Hitchborn, J. R. & Hills, G. J., 1965. The use of negative staining in the electron microscopic examination of plant viruses in crude extracts. Virology 27: 528–540.
Huttinga, H., 1975. Purification by molecular sieving of a leek virus related to onion yellow dwarf virus. Neth. J. Pl. Path. 81: 81–83.
Kahn, R. P., Scott, H. A. & Monroe, R. L., 1962. *Eucharis* mottle strain of tobacco ringspot virus. Phytopathology 52: 1211–1216.
Maat, D. Z., Huttinga, H. & Hakkaart, F. A. 1978. *Nerine* latent virus: some properties and serological detectability in *Nerine bowdenii*. Neth. J. Pl. Path. 84: 47–59.
Noordam, D., 1973. Identification of plant viruses. Methods and experiments. Centre for Agricultural Publishing and Documentation (Pudoc), Wageningen: 206 pp.
Slogteren, D. H. M. van, 1954. VIII. Serological micro-reactions with plant viruses under paraffin oil. Proc. 2nd Conf. Pot. Vir. Dis. Lisse–Wageningen: 51–54.
Whetzel, H. H., 1923. Report of the Plant Pathologist for the period January 1st to May 31st, 1922. Rep. Bd & Dep. Agric. Bermuda for 1922: 28–32.

Address

Laboratorium voor Virologie, Binnenhaven 11, 6709 PD Wageningen, the Netherlands.

Book review

International Virology IV. Abstracts of the Fourth International Congress for Virology held at The Hague, the Netherlands August 30–September 6, 1978. Centre for Agricultural Publishing and Documentation (Pudoc), Wageningen, the Netherlands, 1978. 674 pp. Price Dfl 85.

From 30 August to 6 September 1978, 1700 virologists from 55 countries gathered in The Hague to discuss developments in fundamental and applied research on viruses. About 200 of the participants were plant virologists.

The six mornings were devoted to plenary sessions on subjects of general interest. In four of these sessions, a paper on plant viruses was given. These four papers reviewed the use of resistance genes in crops, properties of viruses favouring their survival in different plant communities, the assembly of tobacco mosaic virus, and the genome structure and regulation of gene expression in plant viruses.

For the afternoon sessions, participants split up to attend workshops or to visit posters sessions on a great variety of special topics. Of the 1100 papers and posters, about 130 were on plant viruses and viroids. Almost half were accommodated in workshops and poster sessions exclusively devoted to plant viruses. These sessions covered multiplication of plant viruses in protoplasts, symptomatology and pathogenesis in virus infected plants, viroids, potyviruses, and the organization of seed and serum banks. All other presentations on plant viruses were placed in sessions dealing also with viruses of vertebrates and invertebrates. Such sessions included those on virus structure and assembly, replication of small RNA viruses, early stages of virus-cell interactions, ecology of vector-borne viruses, viruses in their arthropod vectors, and evolution of viruses.

The tendency to give papers on plant viruses in sessions dealing with general virological topics is indicative of the growing notion that plant viruses are not a separate group of pathogens but share many properties with viruses of other host groups.

Abstracts of all papers and posters are published in the present book, arranged in the sequence of the sessions. The abstracts were directly reproduced by a photographic process. For those who attended the congress, the book was rather heavy to carry around but that inconvenience is compensated by the wealth of recent information contained. Unfortunately the accessibility of the information is limited by the lack of a subject index. But this is probably an inevitable feature of books produced so rapidly. An index of contributors is inserted on the last pages.

C. P. de Jager

G. Röbbelen and E. L. Sharp: Mode of inheritance, interaction and application of genes conditioning resistance to yellow rust. J. Plant Breeding Vol. 9, Suppl. Verlag Paul Parey, Berlin and Hamburg, 1978. 88 pp. Price DM 41.

Puccinia striiformis West., causing yellow or stripe rust, is a serious leaf pathogen of wheat and barley. Hassebrauk (1965, 1970) and Hassebrauk and Röbbelen (1974, 1975) produced a series of excellent reviews in German of all aspects of the pathogen. The main method of control is resistance breeding. To reach more people involved in aspects of resistance breeding to yellow rust, those parts of the these reviews dealing with the genetics of the host-pathogen relationship were revised into this English booklet.

A short introduction is followed by two large chapters. The first deals with the genetics of the host-pathogen relationship. It discusses: (i) Seedling resistances, often monogenic with a low infection type from the primary leaf onward; (ii) Adult plant resistances, characterized by a low infection type in the later phases of plant development only; (iii) Quantitative resistances governed by a number of minor genes with additive effects; and (iv) Field resistance, the resistance of mature plants in the field, due to any one or a combination of these resistances. Field resistance therefore tends to be inherited in a complex way.

Knowledge about the inheritance of virulence is scanty indeed as the lack of a perfect state prohibits genetic studies with the pathogen. In correspondence with other host-pathogen systems a gene-for-gene system is assumed for race-specific resistances.

The last chapter deals with breeding for resistance. First the classical approach, selection for complete resistance is discussed, including a comprehensive discussion of the sources of resistance genes. The central problem is the versatility of the pathogen resulting in rapid adaptation to many of the newly introduced resistance genes ('break-down' of resistance). Possible measures to increase the durability of such resistances are discussed and can be categorized as a diversification of resistance genes in time, in space or in both. The second main item considered is resistance that might be stable. Within this scope, polygenic, field, pathotype-independent and general resistance are considered and selection and breeding for it discussed. Breeding for tolerance is mentioned shortly.

For a host-parasite system, where resistance breeding is practised on a wide scale, this type of review is very useful. The only two minor shortcomings I felt were the lack of comparison with other cereal-rust relationships and the prolific use of terms indicating resistance. Comparison with other cereal-rust systems would have enhanced the use of this booklet as the genetics of these systems seem to resemble each other strongly. The use of about 20 different terms for resistance, like absolute, relative, general, specific quantitative, differential or pathotype-independent resistance, does not help to standardize terminology, and may confuse the reader. It is hoped that this review may induce others to produce similar comprehensive reviews of other host-parasite relationships.

J. E. Parlevliet