 830 nm and 1400 nm. Diameter of both forms about 5.5 nm. Grows on *Enterobacteriaceae*, *Pseudomonas*, *Xanthomonas* and *Vibrio*.

Latin derivation : "Filum" = thread.

Type species : coliphage fd.

The algal viruses

Gonus 1. *Caudacyanovirus*

Definition : contains 2-DNA, possesses regular polyhedral capsid with a very short tail.

Main characteristics : one form with a head of about 60 nm and a tail of about 15 nm. Grows on several genera of the "blue-green" algae.

Latin derivation : "Cauda" = tail and "Cyano" from the host class *Cyanophyceae*.

Type species : algal virus LPP1.

D. BRADLEY
Chairman