SECOND SUPPLEMENT

TO

PARTIAL BIBLIOGRAPHY OF VIRUS DISEASES OF PLANTS *

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Agricultural Experiment Station, College of Agriculture of the University of Puerto Rico, Río Piedras, P. R.

Afzal, H. M., Jaggi, S. S., & Singh, B.

A note on a survey of the disease of malformation in the Punjab-American cottons. Indian Journ. Agric. Sci. **5**(5) : 624–631, 1935.

This disease has been tentatively identified as stenosis. Although this is not strictly a virus disease paper we decided to include it, because some workers have regarded stenosis as a virus disease.

Agee, H[amilton] P[ope]

The Hawaii system of sugar-cane quarantine. Proc. Fifth Congress Soc. Sugar Cane Tech. Brisbane, Australia, **1935** : 707–710, 1935.

This paper contains one paragraph on *Perkinsiella saccharicida*.

Ainsworth, G. C.

Fig mosaic. Journ. Roy. Hort. Soc. **60**(12) : 533, 1935.

Report of a fig mosaic in Great Britain. The author claims that although there is no printed record of such maladie occurring in Great Britain it has been known for at least twenty years.

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Virus diseases of cucumbers. Journ. Minis. Agric. **42**(4) : 338–344, 1935.

Brief popular descriptions of (1) green-mottle mosaic (cucumber virus 3), (2) yellow mosaic (cucumber virus 4) and (3) yellow mottle mosaic (cucumber virus 1). Also a brief discussion of the causative agents, transmission of the diseases and methods of control.

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Another new virus disease of tomato. Gard. Chron. **98**(2549) : 320–321, 1935.

A description of a disease reported by K. M. Smith, June 1, 1935. Produces enations similar to those described by Jensen on tobacco. The disease is due to ordinary tomato mosaic virus.

* Journ. Agric. Univ. Puerto Rico 18(1–2) : 1–410, 1934. First Suppl. 19(2) : 129–313, 1935.

Spotted wilt of Richardias (Arums). Gard. Chron., **97**(2507) : 31. 1935.

A short illustrated note indicating the symptoms and suggesting control measures.

"Bushy stunt": a virus disease of the tomato. Journ. Min. Gt. Brit. **43**(3) : 266–269, 1936.

Detection of spotted wilt virus in chrysanthemums. Nature **137** : 868, 1936.

The disease is abundant on ornamental plants. The virus is inactivated by an extract of healthy chrysanthemum leaves added to an extract of diseased tomato leaves.

---, **& Selman, I. W.**

Some effects of tobacco mosaic virus on the growth of seedling tomato plants. Ann. Appl. Biol. **23**(1) : 89–98, 1936.

Johnson tobacco virus No. 1 was used. The authors give the results of a series of experiments which they summarize as follows:

"A negative correlation has been shown to exist between the growth rate of seedling tomato plants and the length of the incubation period.

"Evidence has been presented, which suggests that the relative effects of *tobacco virus* 1 on the growth rate of the plant subsequent to the appearance of symptoms is the same in both summer and winter.

"The percentage water content of all parts of infected plants was found to be lower than that of the controls, during the early stages of the disease. Later the water content tended to rise above that of healthy plants."

Anderson, Rudolph Daniel

A study of some abnormalities occurring in certain potato varieties in California. Colorado Agric. Expt. Sta. Tech. Bull. **16**, 52 p., 1936.

Contains some interesting data on virus diseases.

Anonymous

Leaf-roll and mosaic diseases of the potato. Ireland, Dept. Agric. Leaflet **29**, 1933.

The growing and marketing of potatoes for seed. Ireland, Dept. Agric. Leaflet **8**, 1934.

New York Cornell Agric. Expt. Sta. Forty-seventh Annual Report for the year **1933–34** : 102, 1935.

Note on work in progress.

Die Blattrollkrankheiten der Kartoffel. Ernährungestörung oder infektion? Ungelöste Probleme. Der Kartoffelbau 18. Jarhrgang, **1934**: 29–30, 1934.

The propagation and maintenance of healthy stocks of potatoes. Gov't. of Northern Ireland, Min. of Agric. Leaflet **73**: 8, 1934.

Annotated bibliography on bitter-pit. Occ. Pap. Bur. Fruit Prod. E. Malling, **3**: 28, 1934.

Although it has not been proved to the satisfaction of all workers that bitter-pit is due to a virus, this publication will be found useful. Contains list of papers since 1869 on bitter-pit of apples.

Our changing agriculture served by Science. Fiftieth Annual Report of the Dir., 1932–33, Wisconsin Agric. Expt. Sta. Bull. **428**: 8, 1934.

A brief note saying that yellow dwarf of potatoes causes a decrease in yields.

Mosaic disease of the sugar cane. Science (Suppl.) **82**(2122): 7–8, 1935.

A statement that Dr. E. W. Brandes and Julius Matz of the U. S. Dept. of Agriculture have discovered that the sugar cane plant fights mosaic "with a virus-paralyzing substance that it forms in the growing tips of its stalks. A stuff that seems to be somewhat analogous to the germ-fighting 'anti-bodies' formed in the bodies of human beings and animals when invaded by disease."

Mosaikayge hos agurker. Gartri-tid. **51**: 417–419, 1935.

Mosaic and nature of virus disease. Int. Sugar Journ. **37**: 460–461, 1935.

New sugar-beet varieties for the curly-top area. U. S. Dept. Agric. Circ. **391**. 4 p., 1936.

Plum and peach virus diseases. Amer. Fruit Grower **56**: 31, 1936.

Virus diseases. Gard. Chron. (London) **99**: 209, 1936.

Anstead, Rudolph D.
Mosaic Disease. Madras Agric. Dept. India, Bull. **92**: 13. (n.d.)

A popular description of sugar cane mosaic and suggestion for its control.

Appel, [Friedrich Carl Louis] Otto
Vitalitat und Vitalitätsbestinumung bei den kartoffeln de Kartoffel **13**: 20–21, 1933.

Arnaud, G., & Arnaud, M.
Les maladies á virus des rosacées amygdalées (Virus disease of the amygdalous rosaceae.) Compt. Rend. Acad. Sci. Paris **202**(10): 869–871, 1936.

Atanasoff, D[imitr]
Old and new virus diseases of trees and shrubs. Phytopath. Zeitschr. **8**(2): 197–223, 1935.

The author observed the following virus diseases in Bulgaria: mosaic of *Populus balsamifera, Corylus avellana, Ulmus* sp., *Acer negundo, Cornus mas,* ash and lilac. Also infectious variegations of *Labrum vulgare* and witches' broom of *Gleditschia triacanthes.*

Atkinson, J. A.
Progress report on the investigations of corky-pit of apples. New Zealand Journ. Sci. & Tech. **16**(5): 316–319, 1935.

This disease has not been proved to be due to a virus but has certain resemblances which make it desirable to include it in this publication.

Bailey, M. A.
Leaf curl disease of cotton in the Sudan. Empire Cotton Growing Rev. **11**(4): 1–9, 1934.

A very comprehensive review of the history of this disease.

Bald, J[ames] G[rieves]
Statistical aspect of the production of primary lesions by plant viruses. Nature **135**(3424): 996, 1935.

A criticism of a paper by Youden, Beale & Guthrie. (Cont Boyce Thomp. Inst. 7: 37, 1935.)

Baribeau, [Charle Henri] B[ernard]
The tuber-unit seed plot in Quebec. Amer. Potato Journ. **12** (3): 62–64, 1935.

Report of a potato tuber-unit seed plot which is considered to demonstrate clearly the value of this method of combating virus diseases.

Barrus, M[ortier] F[ranklin] & Crosby, Cyrus R[ichard]
Control of diseases and insect pests of potatoes in Long Island. Cornell Agric. Expt. Sta. Ext. Bull. **288**, 26 p., 1935.

An outline for potato growers of control measures for virus diseases and other groups of maladies.

Baudys, E[duard]
Nejdúlezitejsi choroby a skudci Merunky a Broskvene a ochrana proti nim. (The most important diseases and pests of the apricot and peach and their control.) Publ. Fytopath. Sekce Zemsk. Vyzk. Ust. Zened. **147**, Zidlochovice, 55 p.. 1935.

An annotated list of the most important diseases of the peach and the apricot giving attention to those caused by viruses. Control measures in each individual case are discussed in details.

Bawden, F. C.
The relationship between the serological reactions and the infectivity of potato virus X. Brit. Journ. Expt. Path. **16**: 435–443, 1935.

A careful study containing much data on this subject.

----------, **& Pirie, N. W.**
Experiments on the chemical behavior of potato virus X. Brit. Journ. Expt. Path. **17**: 64–74, 1936.

This paper gives the results of the studies in which the authors determined the relation of the virus to several chemicals.

Bechhold, H.
Subvisibles virus und Kolloidforschung. Kolloidztschr. **51**: 134–144. 1930.

----------, **Gerlach, W., & Erbe, F.**
Die Kupferprobe zur unterscheidung von gesunden und abgebanten Kartoffeln. (The copper test for differentiation of healthy and degenerated potatoes.) Angew Chemie **47**(2): 26–30, 1934.

A sheet of copper is inserted into a tuber for 8 hours at 37°C. followed by 16 hours at room temperature. On cutting the healthy tuber show a dark brown to dark color. The diseased tubers do not.

Bell, Arthur F[rank]
Disease resistant trials in Queensland. Proc. Fifth Cong. Int. Soc. Sugar Cane Tech., Brisbane, Australia, p. 511–517, 1935.

This paper includes a discussion on Fiji disease of sugar cane.

The present status of dwarf disease. Proc. Queensland Soc. Sugar Cane Tech. 7: 129–131, 1936.

Bennett, C[arlyle] W[ilson]
Studies on the properties of the curly top virus. Journ. Agric. Res. **50**(3): 211–214, 1935.

The author describes his methods in details. The aging of the virus depends on the medium and ranged from 7 to 28 days. Also resistance to desiccation reported on the medium and ranged from

2 to 10 months. Thermal inactivation point between 75 and 80 degrees C. No virus was recovered from liquids having a pH of 2.9 or lower. A very high resistance to chemicals.

Berkeley, G[arven Hugh]

Three diseases of lilies. Canadian Florist. **30**(20) : 307–308, 1935.

This paper contains a popular discussion of the mosaic disease.

Occurence of "spotted wilt" on tomatoes in Ontario. Sci. Agric. **15**(6) : 387–392, 1935.

A description of symptoms on tomato and a study of the disease on *Nicotiana glutinosa.*

Berkner, F. W.

Eisenfleckigkeit bei kartoffeln. Wesentliche Sortenunterschiede-Abbiängigkeit der befallstärke von jahreswitterung und boden. Mitt. Landw. **49** : 378–380, 1934. (Zeitsch. Pflanzenk u. Planzenschutz **45** : 239. Die Kartoffel **14** : 78–81, 1934. Neuh. Geb. Pflanzensch. (abstract) **1935** : 85, 1935.)

Der Einfluss zurückliegender Kalidungungen auf das Trachtenbild (Abbauerscheinungen) sowie die Nährstoff aufnahme und die späteren Erträge der Kartoffel-pflanze. III Mitteilung. (The influence of past applications of potash fertilizers on the performance (degeneration phenomena), assimilation of nutriment, and subsequent yields of the potato plant. No. III.) Landw. Jb. **81**(3) : 293–423, 1935.

This is a detailed account of the results obtained by experiments conducted by the author. The forms of "degeneration" observed were mosaic, leaf roll and dwarfing. A noticeable increase in all the mentioned diseases, scab and "Eisenfleckigkeit" appeared to result from the potash treatment.

NOTE: The results obtained are rather in opposition with those obtained by G. Rhode (Ernähr. Pflan. 31(13–14) : 237–243, 1935.)

Best, R. J.

Precipitation of the tobacco mosaic virus complex at its isoelectric point. Austral. Journ. Expt. Biol. & Med. Sci. **1**[illegible] (1) : 1–13, 1936.

Bessey, E. A.

Michigan State Board of Agric. Seventy-second Annual Repor of the Secretary of the State Board of Agric. and Forty sixth Annual Report of the Expt. Station from July 1, 193[illegible] to June 30, **1933** : 314, 1933.

A brief note of work in progress.

Birkeland, Jorgen M.
Further serological studies of plant viruses. Ann. Appl. Biol. **22**(4) : 719–727, 1935.

These experiments indicate that the virus is, in itself, antigenic; that cucumber mosaic, tobacco ring spot and tobacco mosaic are serologically distinct and that tobacco mosaic virus, aucuba mosaic virus (green and yellow strains), and probably tomato streak virus are serologically indistinguishable.

On the classification of plant viruses. Phytopathology **25**(5) : 456–458, 1936.

The results of studies which suggest that the serologic tests may be useful in the classification of viruses.

Bitancourt, A[gegislan]
Um protozoario parasita do Cafeeiro. (A protozoon parasitic on coffee) Rev. Inst. Café **10**(107) : 2486–2490, 1935.

The author reports a cochineal insect (*Cerococcus parahybensis*) and the protozoon *Rhyzoecus coffeae* associated with coffee *phloem necrosis*. The paper is not strictly on virus, but as he discusses Stahel's observations on the subject we decided to include this citation considering it of interest to the students on the subject.

Black, L. M.
Some insect and host relationship of the potato yellow dwarf virus. Phytopathology (Abstract) **26**(2) : 87, 1936.

Abstract of paper read before the 27th Annual Meeting of the American Phytopathological Society, St. Louis, Mo. Dec., 1935. *Aceratagallia sanguinolenta* is a vector and *Trifolium pratense* is a host plant.

Blank, L. M.
A mosaic on cabbage in Wisconsin. Phytopathology (Abstract) **25**(1) : 6, 1935.

This paper appeared in our First Supplement under Black, L. M.

Blattny C[tibor Eugen Marie Karel], & Vukolov, V.
Nakazliva neplodnost Chmele (Infectious sterility of the hop.) Rec. Inst. Rech. Agron. Rep. Tchecosl. 1936, **137** : 3–18, 1935.

Account of the author's studies since 1924 of the hereditary or infectious sterility of hops in Czecho-Slovakia. The disease is well described showing an extensive phloem necrosis of all the non-lignified organs. The work on transmission is also described and is attributed to a virus that may be of a complex nature suggesting that it may have originated from the disassociation of the virus of the "Kaderavost" disease.

Ozdravovaci pokus se sorton Bramború "Prazské rohliky". (An attempt to restore the health of the potato variety "Prazske Rohlíky.) Rec. Inst. Rech. Agron. Rép. Tchecosl. 1935, **137**: 33–38, 1935.

Account of the author's eight years work trying to free a potato variety from virus diseases.

Prispevek K lécení virovych chorob Bramború. (Contribution to the therapy of the virus diseases of the potato.) Rec. Inst. Rech. Agron. Rép. Tchécosl. 1935, **137**: 39–42, 1935.

Brief report of an experiment in trying to cure virus diseases by therapeutical methods.

Pokus o vlivu zavlahy a vlivu doby sázeni na zdravotni stav Bramború. (Experiment on the influence of watering and of date of sowing on the health of potatoes.) Rec. Inst. Rech. Agron. Rép Tchécosl. 1935, **137**: 43–47, 1935.

The author reports the results of his experiments on watering and time of planting potatoes. Late planting and over-watering reduced virus diseases (leaf roll crinkle, mosaic and stipple-streak). A noticeable reduction of the number of aphids was demonstrated, to it was attributed the success in reducing the spread of the disease. Experimental work in regard to aphid control was also conducted with derris and pyrethrum powder.

---, **& Vukolov, V.**

Studie Z pathologie chmele a Bramború (Pathological studies on hop and potato.) Sbornik Vyzkumnych u. 1 tavú zemedelskych C.S.R. Svazek **137**, 47 p., 1935.

Contains some notes on virus diseases of potatoes and hops.

Blood, H[erbert] L[oren]

An unusual occurrence of "spotted wilt" of tomato in Utah. U. S. Dept. Agric. Plant Disease Rep. **20**(9): 143–144, 1936.

A record.

Bodine, E. W.

Peach mosaic disease in Colorado. Colorado Agric. Expt. Sta. Bull. **421**, 11 p., 1936.

A description of the disease and recommendations for its control.

Boss, Andrew

Forty-first Minnesota Agric. Expt. Sta. Ann. Rpt. July 1, 1932 to June 30, **1934**: 7, 1934.

Brandes, E[lmer] W[alker,] & Matz J[ulius]
Recovery of the sugar cane plant from the mosaic disease. Paper presented to 5th Congress of the International Association of Sugar Cane Tech. (Facts About Sugar (Abstract) **30**(11): 425, 1935.)

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Importance of the virus diseases of sugar cane. Proc. Fifth Congress Int. Soc. Sugar Cane Tech. Brisbane, Australia p. 87–105, 1936.

A very excellent review of the subject including descriptions of the diseases and methods of control.

Transmission of new types of sugar cane mosaic and some observations on significance of the diseases. Proc. Fifth Congress Int. Soc. Sugar Cane Tech. Brisbane, Australia, p. 804–811, 1936.

This may be considered a progress report. It contains a careful and thorough discussion of the methods of work.

Brentzel, W. E.
Types of potato virus diseases in North Dakota. North Dakota Agric. Expt. Sta. Bull. **282**, 23 p., 1935.

Popular.

Caldwell, John
Spurious cucumber "mosaic" due to copper poisoning. Journ. Min. Agric. Great Britain **42**(2): 97–98, 1935.

A description.

On the interactions of two strains of a plant virus: Experiments on induced immunity in plants. Royal Soc. (London), Proc. Ser. **B**: 117, 1935, No. **B–803**: 120–139, 1935.

The author reports two strains of the virus of the aucuba mosaic of tomato. A. G. causes a green mottling and A. Y. causes a yellow mottling. The yellow strain is similar to Johnson's tobacco virus No. 6, but both show some differences.

Caminha, A.
Co. 290 cane at Campos, Brazil. Observations on cane culture in Brazil. Brazil Assuc. **5**(3): 127–138; (4): 335–341, 1935. (Facts About Sugar (Abstract) **30**(8): 304–305, 1935.)

Account of variety resistance to mosaic.

Carsner, Eubanks
Results from U. S. No. 1 resistant beet seed. Facts About Sugar **30**(2): 70, 1935.

Brief popular notes on yields.

Carter, Walter

Mealy-bug wilt and green spot in Jamaica and Central America. Phytopathology **24**(4) : 424–426, 1934.

The Smooth Cayenne pineapple appears to have disappeared as a result of the wilt and the Red Ripley is becoming scarce.

The symbionts of *Pseudococcus brevipes* (Ckl.) Ann. Ent. Soc. Amer. **28**(1) : 60–64, 1934.

This paper is of interest because this insect is a vector of pineapple wilt which is similar to the virus diseases.

Mass action phenomena in mealybug wilt. Ann. Ent. Soc. Amer. **28**(3) : 396–403, 1935.

This paper is of interest because this disease is very similar to the virus diseases.

Studies on biological control of *Pseudoccus brevipes* (Ckl.) in Jamaica and Central America. Journ. Econ. Ent. **28**(6) : 1037–1041, 1935.

This paper is of interest to students of virus diseases because this insect is a vector of pineapple wilt.

Insects and Plant diseases (Presidential Address). Proc. Hawaii Ent. Soc. **9**(2) : 159–170, 1935.

A popular discussion on the insect transmission of virus diseases and virus-like diseases of plants.

Mechanical transmission of two viruses to pineapple. Phytopathology (Abstract) **25**(1) : 10, 1935.

The toxicogenic and toxiniferous insect. Science **83** : 522, 1936.

A brief discussion which is of interest to students of virus diseases.

The symbionts of *Pseudococcus brevipes* in relation to a phytotoxic secretion of the insect. Phytopathology **26**(2) : 176–183, 1936.

Insects that are transferred from pineapple to *Panicum barbinode* loose the power to produce green spots on pineapple after a time. The symbiont is pleomorphic and passes from a rod to a *coccus* form. It does not regain the rod form after the insect is returned to the pineapple.

Cation, D[onald]
The role of plums in the spread of peach virus diseases. Ann. Rpt. State Hort. Soc. Michigan, **65**: 61–63, (1935), 1936.

Popular.

Caudwell, E. S.
Cane experiments at Umbogintwini. Sugar and Cotton Planter, **II**(6): 7–9, 1926.

This paper is a record of a field test of streak of sugar-cane.

Chamberlain, E. E., & Taylor, G. G.
The occurrence of spotted-wilt of tomatoes in New Zealand. New Zealand Journ. Agric. **52**(1): 9–17, 1936.

Popular.

Sore-shin of blue lupins. New Zealand Journ. Agric. **51**(2): 86–92, 1935.

A disease that is very destructive on *Lupinus angustifolius*. It causes a mosaic of peas, broad bean and red clover. It is readily transmitted by *Aphis rumicis* and *Myzus persicae*. Experiments indicate that it is not transmitted by seeds. It overwinters in the red clover.

Chapman, G[eorge] H[enry]
Crack-neck: A non-parasitic disease of Chrysanthemums. Phytopathology **9**: 532–534, 1919.

It is possible that this is a virus disease.

Chester, K[enneth] S[tarr.]
Serological evidence in plant-virus classification. Phytopathology **25**(7): 686–701, 1935.

The author gives a historical review of the subject and methods. The results are summarized as follows: The test show the following virus types to represent distinct serological entities: tobacco mosaic, latent mosaic of potato, potato mild mosaic, potato aucuba mosaic, potato-vein-banding virus, tobacco ring spot, and Osborn's pea-mosaic virus No. 2.

From tobacco mosaic have been derived many strains of very close affinity serologically, although of very diverse symptomatology. The group of such uniformly interreactive viruses includes tobacco aucuba mosaic, Johnson's yellow tobacco virus 4, Holmes' symptomless tobacco mosaic, and many of Jensen's brilliant yellow, white, and slow-moving types.

The latent-mosaic virus of potato (X-virus or healthy-potato virus) is representative of a group of serologically closely related virus strains embracing potato mottle, potato ring spot, and British Queen streak. According to Birkeland's tests (5), spot necrosis and at-

tenuated spot necrosis also belong in the same group. Rugose-mosaic virus of potato reacts with both X-virus and vein-banding sera, confirming the present view that it is a mixture of these two virus types.

The vein-banding virus of potato and cucumber-mosaic virus are so strongly interreactive that these appear to be but strains of the same virus type.

This relationship is supported by infection tests. Valleau's tobacco virus 10729 also shows marked affinities with these viruses.

A much more distant serological relationship between tobacco-mosaic and severe etch of tomato is indicated by precipitin tests.

Two viruses isolated from legumes by Osborn and tentatively referred to as pea-mosaic viruses No. 2 and No. 3 behave serologically as strains of the same virus type, although both are serologically distinct from all of the other viruses studied.''

The antigenicity of the plant viruses. Phytopathology **25**(7): 702–714, 1935.

The author gives the results of extensive experiments and says: ''From these findings, as well as from the facts previously reported concerning virus neutralization, the possibility of arriving at a logical classification of viruses by means of serological reactions, and the correlation between strength of serological reactions and the amount of infective material present in tests samples, it is concluded that the evidence now available is sufficiently strong to warrant the assumption that the antigens responsible for the plant virus serological reactions thus far studied are the viruses themselves and not normal or derived constituents of diseased plants.''

A serological estimate of the absolute concentration of tobacco mosaic virus. Science **82**(2114): 17, 1935.

After a brief review of the work of other students the author concludes ''that a single animal dose on *N. glutinosa* corresponds to 60–600 million molecules of virus antigen.''

Choudina, I.

(Virus diseases of tobacco in the U.S.S.R. and methods for their control.) Trans. Lenin Acad. Agric. Sci. **1936**: 32–41, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. A Discussion of the known diseases, most of which are known in the United States. The speck spot of tobacco is transmitted in the seeds. Recommendations for control.

Chu, H. S.

On the mosaic disease of wheat. Entom. & Phytopath. Hangschow, China **4**(2): 22–27, 1936.

Conners, I. L.

Fourth Annual Report of the Canadian Plant Disease Survey, 116 p., 1935.

In this report is included the new record for Canada on a mosaic on seed mangolds and on Swiss chard. Also a new mosaic disease on cherry.

Cook, Melville T[hurston]

A mosaic disease of *Tithonia rotundifolia.* Phytopathology **26** (2) : 90, 1936.

Abstract of paper read before the 27th Annual meeting of the American Phytopathological Society, St. Louis, Mo., Dec., 1935. The host plant was incorrectly determined. It was *T. diversifolia.*

Index of the vectors of virus diseases of plants. Journ. Agric. Univ. Puerto Rico, **19**(3) : 407–420, 1935.

A list of vectors arranged alphabetically. Under each vector is a list of the diseases which it transmit with date of first record, place and name of report.

Host index of virus diseases of plants. Journ. Agric. Univ. Puerto Rico, **19**(3) : 315–406, 1935.

A list of virus diseases that have been reported, arranged according to families, genera and species.

Phloem necrosis in the stripe disease of corn. Phytopathology **26**(2) : 90, 1936.

Abstract of paper read before the 27th Annual meeting of the American Phytopathological Society, St. Louis, Mo., Dec., 1935.

Cooley, L. M.

Virus-free raspberries. Rural New York, **94**: 385, 1935.

Popular.

The identity of raspberry mosaics. Phytopathology **26**(1) : 44–56, 1936.

The author gives the results of studies and recommends the use of two terms to include all raspberry mosaics,—green mottle mosaic and yellow mosaic.

Corneli, E.

Mal del mosaico su patate (Mosaic disease of potato.) Rilievi Fitopt. Lab. & Osser. Pat. Veg. R. Inst. Sup. Agr. di Perugia, Memoria **26**: 61, 1933.

Brief popular note.

Costantin, Julian [Noel]

Experiences culturales sur la pomme de terre dans les Pyrénés. Compt. Rend. Acad. Sci. (Paris) **198**: 22–26, 1934.

Notion nouvelle de l'Erulement doux de la pomme de terre. Compt. Rend. Acad. Sci. (Paris) **198**: 299–302, 1934.

Extériorisation des dégénérescences par l'action de l'altitude, Compt. Rend. Acad. Sci. (Paris) **198**: 1095–1097, 1934.

Influence des hautes latitudes sur les rendements agricoles de la pomme de terre dans l'Amérique du Nord. Compt. Rend. Acad. Sci. (Paris) **199**: 690–694, 1934.

Culture de la pomme de terre au Maroc en 1933. Compt. Rend. Acad. Agric. Sci. (Paris) **20**: 146, 1934.

L' enroulement de la variété de Pomme de terre Belle de Juillet. (Leaf roll in the Belle de Juillet potato variety.) Compt. Rend. Acad. Sci. (Paris) **201**(23): 1080–1083, 1935.

The author states that Belle de Juillet potato variety suffer to the extent of 100 per cent from leaf roll in low-lying situations. He gives details of his experiments to cure leaf roll and mosaic at high altitudes in the Pyrenees, at 1,400 m. above sea level.

---, **& Magrou, J[oseph]**

Étude des mycorhizes de la Pomme de Terre sur des pieds sains et sur des pieds atteints de mosaïque. (Study of potato mycorrhiza on healthy plants and on plants affected with mosaic.) Rev. Path. Vég. **22**(1): 60–62, 1935.

Report of the behavior of potato varieties at different altitudes and affected with mosaic and its reaction to mycorrhiza.

Cotton, A[rthur] D[isbrowe]

The aphis carrying lily mosaic. Royal Hort. Soc. Lily Year-Book **3**: 89–91, 1934.

Aphis gossypii is only vector known. It is less abundant in Great Britain than in the U. S. which may account for a less rapid spread.

Cottrell-Dormer, W.

The variability of plant pathogens. Proc. Fifth Congress Soc. Sugar Cane Tech. Brisbane, Australia, p. 713–722, 1936.

This paper contains a brief discussion of variability in viruses.

Cristinzio, M.

Le virosi delle Patate Riccia e Biancona di Napoli nell' annata 1934. (The virus diseases of Napolitan Riccia and Biancona potatoes in the year 1934.) Ric. Ossvz. Divulg. Fitopat. Campania ed Mezzogiorno (Portici) **4**: 51–65, 1935.

Account of reduction in potato yields during 1934 due to several virus diseases.

Cross, W[illiam] E[rnest]

Ensayos y observaciones relativos al efecto del mosaico sobre los rendimientos culturales de las variedades P.O.J. 36, 213 y 2725. (Tests and observations in regard to the effects of mosaic on the cultural yields of the varieties P.O.J. 36, 213 and 2725.) Rev. Indust. Agric. (Tucumán) **24**(3–4) : 57–76, 1934.

Report of the tests conducted and discussion on the observations. The author declares, that practically, no loss of productivity, is suffered in the province on the three mentioned varieties due to the acquired tolerance after twenty years of cultivation.

Cunha Bayma, A. da

(Mosaic disease of sugar cane in the State of Ceara, (Brazil) Campo (Río de Janeiro) **4**(7) : 74–78, 1933.

The disease spread from certain plantations. Infection ranges from 30 to 100 per cent, and there is a decrease of 80 per cent in sugar productions. Steps have been taken to introduce resistant varieties.

Curzi, M[ario]

Le malattie da virus delle piante. Ann. Tec. Agric. (Rome) **7**: 183–196, 257–272, 423–442, 1934.

Dale, H. H.

Viruses and heterogenesis. An old problem in a new form. Huxley Mem. Lect. 24 p., 1935.

A summary of the filterable virus problem. The author believes that further studies will result in a biogenesis explanation of the problem.

Dana, B[liss] F.

Occurrence of curly top in Pacific Northwest in 1934. Plant Disease Reporter **18**(14) : 168–173, 1934.

Account of the unprecedented spread of curly top on different hosts.

Daniels, Leslie B.

The tomato psyllid and the control of psyllid yellows of potatoes. Colorado Agric. Expt. Sta. Bull. **410**, 1934.

A description of the diseases and recommendations for its control.

Davies, W. Maldwyn

Ecological studies on aphides infesting the potato crop. Bull. Ent. Res. **23**(4) : 535–548, 1932.

This is not a paper on virus diseases but it may be of interest to some of the students on insect vectors.

Studies on aphides infesting the potato crop II. Aphids survey: its bearing upon the selection of districts for seed potato production. Ann. Appl. Biol. **21**(2): 283–299, 1934.

This paper contains a brief discussion of the relations of *Myzus persicae* to virus diseases.

Studies on aphides infesting the potato crop. III. Effect of variation in relative humidity on the flight of *Myzus persicae* Sulz. Ann. Appl. Biol. **22**(1): 106–115, 1935.

Contains a brief reference to virus diseases.

---,& **Whitehead T[athan]**

Studies of aphides infesting the potato crop. IV. Notes as the migration and condition of alate *Myzus persicae* Sulz. Ann. Appl. Biol. **22**(3): 549–556, 1935.

A discussion of time and environmental conditions.

De Haan, K., & Roland, G.

Enquete internationale sur les différents types de maladies de jaunissement et de mosaïque de la Betterave sucriére quant á leurs caractéres et leur influence sur la végétation. (An international inquiry into the different types of yellowing and mosaic diseases of sugar beet in respect to their properties and influence on growth.) Publ. Inst. Belge Amélior. Better. **3**(2): 55–67, 1935.

Summary of the fifth meeting of the International Institute of Beet Research at Brussels in January 1935. Extensive data is given in regard to "yellowing" and mosaic.

Deighton, F. C.

Mycological work. Sierra Leona Dept. Agric. Rpt. **1933**: 14–20, 1935.

This report includes notes on cassava mosaic, giving the observations of two years experiments. Reports cases of apparent recovery and that the disease is not seed-borne.

Desai, S. V.

The antigenic properties of the sugar-cane mosaic virus. Curr. Sci. **3**(7): 28, 1935.

Serological studies.

Organisms associated with sugar cane mosaic, and their relation to the mosaic virus. Indian Journ. Agric. Sci. **5**(4): 367–386, 1935.

The author obtained a bacterial organism from mosaic of sugar cane. This was grown in culture and developed an invisible filter passing stage.

Dickson, B[ertram] T[homas]
Filterable viruses. Australian & New Zealand Assoc. Adv. Sci. Report, vol. **21**, 1933.

A review of the subject.

Dippenaar, B. J.
Fruit spots of the Kelsey and other plum varieties. Farming in South Africa March, 1932, p. 4, 1932.

Popular. Refers to sun-scorch, Kelsey spot and drough spot, cause unknown.

Dodds, H. H., & Beater, B. E.
Proc. South Africa Sugar Tech. Assoc. **1931**: 116, 1931.

Has some references to virus diseases of sugar cane.

----------, **& Fowlie, P.**
South African Sugar Tech. Assoc. Proc. **1932**: 38; **1934**: 89, 1934.

Has some references to virus diseases of sugar cane.

Doerr, R.
Die submicroscopischen Lebensformer. Verh. d. Schweiz. Naturf. Ges. 1929, II, Teil, 92, 1929.

This paper contains a discussion of tobacco mosaic virus.

Dounine, M. S.
(Virus diseases of leguminous crops.) Lenin Acad. Agric. Sci. Trans. **1936**: 59–68, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. A review of the subject and recommendations for control. *Epitetranyschus althaeae* is mentioned as a vector.

----------, **& Rischkow, V[itolij] L.**
(Aim and organization of scientific research work on virus diseases of plants in the U.S.S.R.) Lenin Acad. Agric. Sci. Trans. **1936**: 119–122, 1936.

This paper was read at the First Virological Conference, March 7–11, 1935, it was followed by resolutions on the report of (1) The nature of the viruses. (2) Virus diseases of potato. (3) Virus diseases of tobacco and makhorka. (4) Virus diseases of the cotton plant. (5) Virus diseases of *Leguminosae*. (6) Virus diseases of vegetables. (7) Aim and organization of work regarding virus diseases of plants in U. S. S. R. All of the above was in Russian without English summary.

Duggar, B[enjamin] M[inge], & Easley, Tildon
Comparative effects of certain aldehydes on the viruses of typical tobacco mosaic and tobacco ring spot. Amer. Journ. Bot. **22**(10): 912, 1935.

Abstract of a paper read before the Botanical Society of America.

Dykstra, T[heodore] P[eter]

A top-necrosis virus found in some apparently "healthy" potatoes. Phytopathology **25**(12) : 1115–1116, 1935.

The author gives a brief review of the work of several writers and says: "It is believed that the virus component found in apparently healthy tubers of some American varieties in addition to virus X, is the same as Bawden's virus B."

Cooperative studies of some European and American potato viroses. Phytopathology **26**(6) : 597–606, 1936.

Comparative studies of European and American viruses showed that X virus of European potatoes was similar to the so-called latent virus of "healthy" American potatoes. The Y virus, and the vein-banding virus (rugose mosaic complex minus the X component) caused banding of veins on tobacco leaves. These two viruses belong to the same group but are not identical. Paracrinkle of Europe does not resemble leaf-rolling mosaic or any other known American potato virus. Crinkle A of Europe is not the same as rugose mosaic in America. Virus C does not resemble any of the known American viruses.

Edgerton, C[laude] W[ilbur], & Tims, E. C.

Testing canes for disease resistances in Louisiana. Proc. Fifth Congress Int. Soc. Sugar Cane Tech., Brisbane, Australia, **1935** : 494–497, 1936.

This paper contains some discussion of methods for testing for mosaic.

Edwards, E. T.

Witches' broom : a new virus disease of Lucerne. Journ. Austr. Inst. Agric. Sci. **1**(1) : 31–32, 1935.

A description of this disease which is commonly known as spindle shoot, mistletoe, bunchy-top and kurrajong.

Ehrke, G.

Untersuchungen über die Eisenfleckigkeit der Kartoffel. (Investigations on "Eisenfleckigkeit" of the potato.) Biochem Zeitung, **278**(3–4) : 195–225, 1935.

In this rather extensive and comprehensive study the author gives the results of his observations and experiments.

Untersuchungen über die Stoffwechselvorgänge in Eisenfleckingen Kartoffeln. (Investigations on the metabolic processes in "Eisenfleckingen" potatoes.) Angew Bot. **17**(6) : 453–483, 1935.

Emmerez de Charmoy, D[onald] d'

La lutte contre la mosaïque de la canne á sucre á l'Ile de la Réunion. (Control of sugar-cane mosaic in the island of Réunion.) Rev. Agric. Maurice, **83** : 158–163, 1935.

Control by replacing infested areas with resistant varieties.

Esau, Katherine,
Initial localization and subsequent spread of curly top symptoms in the sugar beet. Hilgardia **9**(8) : 397–431, 1935.

A very thorough study of the histology of diseased plants of various ages.

Esmarch, F.
Die Eisenfleckigheit der Kartoffeln (''Eisenfleckigkeit'' of potatoes.) Kranke Pflanze **12**(1) : 7–10. 1935.

Contains information of ''Eisenfleckigheit'' of potatoes with special reference to the investigations of Meyer-Hermann in Germany.

Esnault, O.
Les maladies degénérescence de la pomme de terre. (Potato degeneration diseases), Vie. Agric. Rur. **24**(41) : 235, 1935.

Popular.

Fawcett, G[eorge] L[orenzo]
Notas preliminares sobre una enfermedad del tabaco (Preliminary notes on a tobacco disease). Rev. Indust. y Agric. de (Tucumán) **12** : 5–17, 1921.

Fernandes, D. S.
Voorloopige mededeeling over dede oorzaak van de Zeefvatenziekte (phloemnecrose) bij de Liberiakoffie an have bestrijding (Preliminary note on the cause of the sieve-tube disease (phloem necrosis) of Liberian Coffee and its control. Meded. Landbouwproefstat. Surinam 2, 12 p.. 1928.

A physiological study. No causal organism was found.

Findlay, A. J.
Annual Report of the Department of Agriculture, (Zanzibar), 1934, 32 p., 1935.

This report includes notes on cassava mosaic.

Folsom, Donald
Potato virus diseases, in 1933. Amer. Potato Journ. **11**(9) : 235–242, 1934.

Bibliography of recent literature.

Potato virous diseases in 1934. Amer. Potato Journ. **12**(11) : 304–310, 1935.

A brief statement of recent literature and bibliography of recent publication.

---, **& Bonde, Reiner**
List of distinct potato viroses. Amer. Potato Journ. **13**(1) : 14–16, 1936.

The authors give a list of 26 virus diseases which are apparently due to 26 distinct viruses. An excellent resumé.

Franklin, H[enry] J[ames]
False blossom, the most destructive cranberry disease. Mass. State Coll. Ext. Leaflet **154**, 8 p., 1935.

Popular.

Fukushi, Teikichi
Multiplication of Virus in its Insect Vector. Proc. Imp. Acad. **11**(7) : 301–303, 1935.

The experiments were made with *Nephotettix apicalis* var. *cincticeps* which is a vector of the dwarf disease of rice. The author had previously demonstrated that virus was transmitted through the egg and three generations. A female was selected for this experiments. She transmitted the disease to 38 plants on which she had been confined for 24 hours on consecutive days and to at least 15 eggs. The progeny of these eggs transmitted the disease to 201 healthy plants. An egg weighs 0.06 milligrams. The author states that this transmission can hardly be explained without assuming a multiplication of the virus.

Galloway, L. D.
India: new plant diseases recorded in 1934. Int. Bull. Plant. Protect. **9**(8) : 176–178; (11) : 268, 1935.

Among the new plant diseases reported during 1934 is a mosaic of *Elettaria cardamomum.*

Garbowski, L[udwik]
Choroby roslin uzytkowych w okresie 1931–1933 r. Zestawienie notowan Zakklaöow Ochrony Roslin. (Diseases of useful plants in the period 1931–33. A summary of the observations of the Plant Protection Stations.) Rozn. Ochr. Rosl. Cz. A. (Choroby Roslin) 1931–33, **2** : 406–580, 1935.

This report includes a list arranged by host of many plants affected with virus diseases.

Gardner, John S.
Tuber-indexing of potatoes made easy. Ohio Veg. Grow. Assoc. **19** : 144–148, 1934.

Ghimpu, V.
Infinital mic in patologia vegetal: ultravirusurile fitopathoege. (The infinitely small in plant pathology: plant pathogenic ultraviruses). Viata Agric. **5**, 10 p., 1935.

A semi-popular review.

Gigante, R[oberto]
La maculatura grigia interna dei tuberi di patata. Boll. R. Staz. Patol. Veg. (Roma) Firenze n. s. **14** : 256–267, 1934.

II mosaic della Zucca. (Mosaic of vegetable marrow.) Boll. R. Staz. Pat. Veg. (Rome) **14**(4) : 503–530, 1934.

A description of the disease which is transmitted by *Aphis gossypii.*

Prime ricerche sul comportamento di alcune varietá di patate italiane di fronte ai virus. (First reasearch on the behavior of some italian potato varieties to virus.) Boll. R. Stat. Pat. Veg. n. s. **15**(4) : 533–547, 1935.

Preliminary report on his observations on the behavior of some potato varieties to virus diseases.

Secondo contributo alla conoscenza della necrosi del cuore dei tuberi di patata (Second contribution to the knowledge of the heart necrosis of the potato tuber) Bol. R. Stat. Pat. Veg. **15**(4) : 555–560, 1935.

The observations made by the author on experimental plots lead him to the conclussion that heart necrosis of the potato is hereditary; he also concludes that the experiments gave negative results in trying to find out if the disease was of the virus group.

Gilliat, F. C.

False blossom disease and insect pests of the cranberry. Ann. Rpt. Nova Scotia Fruit Grower Asso. **71** : 52–55, 1934.

Goidánich, G.

La leptonecrosi dei Ciliegi e degli Albicocchi. (Leptonecrosis of cherries and apricots.) Boll. R. Stat. Pat. Veg. (Rome) n. s. **14**(4) : 531–540. 1934.

This disease presents resemblance to plum leptonecrosis. Although it is not definitely proved that it is a virus disease we decided to include it due to its similarity and interest to students on the subject.

Golding, F. D.

A probable vector of Cassava mosaic in Southern Nigeria. Trop. Agric. (Trinidad) **12**(8) : 215, 1935.

Bemisia nigeriensis is the vector.

Bemisia nigeriensis Corb.. a vector of cassava mosaic in Southern Nigeria. Trop. Agric. (Trinidad) **13**(7) : 182–186, 1936.

Gould, N. K.

Hot water treatment of narcissus bulbs. Journ. Roy. Hort. Soc. **59**(1) : 78–81, 1934.

This paper refers to the yellow stripe disease but the results are not definite.

Stripe disease of daffodils. Journ. Royal Hort. Soc. **60**(11) : 492–500, 1935.

A very complete discussion of this disease. A virus disease.

Green, D. E.

A suspected virus disease of Peonies new to Great Britain, Gard. Chron. **98**(2543) : 213, 1935.

Probably the ringspot disease of France.

Green, R. G.

On the nature of filterable viruses. Science **82**: 443–445, 1935.

The author concludes:

"From the very intensive investigations that have now been carried out on certain filterable viruses, their obligatively parasitic nature, their ultramicroscopic size and their intracellular specialization appear established. No characters have yet been discovered for filterable viruses that require an unique explanation. Their origin from visible microbes and their known characteristic properties are to be expected from our knowledge of the evolution of life under the conditions of parasitism."

Güssow, H[ans] T[heodor]

Seed potato certification. Canada Parliamentary Session 1924. Select Standing Committee on Agriculture and Colonization, 1924.

A history of the inspection and certification work in Canada and statement of results.

Hansford, C[lifford] G[erald]

Sugar cane diseases in Uganda. East African Agric. Journ. **1**(1): 25–28, 1935.

A brief popular account is given of the local history, symptoms and control of sugar cane mosaic.

Hargreaves, E.

Rosette of *Arachis hypogea*. Ann. Rpt. Dept. Agric. (Sierra Leone) **1930**: 27; **1931**: 19; **1932**: 19.

Entomological work: Sierra Leone Dept. Agric. Rept. 1933: 12–14, 1935.

The author reports that dark-veined type of groundnut mosaic (a form of rosette) is transmissible by *Aphis laburni*.

Harrison, A[rthur] L.

Bean mosaic menaces important crop. Farm Research **2**(1): 1, 3, 1935.

Popular.

Mosaic of the refugee bean. New York Agric. Expt. Sta. (Geneva) Bull, **656**, 19 p., 1935.

The author gives a description of the common bean mosaic on this variety. The mosaics of red clover, alsike clover, white sweet clover, alfalfa, peas and black medick are caused by distinct viruses and some of them will attack the bean causing a yellow mosaic. The common mosaic can be transmitted by pea aphid, potato aphid, bean aphid, cucumber aphid, cabbage aphid, chenopodium aphid, *Macrosiphium ambrosis* and an unidentifical species of mealy bug. "Altho many kinds of aphids will carry the disease from plant to plant, they are not very common in the bean fields." It is also transmitted in the seed. It can be controlled by the use of mosaic free seed, roguing and the use of immune varieties.

The physiology of bean mosaic. New York Agric. Expt. Sta. (Geneva) Tech. Bull. **235**, 48 p., 1935.

This bulletin is a record of extensive studies and contains much data. High temperature, formal-dehyde fumes and X-rays did not inactivate the virus in diseased seed. Transpiration was lower in diseased than healthy plants. Detached pods from diseased plants loose weight faster than those from healthy plants. Diseased plants are likely to be stunted and parts deformed. The symptom develops between 15 and 30 degrees C.

Transmission of bean mosaic. New York State Agric. Erpt. Sta. (Geneva) Tech. Bull. **236**, 19 p., 1935.

The bean mosaic has not been found on any legumes, other than beans, in the vicinity of Geneva, New York, with the exception of sweet clover and then on only one plant. The viruses causing the mosaic diseases of red clover (*Trifolium pratense*), alsike clover (*T. hybridum*), black medick (*Medicago lupulina*) and white sweet clover (*Melilotus alba*) were transmitted by *Illinoia pisi* to *Phaseolus vulgaris* and caused a yellow bean mosaic. The disease was transmitted through the seeds but the amount of transmission was irregular.

Harrison, K. A.

Cranberry disease, Canada Dept. Agric. Bull. n. s. **180**: 27–30, 1935.

Harter, L[eonard] L[ee]

Mosaic of lima beans. Phytopathology **26**(2): 91, 1936.

Abstract of paper read before the 27th Annual meeting of the American Phytopathological Society. St. Louis, Mo., Dec. 1935. The disease is different from the mosaic of *Phaseolus vulgaris*.

Hartzell, Albert

A study on peach yellows and its insect vector. Cont. Boyce Thompson Inst., **7**: 183–207, 1935.

The author gives a very complete review of the subject and the results of his own work. He found that both nymphs and adults of *Macropsis trimaculata* transmit the disease.

Hedrick, Ulysses P.

Forty-fourth annual report for the fiscal year ended June 30, 1935. Division of Botany. Diseases of small fruits in Western New York. New York State Agric. Expt. Sta. (Geneva) Ann. Rpt. **45**: 30–31, 1936.

In this report the following subjects are briefly discussed: I. Control of virus diseases in black raspberries. II. Wild red raspberries as virus source. III. Mosaic in purple raspberries. IV. Delayed spring foliation of black raspberries caused by mosaics. V. "June yellows" in straw-berries.

Henderson, W. J.

Yellow dwarf, a virus disease of onions, and its control. Iowa Sta. Res. Bull. **188**: 209–255, 1935.

A description of this diseases which is very important. It is transmitted by *Aphis maidis, A. rumicis* and *Rhopalosiphum prunifoliae.* It was successfully transmitted by inoculation into *Narcissus tazetta, N. jonquilla* and *Allium ascalonicum.*

Henry, A. W.

Common potato diseases and their control. Alberta, College of Agric. Expt. Circ. **15**, 1934.

Herbert, D. A.

Bitter pit in apples: the crushed cell theory. Phytopathology **12**: 489–491, 1922.

The author claims that the crushed cell theory does not give a satisfactory explanation.

Hiltner, L[orenzo]

Beiträge zur ernährunge. Physiologie der kartoffel unter besonderen berüchsichtigun des Abbauproblems. Rept. Blätt. Pflanzb. u. Pflanzensch. (Freising), **34**: 206–219, 1934.

Hirayama, S., & Yuasa, A.

Cytological study of tobacco mosaic I.—Ann. Phytopath. Soc. Japan **5**(3): 197–205, 1935.

The authors give in this paper the results of their observations and studies. As conclusion, they state that all tissue examined from tobacco plants affected with mosaic contained X bodies and other inclusions.

Ho, W. T. H., & Li, L. Y.

Preliminary notes on the virus diseases of some economic plants in Kwangtung Province. Lingnan Sci. Journ. **15**(1): 67, 68, 1936.

Account of several virus diseases occurring in Kwangtung, China.

Hoggan, Ismé A[ldyth]

Transmissibility by aphids of tobacco mosaic virus from different hosts. Journ. Agric. Res. **49**(12): 1135–1142, 1934.

Myzus pseudosolani, M. persicae and *Macrosiphum solanifolii* were tested to determine ability to transmit ordinary tobacco mosaic virus from 18 hosts plants. It was transmitted regularly from *Lycopersicum esculentum* and *L. pimpinellifolium,* and occasionally from others. *M. pseudosolani* was most efficient and *M. persicae* least efficient. A brief summary of Dr. Hoggans' work in Wisconsin.

----------, & Johnson, James

A virus of crucifers and other hosts. Phytopathology **25**(6): 640–644, 1935.

A description of a disease that was transmissible to several crucifer, *Nicotiana tabacum, N. glutinosum, Lycopersicon pimpinellifolium* and *Spinacia oleracea; Myzus persicae* and *Brevicoryne brassicae* are vectors.

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Behavior of ordinary tobacco mosaic virus in the soil. Journ. Agric. Res. **52**(4) : 271–294, 1936.

Hollaender, A., & Duggar, B[enjamin] M[inge]
Irriadiation of plant viruses and of microorganism with monochromatic light, III Resistance of the virus of typical tobacco mosaic and *Escherichia coli* to radiation from lambda 3000 to lambda 2250 A. Proc. Nat. Acad. Sci. **22**: 19–24. 1936.

Hopkins, J[ohn] C[ollier] F[rederick]
Leaf spotting of tobacco caused by mosaic. Bull. **753**, 1929. (Also published in Rhodesia Agric. Journ. Issued by the authority of the Minister of Agric. of Rhodesia.)
Popular.

Field control of frenching in tobacco. Bull. **784**, 8 p., 1930. (Also published in Rhodesia Agric. Journ. Issued by the Minister of Agric. of Rhodesia.)
Popular. This is not a virus disease but has been confused with the mosaic of tobacco so often that it is included in the bibliography.

Further notes on leaf curl of tobacco. Bull. **861**, 8 p., 1932. (Also published by authority of the Minister of Agriculture of Rhodesia.)
Popular.

Mycological Notes: Seasonal Notes on Tobacco diseases. 8. The mosaic mystery. Bull. **942**, 1935. (Rhodesia Agric. Journ. **32**(2) : 108–113, 1935.)
Popular.

Annual Report of the Branch of Plant Pathology for the year ending 31st. Dec., 1934. Rhodesia Agric. Journ. **32**(6) : 397–405, 1935.

Hungerford, Cha[rle]s W[illiam]
Curly top of vegetables in Idaho. Plant Disease Reporter **18** (14) : 173–174, 1934.
The author states that in 1934 the virulence of curly top surpassed all records at the Idaho Experiment Station. Gives detail of losses due to the disease.

Hyde, R. R.
An interpretation of the filterable viruses. Amer. Journ. Hyg. **21**(2) : 472–481. 1935.
The author lists 20 virus diseases, including tobacco mosaic, which should be placed in one group because of the formation of inclusion bodies in all of them and because they will pass a filter. He believes them to be living.

Ingram, J. W., & Summers, Eaton M.
Transmission of sugar cane mosaic by the rusty plum aphid, *Hysteroneura setariae*. Journ. Agric. Res. **52**(11) : 879–887, 1936.

Until 1933 *Aphis maidis* had been the only proved vector of sugar cane mosaic, but preliminary experiments in that year showed that the rusty plum aphid (*Hysteroneura setariae*) was also capable of transmitting the disease. The authors gives the distribution of the insect and details of their experiments.

Jehle, R[obert] A[ndrew,] & Henberger, J. W.
Potato seed maintenance studies in Maryland. Maryland Agric. Expt. Sta. Bull. **361** : 345–356, 1934.

Jensen, Hj.
Ziekten van de tabak in Vorstenland. Proefstat. Vorstenland. Tabak Bull. **40** : 1–147, 1920.

Jensen James, H.
Studies on the origin of yellow viruses. Phytopathology **26**(3) : 266–267, 1936.

The author obtained 51 strains of yellow mosaic from tobacco mosaic. This strains have arisen in a manner similar to mutations.

Notes on the present sugar cane-disease situation in Puerto Rico. Agric. Notes, Puerto Rico Agric. Expt. Sta. (Mayagüez) **68** : 1–8, 1936.

The results of a survey. Most of this paper is devoted to the mosaic situation.

Johnson E[dward] M[arshall], & Valleau, W[illiam] D[orney]
Are tobacco plants affected with mild mosaic susceptible to other strains of the virus. Phytopathology **26**(2) : 96, 1936.

Abstract of paper read before the 27th meeting of the American Phytopathological Society, St. Louis, Mo., Dec., 1935. "The tests indicate that protection may be afforded individual cells or group of cells because they probably are completely occupied by the first virus, but the plant as a whole does not develop immunity."

An example of spread of veinbanding from potatoes to tobacco. Phytopathology, **25**(6) : 650–652, 1935.

A demonstration that this disease is transmitted from potatoes to tobacco.

Johnson, Folke, & Jones, L[eon] K[ilby]
Virus diseases of peas. Phytopathology **26**(2) : 96, 1935.

Abstract of paper read before 27th Annual meeting of the American Phytopathological Society, St. Louis, Mo., Dec., 1935. Common mosaic and severe mosaic of the common pea belong to the sprenkel and marmon types of Merkel. Cross inoculations demonstrated a large number of leguminous hosts. These diseases are rarely transmitted through the seeds.

Johnson, Frank H.

Cultural studies of the virus of tobacco mosaic. Phytopathology **25**(11):1035–1037, 1935.

A record of experiments for the culturing of the virus of tobacco mosaic. Many tests were made and only one gave positive results and this was not duplicated.

Johnson, James

Nomenclature of plant viruses. Int. Bot. Cong. Proc. **2**:193–195, 1935.

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Tobacco streak, a virus disease. Phytopathology **26**(3):285–292, 1936.

This disease is due to a virus. The virus is relatively sensitive. It withstands aging less than 36 hours, the thermal death point is 53°C., and it is tolerant to dilutions of less than 1 to 30.

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A tobacco hybrid useful for virus studies. Amer. Journ. Bot. **23**(1):40–46, 1936.

This is a cross between *Nicotiana tabacum* and *N. glutinosa*. It resembles *N. tabacum* in its morphological characters but appears to be completely sterile. The reaction to the virus of ordinary tobacco mosaic is that of *N. glutinosa*. The virus can be transmitted to the hybrid by aphids. The most favorable temperature is 22–24 degrees C. There is evidence of invasion to some extent through the stomata.

Jones, G. Howard

Egyptian plant diseases: a summary of research and control. Ministry of Agric. Egypt. Tech. & Scientific Ser. (Mycol. Sec. Bull. **146**. 45 p., 1935.

Although this publication is not devoted to virus diseases it contains records of ten of these diseases. These records are of value in connection with the study of geographical distribution.

Jones, L[eon] K[irby], & Baur, Karl E.

Mosaic and related diseases of raspberries in Washington. Washington Agric. Expt. Sta. Bull. **324**, 19 p., 1936.

A well illustrated popular publication.

———————, **& Burnett, Grover**

Virus diseases of greenhouse-grown tomatoes. Bull. Washington Agric. Expt. Sta. **308**, 36 p., 1935.

A semi-popular publication containing much important data.

Kaho, H.

Zur Physiologie der Kartoffel. I Über die Permeabilität des Knollengewebes der vitalen und der abbaukranken Kartoffeln. (Contribution to the physiology of the potato. I. On the permeability of the tuber tissue of sound and degenerate potatoes.) Phytopath Zeitschr. **8**(2):157–164, 1935.

The author gives an account of his experiments in Estonia on potatoes suffering from degeneration in the form of mosaic, crinkle

and leaf roll. According to the experimental results it was showed that exosmosis was generally greater in the diseased than in the healthy tuber; that the cells of the diseased tubers have lower osmotic values than those of healthy ones and that the cells of diseased tubers are more permeable to water than those of healthy ones.

Zur Physiologie der Kartoffel. II. Ein Beiträg zur Diagnose abbankranker Knollen. (On the physiology of the potato. II. A contribution to the diagnosis of degenerate tuber.) Phytopath. Zeitschr. **8**(4) : 323–335, 1935.

Continuation of previous work, cited above.

Das Verhalten der Eiweisstoffe und abbaukranker Kartoffelknollen gegen Salze. (The reaction of the albumins of healthy and degenerate potato tubers to salts.) Bull. Phytopath. Exp. Sta. Univ. Tartu **31**, 22 p., 1935.

The author discusses and tabulates the results obtained in his experiments with healthy and degenerate (leaf roll, mosaic and crinkle) potato tubers as to the reaction to several salts and heat.

Kanngiesser,

Über netzpanaschierung bei *Oxalis acetosella*. Naturwiss. Wach. **12**, 1913.

Keeble, F.

Bitter pit. Nature, **98** : 137–138, 1916.

Klapp, E. L.

Scheinabbau, modifikationen und viruskrankheit. (Zur neuregelung der kartoffel-anerkennung). Der Züchter **6** : 177–181, 1934.

Zusammenhänge von Standortseigenschaften, Viruserkrankung und Nachbauertrag der Kartoffel. (Connections between ecological properties, virus diseases and progeny yield of the potato.) Pflanzenbau **12**(5) : 163–191, 1935.

The present study is based on extensive experiments done by the writer in Germany. He observed the connection between the ecological influence and virus diseases and discusses his observations. He believes that virus diseases, inadequate ecological conditions and nutritional influences are important in the production of healthy seeds.

Klinkowski, M.

Die Bechholdsche Kupferprobe als diagnostisches Hilfsmittel zur Beurteilung des Gesundheitszustandes von Kartoffelknollen. (The Bechhold copper test as a diagnostic aid in the determination of the state of health of potato tubers.) Phytopath. Zeitschr. **8**(5) : 421–455, 1935.

Explanation of the method of Bechhold copper test for determining *degeneration* in potato tubers.

Knowlton, George F[ranklin]
The potato psyllid. Utah Agric. Expt. Sta. Leaflet **36**, 1934.

The beet leafhopper and curly-top. Utah Agric. Expt. Sta. Leaflet 8, 3 p., 1934.
Popular.

Kock, G.
Wie erklärt sich der Abbau der kartoffeln und wie läst er sich oerhinden. Der Pioner, Heft. **5**, 3 p., 1934.

Die bedentung der nicht-parasitäsen pflanzenkranheiten für die landwirtschaftliche, Praxis. Ldw. Fachpresse f. d. Czecheslovakia **12**: 107–108, 1934.

---, **& Greisenegger, K.**
Tatigkeitsbericht des Kartoffel-Fachausschussus über des Jahr 1934. (Report on the work of the Potato Expert Committee for the year 1934.) Neuheiten Pfl. Sch. **28**(1): 4–6, 1935.
In this report is added an unobserved form of mosaic-crinkle found in Petzenkirchen to the eight types of potatoes viruses previously recognized in Austria.

Köhler, E[rich]
Kartoffelabbau und viruskrankheiten. Mitt. Deut. Landw. Ges. **40**: 260–261, 1934. (Wiener Ldw. Ztg. **84**: 89, 1934.)

Mischinfektionen mit verschiedenen Stämmen des Ringmosaikvirus (X Virus-Gruppe.) der Kartoffel. (Untersuchungen über die Viruskrankheiten der Kartoffel. IV Mitteilung.) (Mixed infections with various strains of the ring mosaic virus (X virus group.) of the potato. (Investigations on the virus diseases of the potato. Note IV). Angew Bot. **17**(1): 60–74, 1935.
Continuation of previous work by the author. In the present paper he gives his observation in regard to the reaction in inoculations of viruses of different strains.

Übertragungsversuche mit dem virus der Lupinenbraune. (Transmision experiments with the Lupin browning virus.) Angew. Bot. **17**(5): 277–286, 1935.
The results of experimental studies. The disease appears to be identical with the sore shin of New Zealand. It was transmitted to *Lupinus angustifolius, L. luteus* and to Samsum tobacco.

Über Umweltnachwirkungen bei einer vegetativ vermehrten Pflanze (Kartoffel.) Angew Bot. **17**(5): 288–302, 1935.

Zur charakterisierung des ringmosaikvirus (X virus) der kartoffel. (The characteristics of the ring-mosaic virus (X virus) of potato. Int. Bot. Cong. Proc. **2**: 197–198, 1935.

Über die Variabilität des Ring mosaikvirus (X virus) der Kartoffel. (The variability of the virus of ring-mosaic (X virus) of potato.) Die Naturw. **23**(49) : 828–829, 1935.

The author gives his observations and experimental evidence. He confirms those of J. Johnson and Koch.

Die Viruskrankheiten der Kartoffel. (The virus diseases of potato.) Biol. Reichs. für Land-und Forst. Flugblätt **42**, 4 p., 1935.

Popular account and discussion.

Erfahrung beim feldmässigen Anbau von Künstlich blattrollinfizierten Kartoffeln. (Sorte Kl.-Sp. Wohltmann.) (Untersuchungen über die Viruskrankheiten der Kartoffel. V. Mitteilung.) ond. Arb. Biol. Reich. für Land-und Forst. **21** (4) : 517–529, 1935.

Account of Experimental results.

---, **& Hey, A.**

Untersuchungen au Kartoffelproken über die Beziechungen zwischen knollenpotential und Virusleefall. (Investigation on potato samples on the relations between tuber potential and virus infection) Zentbl, Bakt. 2 Abt., **91**(11–15) : 256–267, 1935.

The authors used tubers of different regions and found that when the tubers were cut in half and one part used for potential measurements and the other for the determination of virus infections, there was a correlation towards the definite end. The results are discussed.

Viruskrankheiten (Virus disease) Kranke Pflanze, **12**: (7–8) : 109–112, 1935.

A semipopular account of recent discoveries with special reference to cultivated plants.

Fortgeführte Untersuchungen über den kartoffelabbau. (Continued investigations on potato degeneration.) Landw. Jb. **80**(3) : 379–408, 1936.

This rather extensive comprehensive study is a contribution of previous investigations on the etiology of potato degeneration made by the author. He study different viruses and their behavior on different potato varieties and tobacco.

Koratshevsky, I.

(New data on the properties of the tomato mosaic virus.) Trans. Lenin Acad. Agric. Sciences, p. 82–91, 1936.

Paper read before the First Virological Conference. March 7–11, 1935. This is the leaf-fern virus No. 1, of the tobacco mosaic group. A discussion of reactions to chemicals.

The stolbur disease of plants. Trans. Lenin Acad. Agric. Sciences, **1936**: 99–111, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. (Eng. summary.) This disease attacks *Atropa belladonna, Datura stramonium, Convolvulus arvensis* and *Nicotiana tabacum.* Probably transmitted by *Thrips* sp. The disease is very severe. Methods of control are given.

Kozlowski, Antoni

Little leaf or rosette of fruit trees in California. Phytopathology **25**(2): 275–278, 1935.

A description of the disease which appears to be an exanthema.

Kunkel, L[ouis] O[tto]

Recent advances in studies on plant virus diseases. Rept. Soc. for Prot. of plants. **1932–34**: 23–22, 1934.

A review of studies on variant strains of tobacco mosaic virus and insect vectors.

Immunological studies on the three peach diseases, yellows, rosette and little peach. Phytopathology **26**(3): 201–219, 1936.

Descriptions are given of these diseases. Little peach and yellows do not give immunity against rosette, but each gives immunity against the other. Peach yellows and little peach are believed to be related but rosette is believed to be different.

Larue, P.

Études et vues nouvelles sur la chlorose dela vigne. Progr. Agr. et Vitic. **105**(16): 378–380, 1936.

Leach, J[ulian] G[ilbert]

Insects in relation to plant diseases. Bot. Rev. **1**(11): 448–466, 1935.

Two pages of this paper are devoted to a brief discussion of insects and virus diseases.

Lees, A[lan] H[enry]

Progress report on big bud and reversion of black currant. Univ. Bristol Ann. Rpt. Agric. and Hort. Res. Station **1923**: 69–72, 1923.

Lefevre, P.

Quelques considerations sur la "mosaïque du manioc" (Some considerations on cassava mosaic.) Bull. Agric. Congo Belge **26**(4): 442–447, 1935.

According to the author cassava mosaic was first described in 1895 by Dammer from East Africa. The author describes the behavior of the disease and its reaction to wood ashes and stable manure. He also states that bitter types of cassava are more susceptible than the sweet ones. The insect vector for cassava mosaic is given here as *Bemisia gossypiperda* var. *mosaicivecta.*

Lehman, S[amuel] G[eorge]
Soil contamination as a factor in crop infestation of tobacco mosaic. Journ. Elisha Mitchell Sci. Soc. **50**(1–2) : 44–45, 1934.

This is an abstract of a paper presented before the North Carolina Academy of Sciences, May 4–5, 1934.

Lemmon, Paul
Comparative studies on Metabolism of healthy and mosaic-infected tobacco leaves, Respiration studies. Amer. Journ. of Bot. **22**(10) : 912, 1935.

Abstract of a paper read before the Botanical Society of America.

List, George M.
Psyllid yellows of potatoes, with a preliminary report on the control of the insect *Paratrizoa cockerelli* Sulc. Journ. Colorado–Wyoming Acad. Sci. **1** : 74–75, 1934.

Loughnane, J[ames] B., & Clinch, Phyllis
Composition of interveinal mosaic of potatoes. Nature **135** (3420) : 833. 1935.

This disease is a complex of two viruses.

Lounsbury, C. P.
Tobacco wilt in the Kat River Valley. Agric. Journ. of Cape of Good Hope, **28** : 784–803, 1906.

Longley, L. E.
Flower in "broken" or mosaic tulips. Proc. Amer. Soc. Hort. Sci. **33** : 664–667, 1936.

Ludewig Karl,
Ueber die kroepoek-krankheit des Tabaks in Kamerum. Ber. Deutsch. Bit. Gesell **31** : 536–543, 1913.

Luthra, J. C., & Satter, A.
Some observations on the mosaic disease of sugar cane in the Punjab. Indian Journ. Agric. Sci. **5**(6) : 649–662, 1935.

Description of symptoms of the disease in the Punjab District of India. Discussion on the relative resistance of different varieties.

Magee, C[harles] J. P[atrick]
Spotted disease of lettuce and potatoes. Agric. Gaz. New South Wales **47**(2) : 99–100, 118, 1936.

The virus is transmitted by *Thrips tabaci* and *Frankliniella insularis*.

Bunchy top disease of bananas. Rehabilitation of the banana industry in New South Wales. Journ. Austral. Inst. Agric. Sci. **2**(1) : 13–16, 1936.

Mahoney, C. H.
Seed transmission of mosaic in inbred lines of muskmelons (*Cucumis melo* L.) Proc. Amer. Soc. Hort. Sci. 1934, **32** : 477–480, 1935.

Forty-eight inbred progenies were studied and six were found to show seed transmission. Three selections did not transmit the disease through the seeds.

Breeding snap beans for mosaic resistance. A progress report. Proc. Amer. Hort. Sci. 1934, **32**: 483–484, 1935.

A study on selection of varieties of *Phaseolus vulgaris*.

Malcolm, D. H.

Virus diseases of tobacco. Tasmanian Journ. Agric. **7**(2): 57–60, 1936.

Manil P.

L' etude sérologique des maladies á virus des végétaux. (The serological study of plant virus diseases.) Comp. Rend. Deusiéme Congr. Sci. Bruxelles p. 998–1004, 1935.

Address made by the author at Brussels in June 1935. He reviews and discusses the most recent advances in the serological study of filterable plant viruses.

Manns, T[homas] F[ranklin]

Peach yellows and little peach studies. Phytopathology **26**(2): 100, 1936.

Abstract of paper read before the 27th meeting of the American Phytopathological Society, St. Louis, Mo., Dec., 1935. The author gives the results of extensive studies. *Macropsis trimaculata* is widely distributed and the only vector found.

Marchionatto, Juan B., & Millán, R.

Certificación de la "semilla" de papa. (Potato seed certification) Bol. Minist. Agric. Argentina **36**(4): 301–312, 1934.

As an introduction, the authors give an account of quarantine regulations for the exclusion of potato diseases, with special reference to those of virus origin in Brazil, Uruguay and Argentine where virus diseases of potato are assuming great importance. Then quarantine provisions for Argentine are inserted.

Martin, F.

La dégénérescence de la Canne á sucre. (Degeneration of sugar cane.) Bull. Asso. Chim. Sucrérie & Distill. France & Colon, **52**: 643–661, 1935.

The author believes that degeneration of cane is due to the use of terminal slips for planting.

Martin, J[oseph] P[olkinghorne]

Sugar cane disease control in Hawaii through the modification of Agricultural practices. Proc. Fifth Congress of the Int. Soc. Sugar Cane Tech., Brisbane, Australia, **1935**: 205–210, 1936.

This paper includes discussions of chlorotic streak and mosaic. The author recommends selection and roguing.

---------, & **Carpenter C[larence] W[illard]**
Testing cane varieties for diseases resistance in Hawaii. Proc. Fifth Congress Int. Soc. Sugar Cane Tech., **1935**: 519–521, 1936.

This paper contains a brief discussion of mosaic.

Chlorotic streak disease of sugar cane. Proc. Fifth Congress Int. Soc. Sugar-cane Tech., Brisbane, Australia, **1935**: 823–828, 1936.

A review of our knowledge of this disease and the recent studies by the author.

Martyn, E[ldred] B[ridgeman]
Report of the Botanical Division for the year 1932. Divisional Reports of Agric. British Guiana for the year **1932**: 117–121, 1934.

The author reports two types of petunia mosaic A & B. The latter read: "The very slow spread of mosaic on D. 625 sugar canes in British Guiana, where no control is practised and the infected fields have been continued to the fourth and fifth ratoons, in spite of which good yields have been maintained, indicates that this variety is definitely resistant."

"Liberian coffee from Demerara was affected with phloem necrosis (*Phytomonas leptovaronum*); until recently, only isolated bushes were attacked in British Guiana, but in 1932 a more extensive outbreak occurred in the North West Districts."

Matsumoto, Takashi
(Differentiation of the two petunia diseases by means of serological, cytological and inoculation experiments.) Botany and Zoology. **3**(5): 893–898, 1935.

The author reports two types of petunia mosaic A & B. The latter is the same as ordinary tobacco mosaic. A cannot be transmitted by inoculation with sap but can be transmitted by inserting small pieces of diseased leaves in the growing stems. They differ in serological reactions. A does not have inclusion bodies. The symptoms are very similar except that A caused a more pronounced symptom of "clearing of veins" in the early stages.

---------, & **Hirane, Seüchi**
Immulogical studies of mosaic diseases. V. Microserological tests as means of detecting the virus in a small area of mosaic tobacco plants. Journ. Soc. Trop. Agric. **7**: 346–350, 1935.

The results of very delicate micro-serological tests which are somewhat different from previous results.

(Serological Analysis of the infective agents causing tobacco mosaic with malformed flowers.) Trans. Nat. Hist. Soc. of Formosa **26**: 258–261, 1936.

In Japanese. A resumé in English reads: "In the course of the study of virus diseases the author found some peculiar mosaic to-

bacco plants bearing strikingly malformed flowers. It has been confirmed by the serological methods, particularly by "precipitin absorption", that the disease under consideration is the composite one due to the virus complex, i. e. common tobacco mosaic and potato mosaic. The disease is therefore identical or very closely related to the "tomato streak" which is caused by the combination of tomato mosaic and potato mosaic viruses, since the tobacco mosaic is proved to be identical with the tomato virus. The above relation has been confirmed by inoculation."

Matz, Julius

Relative infectivity of mosaic virus in the different parts of infected sugar-cane, Proc. Fifth Congress Int. Soc. Sugar cane Tech., Brisbane, Australia, 799–803, 1936.

The work recorded in this paper shows that the virus is not distributed equally throughout the plant and that all parts of the plant are not equally susceptible.

McClean, A[lan] P[ercy] D[ouglas,] & Halse, R. H.

Streak disease of sugar cane; its economic importance in S. Africa. Proc. South African Sugar Tech. Asso. 1936.

The authors give a brief history of this disease and the results of very careful studies to determine the importance of this disease.

Streak disease of sugar cane. Proc. Fifth Congress Int. Soc. Sugar Cane Tech. Brisbane, Australia, p. 812–822, 1936.

This paper contains a brief history of the disease, data on distribution, description and a very thorough discussion of the author's experimental studies.

The bunchy-top disease of the tomato. Host range of the bunchy-top virus. Farming in South Africa. **10**(112) : 302–303, 1935.

The disease has been transmitted to *Solanum aculeatissimum, S. aculeastrum, S. duplosinuatum, S. incanum, S. panduraeforme, S. nigrum, S. sodomaeum, Nicandra physaloides, Physalis angulata, P. viscosa, Solanum tuberosum, S. melongena* and *P. peruviana.* The symptoms were masked in *P. angulata* and *S. nigrum.*

Further investigations on the bunchy-top disease of tomatoes. Dept. of Agric. Union of S. Africa. Sci. Bull. **139**, 36 p., 1935.

The author gives a list of plants to which the disease was transmitted and a special study of the reactions of some of them. The virulence of the virus increases as a result of passage through tobacco but not through other Solanaceae. The author also gives the results of temperature studies and mixing of the virus with alcohol.

McDonald, I. M.

Tests of curly-top resistant beets. Facts About Sugar **25**(6): 212–214, 1935.

A study to determine resistant strains.

McGeorge, W. T.

Pahala blight and a comparison with other forms of chlorosis. Hawaiian Planters' Record **30**(2): 293–328, 1926.

This does not refer to virus diseases but is of interest in this connection.

McKinney, H[arold] H[all]

The antigenic properties of plant viruses. Science **82**(2125): 276–277, 1935.

The author agrees with Chester's conclussions in general but takes some exceptions to the interpretations.

The inhibiting influence of a virus on one of its mutants. Science **82**(2133): 463–464, 1935.

The author believes the yellow mosaic in a mutant of the common mosaic of that host. He discusses the immunization of plants by the use of viruses and concludes that a relatively large amount of the common mosaic virus prevents the establishment of the yellow mosaic virus.

Reaction of wheat varieties, selections and hybrids to mosaic and mosaic-rosette. U. S. Dept. Agric. Misc. mimeographed publication, 1935.

Evidence of virus mutation in the common mosaic of tobacco. Journ. Agric. Res. **51**(11): 951–981, 1935.

After discussing fully his experiments the author concludes that in view of the mutable nature of certain plant viruses, it is possible that viruses may be eventually isolated which will have both a prophylactic and curative effect and yet will not survive indefinitely in an active form in the plant.

McRae, W[illiam]

Report of the Imperial Mycologist. Scient. Rpts. Imper. Inst. Agric. Pusa (India) **1931–32**: 122–140, 1933.

This report includes a test of 25 varieties of sugar cane to determine resistance to mosaic.

Scheme for research in mosaic. Scient. Rpt. of the Imper. Inst. of Agric. Res. Pusa (India) **1932–33**; 1934.

McWhorter, Frank P[aden]

Some diseases of ornamentals in Oregon. Plant Dis. Reporter **19**(2): 18, 1935.

Some 20 per cent of the Calla lily (*Zantedeschia ethiopica*) plants in a Portland greenhouse are reported to be suffering from a mosaic presenting every characteristic of a typical virus disease.

---, & **Milbrath, J. A.**

The interpretation of Oregon tip blight on a basis of causal viruses. Phytopathology (Abstract) **25**(9): 897–898, 1935.

The properties and interpretation of tulip-breaking viruses. Phytopathology (Abstract) **25**(9): 898, 1935.

Metzger, C. H.

Growing potatoes in Colorado. Colorado Agric. Expt. Sta. Bull. **412**, 1934.

Michailova, P. V.

(The pathological changes of generative tissues of the tomato plant affected of woodiness of the fruit.) Trans. Lenin Acad. Agric. Science, **1936**: 92–98, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. A study of the histology of plants with this disease.

Pathologico-anatomical changes in the tomato incident to development of woodiness of the fruit. Phytopathology **25**(6): 539–558, 1935.

These studies were made in the Laboratory of Virus Diseases, Ukrainian Inst. of Plant Protection, U.S.S.R., Kharkow, Sozselchos House. That is probable due to a virus. Was reported from Crimea and Australia in 1933. The author gives a very thorough discussion of the subject.

Miles, A. C.

Report of the Department of Agriculture, Gold Coast, for the year 1934–35, 17 p., 1935.

This report contains very interesting notes on the breeding work and the result obtained with resistant varieties of cassava to mosaic disease. It contains also notes on tobacco and sugar cane virus diseases.

Moore, E[nid] S[tella], & Wager, V. A.

Kromnek: A serious tomato disease. Farming in South Africa. Reprint **51**, 1934.

A popular discussion.

Mottet, S[éraphin] J[oseph]

La dégénérescence de la pomme de terre. (Degeneration of potatoes.) Journ. Soc. National, Hort. France **23**: 263–268, 1922.

The author says that virus diseases are among several causes.

Mouraskinsky, K. E.
(New diseases of cultivated plants in western Siberia.) Trans. Omst. Inst. Agric. **1**(6): 3–30, 1935.

This report includes much data on some virus diseases specially on wheat and rye new to the area.

Muncie, J[esse] H[oward]
History and development of potato disease. Ohio Veg. Grow. Asso. **19**: 128–139, 1934.

Yellow dwarf disease of potatoes. Michigan Agric. Expt. Sta. Spec. Bull. **260**, 18 p., 1935.

This virus disease is transmitted by *Macrosiphum solanifolii*.

Mungomery, R. W., & Bell, Arthur F[rank]
The spread of Fiji disease by insects. Cane Growers' Quarterly Bull. (Bureau of Sugar Expt. Station, Queensland), **1**(1): 20–23, 1933.

Popular.

Murphy, Paul A[loysius]
Identity and spread of some potato viruses of the mosaic group. Int. Bot. Cong. Proc. **2**: 198–201, 1935.

Noble, R[obert] J[ackson]
Woodiness of passion fruit, Trop. Agric. (Ceylon) **72**(1): 48–49, 1929.

A review of a paper in Agric. Gaz. N. S. Wales, 39(9): 691–693, 1928.

Filterable viruses. Report of the Australian and New Zealand Association for the Advancement of Science, Vol. XXI, 1933.

"It is considered that the peculiar symptoms of virus diseases in plants may be due to the close association between the virus particles and the constituents of the cells, and that the diseases are caused by living organisms, although this has not been demonstrated conclusively."

"Virus disease symptoms may be masked by changes in air temperature and light intensity. This apparent recovery of the affected plants may explain why so many specifics have been offered for the elimination of these diseases. Properly conducted tests have demonstrated that these preparations are not of any value."

"Although a plant virus may affect many unrelated plants with production of symptoms, it is of possible greater significance that a virus may also be harboured by a plant without any evidence of symptoms."

"These virus carriers should be examined much more closely as they may help to provide further information on the nature of these diseases, thus leading possibly to the development of new control measures; the carriers also may be potential sources for the develop-

ment of even more serious virus infections when circumstance favor the transfer of the hidden virus alone or in combination with other plant viruses to other plants.''

Some aspects of problems associated with the preservation of health in plant. Presidential Address, Reprint from the Journal and Proc. of the Royal Society of New South Wales. **69**: 1–34, 1935.

A part of this paper is devoted to a general discussion of virus diseases.

Australia: Notes on plant diseases recorded in New South Wales for the year ending 30th June, 1934. Int. Bull. Plant. Prot. **9**(1): 2–5, 1935.

This report includes notes of a new record of streak disease in tomato and a rosette disease of sweet potatoes.

Australia: Notes on plant diseases recorded in New South Wales for the year ending 30th. June, 1935. Int. Bull. Plant Prot. **9**(12): 270–273, 1935.

In this report a brief note is included recording the occurrence of tomato spotted wilt virus in dahlias and *Schizanthus*.

Nolla, J[osé] A[ntonio] B[ernabé]

Studies on disease resistance. I–A tobacco resistant to ordinary tobacco mosaic. Journ. Agric. Univ. Puerto Rico **19**(1): 29–49, 1935.

The *Ambalema* tobacco is resistant to tobacco mosaic but developed symptoms which are described. It is also resistant to yellow tobacco mosaic and celery mosaic. It is very susceptible to cucumber mosaic, yellow cucumber mosaic, potato ring spot, Wingard's tobacco ring spot and spot necrosis. It is less susceptible to the mottle and vein-banding viruses.

North, D[avid] S[utherland], & Barber, E. G.

Fiji disease and varieties. Proc. Fifth Congress, Int. Soc. Sugar Cane Tech., Brisbane, Australia, **1935**: 498–505, 1936.

Ogilvie, L[awrence]

Notes on lilies. Agric. Bull. Bermuda Dept. Agric. **6**(4): 4–5, 1927.

Report of inspection of *Lilium longiflorum* var. *eximium* for mosaic, inoculations and the results.

An important virus disease of *Lilium longiflorum* and its varieties. Nature **119**(2997): 528, 1927.

A report of yellow flat on *Lilium longiflorum, L. giganteum (L. longiflorum* var. *takesima), L. formosum (L. longiflorum* var. *insulare), L. banisii (L. longiflorum* var. *eximium.)* Transmitted by *Aphis lilii*.

The Bermuda Easter Lily. Royal Bot. Soc. London Quart. Summary **39**: 4–6, 1929.

A popular discussion of the history of the host and the mosaic disease.

Spotted wilt of tomatoes and its control. Annual Report of the Agric. & Hort. Res. Station, **1934**: 170–174, 1935.

This paper gives a valuable list of hosts of this disease and recommendations for its control. The thrips should be controlled by nicotine fumigation and spraying, diseased plants should be removed and workers should wash their hands with soap and water after touching diseased plants.

Oortwijn, Botjes J. G.

De stand van het immuniteitsvraagstuk bij viruziekten van de planten. (The status of the immunity problem in virus diseases of plants.) Tijdschr. Pl. Ziekt. **42**(1): 1–9, 1936.

Based on the current studies in Europe and United States the author discusses the problem of immunity in relation to virus diseases of plants.

Orton, C[layton] R[oberts], & Henry, W. D.

An internal necrosis of bean seeds. Phytopathology **25**(7): 726–728, 1935.

A brief description of a disease that may be due to a virus.

Otero, José I[dilio], & Cook, Melville T[hurston]

Partial bibliography of virus diseases of plants. Journ. Agric. Univ. Puerto Rico **18**(1–2): 1–410, 1934.

A bibliography of more than 3,000 papers.

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First supplement to partial bibliography of virus diseases of plants. Journ. Agric. Univ. Puerto Rico **19**(2): 129–313, 1935.

This publication contains a large number of titles and indexes to the original and supplement mentioned above.

Pal, B. P., & Nath, P.

Phyllody: a possible virus disease of *Sesamum*. Indian Journ. Agric. Sci. **5**(4): 517–522, 1935.

The authors report this new disease on *Sesamum indicum* at Pusa. The evidence so far is that it is caused by a virus and is characterized by the bearing of the affected plants of flowers in which all the floral members except the stamens are transformed into leaf-like organs or show a marked tendency to become leafy. The symptoms of the disease are well described.

Palm, B[jorn] T[orvald]

Pricksjukans problem. Ennyorientering. (The bitter pit problem. A reorientation.) Teidem pages 11, 1924.

The author suggests that this disease is due to a virus. This is the earliest suggestion that this disease is due to a virus that has come to our attention.

Applets princksjuka. En cytologisk undersökning. (Bitter pit in apples. A cytological study.) Sv. pomol. Foren Arsskrift, 15 p., 1915.

Pape, H[einrich]

Über eine mosaikkrankheit der Kohlrübe (On a mosaic disease of the Swede) Dtsch. Landbw. Pr. **62**(26) : 319–320, 1935.

A description and results of experiments. The virus is transmitted by *Lygus pratensis.*

Park, M[alcolm]

Report on the work of the Mycological Division. Adm. Rept. Dir. Agric. (Ceylon) **1934**: D124–D131, 1935.

In this report are included notes on virus diseases on *Capsicum annuum, Solanum nigrum* and *S. laeve;* also bunchy top of plantains.

Pascalet, M.

Note sur mosaïque du manioc (lepre du manioc) au Cameroun et au Nord du Gabon, Niet gepubliceerd rapport, 1931.

Pemberton, C. E.

The insect vectors of virus diseases of sugar cane. Proc. Fifth Congress Int. Soc. Sugar Cane Tech. Brisbane, Australia, p. 118–120, 1936.

A very brief review with list of species of *Perkinsiella.*

Peters, L., & Schwartz, M.

Krankheiten and beschädingen des tabaks. Mitt. Biol. Land- und, Forswirtsch. Berlin 128 pp., 1912.

Petherbridge, F. R., & Stirrup, H. H.

Pests and diseases of the sugar-beet. Bull. Minist. Agric. London, 58 p., 1935.

The virus diseases discussed includes mosaic, yellows and crinkle, which is done to some extent.

Petri, L[ionelo]

Deuterophoma tracheiphila e malattie da virus degli agrumi. (*Deuterophoma tracheiphila* and virus deseases of Citrus.) R. C. Accad. Lincei **21**(5) : 301–306, 1935.

The author discusses a number of points of Attanasoff's interpretation of "mal seco" of lemon and other Citrus as a virus disease. He gives the results in the control of the disease and the relation of *Deuterophoma tracheiphila* to it.

Pfankuch, E.

Zur biochemie des kartoffelabbanes. I. Nachrichtenbl. Deut. Pflanzenschutzld, **14**: 38, 1934.

Zur Biochemie des Kartoffelabbaunes. II. Mitteilung: Ascorbinsäure, Glutathion und Zucker. (A contribution to the biochemistry of potato degeneration. Note III Ascorbic acid, glutathion and sugar.) Biochem. Zeitung **279**(1–2) : 115–130, 1935.

Studies made with leaf roll virus and the named reagents. Account of results obtained.

Pierce, W. A., & Walter, J. C.

New mosaic resistance refugee bean is developed. Canning Age **15**(2) : 83–84, 1934.

Popular.

Pierce, W[alter] H[oward]

The inheritance of resistance to common bean mosaic in field and garden beans. Phytopathology **25**(9) : 875–883, 1935.

Account and discussion of the experimental results obtained in varietal resistance to common bean mosaic.

Pirone, P. P.

Spotted wilt of tomatoes and peppers in New York. Plant Disease Reporter **19**(15) : 244. 1935.

A record of the disease on *Lycopersicon esculentum* and *Capsicum annuum.*

Pivovarova, R., & Gorelik, I.

Tests of Rouzinov's and other methods for estimating the soundness of potato tubers. Trans. Lenin Acad. Agric. Sciences. **1936** : 51–58, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. The authors reject Rouzinov's method and reports progress with another.

Plank, J. E. van der

Internal brown fleck of potatoes. Farming in South Africa. **8** : 383–384, 1933.

Porter, D. R.

Insect transmission, host range, and field spread of potato calico. Hilgardia **9**(8) : 383–394, 1935.

A discussion of experimental work. *Macrosiphum solanifolii (M. gei)* is a vector. The disease was transmitted by mechanical inoculation to *Lycopersicon esculentum, Capsicum annuum, Datura stramonium* and *Petunia* sp.

Price, W[illiam] C[onway]

Acquired immunity from cucumber mosaic in Zinnia. Phytopathology **25**(8) : 776–789, 1935.

Cucumber mosaic yellow strain No. 6 and tobacco mosaic 302 A attacked *Zinnia elegans.* Plants that became mottled with four strains of cucumber mosaic virus were immune to No. 6 but not to 302 A. Plants that became mottled as a result of tobacco mosaic or aucuba

mosaic viruses were immune to 302 A, but susceptible to No. 6. Plant infected with tobacco ring spot, yellow ring spot or severe etch viruses were not immune to either No. 6 or No. 302 A.

Classification of southern celery-mosaic virus. Phytopathology **25**(10) : 947–954, 1935.

The author summarizes his work as follows: "Infection of zinnia plant with southern-celery mosaic virus induces in them a specific immunity from a yellow strain of cucumber-mosaic virus (strain 6). Celery-mosaic virus and cucumber-mosaic virus, therefore, are closely related immunologically and it is believed, should be classified as strains of the same virus. Corroborative evidence is found in the fact that the symptoms produced by celery-mosaic virus in *Zea Mays*, L., *Commelina communis* L., and *Vigna sinensis* L. Endl. are similar to to those produced by ordinary cucumber-mosaic virus in the same hosts."

Virus concentration in relation to acquired immunity from tobacco ring spot. Science (Abstract) **32**(2139) : 621–622, 1935.

This is an abstract of a paper presented at the autumn meeting of the National Academy of Science.

Virus concentration in relation to acquired immunity from tobacco ring spot. Phytopathology **26**(6) : 503–529, 1936.

This is a continuation of previous work by the author. He found (1) that ring spot virus multiplied in tobacco plants that had recovered from the disease, (2) leaves of diseased plants contained 5 to 10 times as much virus as leaves from plants that had recovered, (3) basal parts of leaves from plant that had recovered contained less virus than the apical parts, (4) fully recovered leaves contained more virus than healthy appearing parts of partly recovered leaves, (5) the virus content of recovered leaves was not increased by reinoculation, (6) the roots of recovered plants contained less virus than the roots of plants that had not recovered, (7) no essential difference in virus in stems of plants that had recovered and those that had not recovered, (8) recovered plants grown through 10 generations from cuttings contained less virus than diseased plants.

Specificity of acquired immunity from tobacco-ring-spot diseases. Phytopathology **26**(7) : 665–675, 1936.

Pullen, A. R., & Wassermann, J.

Some observations on potato "degeneration" in South Africa. South African Journ. Sci. **32** : 271–279, 1935.

Account of a survey of potato virus diseases of occurrence in South Africa viz. Apical leaf roll, giant hill, spindling sprout, spindle tuber, and yellows (mosaic).

Putman, D. F.

The analysis of a complex mosaic of President potato. Sci. Agric. (Abstract) **15**(6) : 437, 1935.

Quanjer, H[endrik] M[arius], & Gaumann, E.

Versuche über den Einfluss des Klimas auf den Gesundheitszustand der Kartoffel-pflanze. (Experiments on the influence of climate on the state of health of the potato plants.) Phytopath. Zeittschr. **8**(4) : 307–321, 1935.

Studies in potato ecology. The authors give the results of their observations in Switzerland to determine the influence of altitude on the incidence, virulence and course of the anecrotic type of mosaic disease.

----------, **& Thung, H. M.**

Classification of potato viruses and tobacco-viroses in Java. Int. Bot. Cong. Proc. **2** : 199, 202–203, 1935.

Historique des recherches sur la jaunisse et la mosäique de la betterave (The development of the research into the yellow-spot and mosaic disease of the beet) Publ. Inst. Belge Amel. Betterave **4**(2) : 23–33, 1936.

De vergelings ziekte en de mosaikziekte van suiker-en vowderbeiten. I. Geschiedenis van het onderzoek over de vergelingsziekte en de mosaiekziekte van de biet. (Virus yellows and mosaic disease of sugar-and fodder beet. I. History of the investigations on Virus yellows and mosaic.) Inst. Phytopath. Lab. Mycol. en Aardappelonderzoek, Wageningen, Holland, Meded, **77** : 45–54, 1936.

Review of the work done by other workers giving the symptoms of the diseases.

----------, **& Roland, G.**

De vergelingsziekte au de mosaikkziekte van de suiker—en volderbiet. I–II. I. Geschiedenis van het onderzoek over de vergelingsziekte en de mozaiekziekte van de biet. (History of the investigation on virus yellows and mosaic. (Netherlands). II. Onderzoek van de vergelingsziekte van de biet, met enkele opmerkungen over de mozaieksiekte. (Investigation on virus yellows and some remarks on mosaic, Belgium.) Tijdschr. Plantenz. **42**(3) : 45–70, 1936.

Rafay, S. A.

Physical properties of sugar-cane mosaic virus. Indian Journ. Agric. Sci. **5**(6) : 663–670, 1935.

Account of inoculations made of sugar cane virus and its responds to several reagents.

Ragallar, Franz

Der Abbau. Eine ent-wicklungsgeschuchtliche studie zum senilitäts-und Fortpflanzunsproblem. 85 p. G. Fischer, Jena? Adv. on front cover Bot. Cent. **26**(168) H. ½, 1934.

Rands, R[obert] D[elafield], Abbott, E[rnest] V[ictor], & Summers E[aton] M.

Disease resistance tests on sugar cane-seedlings and initial selection procedure in the Southern United States. Proc. Fifth Congress Int. Soc. Sugar Cane Tech., Brisbane, Australia. p. 484–492, 1936.

This paper contains a discussion of method for testing for mosaic reactions.

Rangaswami, S., & Sreenivasaya, M[ontnahalli]

Insect transmission of spike disease of Sandal (*Santalum album* Linn.) Curr. Sci., **4**(1) : 17–19, 1935.

The results of studies with a large number of species of insects. Two species of Jassidae, three of Fulgoridae and three of Pentatomidae are suspected as being vectors.

----------, & Varadaraja Iyengar, A. V.

Experiments conducted by the Madras Forest Department in Collaboration with the Indian Institute of Science, II. Indian Inst. Sci. Bangalore, Invest. Spike disease of Sandal **7** : 8–11, 1933.

A report on experiments for the killing of spike-diseased sandal trees.

Rao, M. G. Venkata, & Gopala, Iyengar

Studies in spike disease of sandal. Two types of spike diseases and the movement of the virus in sandal plants. Mysore Sandal Spike Invest. Comm. Bull. **4**, 14 p., 1934.

Two strains of the disease are described. The active agent does not pass through the ringed stems but through parts of the phloem and cortical parenchyma.

Ravaz, L.

Le court-noue. (Short node of grapes). Prog. Agric. et Vitic. **81** : 424–426, 447–452, 1924.

Believed to be due to soil conditions and to parasitism of smaller roots by a fungus.

Rawlins, T[homas] E[lsworth], & Tompkins, C[hristian] M[ilton]

Studies on the effect of carborundum as an abrasive in plants virus inoculation. Phytopathology **26**(6) : 578–587, 1936.

Finely powdered carborundum was found to be great aid in the inoculation of plants with viruses.

Reddick, D[onald]

Seed transmission of potato virus diseases. Amer. Potato Journ. **13**(5) : 118–124, 1936.

Reinmuth, E[rnest] F[riedrich]

Ein weterer beitrag zur frage der eisenfleckigkeit der kartoffel. Zeitschr. Pflanzenk. **44** : 117–119, 1934.

Remacle, G.

Maladie nouvelle de la pomme de terre. (New potato disease). La Nature **63**(2) : 29, 1935.

Reyneke, J. & Ekteen, L. L.

Bitter pit of apples. Farming in South Africa, 4 p., 1934.

Popular.

Rhode, G.

Kali im Stoffwechsel der Pflanzen unter besonder Berücksichtigung del Kalimangelerscheinumgen au Kartoffeln. (Potash in plant metabolism with special reference to potash deficiency manifestations in Potatoes.) Ernähr. Pflan. **31**(13–14) : 237–243, 1935.

This is not a virus disease paper, but we decided to include it for the interesting notes that it contains on virus diseases. Here it is stated that potash deficiency is liable to promote infection by mosaic, and other diseases such as streak and leaf roll.

Rjachovsky, N.

Tomato leaf-roll in the Woronezh and Kursk provinces. Trans. Lenin Acad. Agric. Sciences. p. 79–81, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. A description of the disease, discussion of yield and methods of control.

Riddle, Oscar

The confussion of tongues. Science **83**(2142) : 41–45; (2143) : 69–74, 1936.

This is not a paper on virus diseases but contains a brief discussion concerning the origin of life and viruses that is very interesting.

Rischkow, V[itolij] L.

(Mutations and diseases of the chloroplasts.) Ukranian State Medical Publishing Board, p. 354, 1934.

Much of this paper is devoted to a discussion of virus disease.

----------, **Michailova, P. V., & Pivovarova, R.**

Virus diseases of Solanaceae in experiments of 1934. Trans. Lenin Acad. Agric. Sciences. p. 112–118, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. Discussion of a disease caused by virus 1 of leaf-fern of tomato which corresponds to tobacco mosaic. Also of crinkle of tomato.

----------, **& Karatchevsky, I. K.**

(Experiments on the artificial transmission of virus diseases of the Tomato. Virus Diseases of plants in the Crimea and the Ukraine.) State Publ. Office of the Crimea Simperopol, p. 7–30, 1934.

A brief list of virus diseases of tomato and a description of the woody fruit or stolbur disease. May be carried by *Agallia sinuata.* The mosaic and fern leaf in Crimea are caused by the same virus (Johnson's tobacco virus No. 1.)

(Virus diseases of plants. General and specific virology.) State Publ. Off. Lit. Collect. Co-op. Farming "Selkhozgiz" Leningrad 247 p., 1935.

In this monograph the author reviews and discusses the progress attained in the study of virus diseases, the work done by other workers in different countries and the several theories advanced. The second part is a detailed account of the virus diseases known arranged by hosts. A 20 pages of bibliography is appended.

Filtrirbarer virus und formbildung (einfluss der filtrierbaren virus auf die formbildung, in bezug der frage nach dem wesen des ultravirus.) Int. Bot. Cong. Proc. **2**: 195–197, 1935.

Virus diseases of plants and the nature of filterable virus: Trans. Linin Acad. Agric. Sciences. p. 11–12, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. A brief review. The recent work indicates that the virus is dead substance of an enzymoidal character. The most interesting and encouraging phase of the subject is the field of physico-chemical investigations.

Rivera, V.

I virus filterabili nella patologia vegetale. (The filterable virus in plant pathology.) V Cong. Naz. de Microb. Agrar. Perugia, Lab. Patol. Veg. Mem. **45**: 47, 1934.

Experimental inoculation with sap from tobacco plants with streak. The virus has no effect on old organs but stimulates young ones. Also stimulates the neoplastic tissues in plants infected with *B. tumefaciens*. The sap from a diseased plant fermented less easily than that from a healthy plant. In some cases the virus caused fungi to grow slowly.

Roberts, R. H.

"Crinkle" on northwestern greening. Phytopathology **9**: 261–263, 1919.

A description of this injury which has not been proved to be due to a virus.

Roland, G.

De vergelingsziekte en de mozaiekziekte van suiker-en voederbieten. II Onderzoek van de vergelingsziekte van de bit, met enkele opmerkingen over de mozaiekziekte. (Virus yellows and mosaic disease of sugar and fodder beet. II Investigation on Virus yellows and some remarks on mosaic.) Inst. Phytopath. Lab. Mycol en Aardappelonderzoek Wageningen, Holland. Meded **77**: 54–70, 1936.

Reviews and compares the work of others giving results obtained. (This paper is also included under Quanjer.)

Roshalin, L.

The nature of the concentric necrosis of the potato tuber. Trans. Lenin Acad. Agric. Sciences. p. 69–73, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. (English summary.) This disease appears to be due to soil conditions.

Russell, T. A.

Report of the Plant Pathologist, 1934. Bermuda Bd. Agric. Rpt. **1934**: 24–32, 1935.

In this report is included the description of a disease on lily known as "twist," characterized by excessive mottling and torsion of the leaves, tentatively is attributed to a virus.

Russo, G.

Il raggrinzimento o arricciamento del cotone nella Somalia Italiana. (Cotton leaf curl or crinkle in Italian Somaliland.) Agric. Colon **29**(2) : 78–95; (3) : 133–143; (4) : 188–199, 1935.

In this extensive report the author discusses the symptoms of the disease and gives experiments, based on them he concludes that the disease does not belong to the virus group of diseases.

Sadebeck, R.

Maniok oder Cassava, *Manihot utilissima* Pohl: p. 74–77.

Sakimura, I, & Carter, Walter

The artificial feeding of Thysanoptera. Annals Ent. Soc. Amer. **27**(2) : 341–342, 1934.

This paper is of interest because it is a study of *Thrips tabaci* which is a vector of virus diseases.

Salaman, Redcliff N[athan]

Research in relation to the production of "good" potato seed. Hort. Educ. Ass. Year-book Vol. II, 1933. (Agric. Progress, **11** : 77–86, 1934.)

A part of this paper is devoted to the propagation of virus-free stocks. The Author describes the method.

Salmon, E[rnest] S[tandley], & Ware, W[illiam]

The chlorotic disease of the hop. IV. Transmission by seed. Ann. Appl. Biol. **22**(4) : 728–730, 1935.

28 to 228 seedlings grown from seed from a diseased plant showed symptoms of the disease.

Samuel, G[eoffrey], Best, R. J., & Bald, J[ames] G[rieve]

Further studies in quantitative methods with two plant viruses. Ann. Appl. Biol. **22**(3) : 508–524, 1935.

The authors give a tabulated account of the factors which influence the estimation by the primary lesion method of the concentration of the viruses of tobacco 1 and of spotted wilt of tomato.

Scarlett, Robert L.

Historical notes on the leaf-roll of potatoes. Scot. Journ. Agric. **16** : 487–486, 1933.

Schander, Staar, et al.

Bericht über die Tätigkeit des Institutes für Pflanzenkrankheiten, 1933. Landw, Jahr. **79**: 14–22, 1934.

Schlumberger, Otto

Die Eisenfleckigheit der kartoffel. (The Eisenfleckigkeit of potato.) Die Kartoffel **13**: 83–85, 1933.

Schmidt, E[rnst] W[illy]

Bericht über neure Arbeiten zur Biologie der Zuckerrübe (Report on recent investigations on the biology of the sugar beet.) Deutsch. Zuckerindustr. **60**(40) : 864–866; (42) : 901–902, 1935.

The author reports personal observations in connection with a review of recent work on leaf spot (*Cercospora beticola*), curly top and mosaic of beets. He states that in experiments at the Kleinwanzleben Research Institute in the transmission of beet mosaic by juice inoculations gave negative results and the suggestion is made that Verplancke's reputed success in this operation is based on an erroneous interpretation of his observations.

Das Vergilben der Zuckerrübenblätter. (The yellowing of sugar beet leaves.) Dutsch. Zuckerindust. **40**(1) : 20, 1935.

Note giving the different yellowing of sugar beet leaves and its causes, includes the virus type of yellowing.

Zur Physiologie und Pathologie des Vergilbens der Zuckerrübenblätter. (On the physiology and pathology of the yellowing of sugar beet leaves.) Z. Wirtschaftsgr. Zuckerindustr. **85**(3) : 200–214, 1935.

A continuation in Germany of the author's works reported above.

Zur pathologischen Physiologie albicater und mosaikkranker Zuckerrüben-Blätter. (On the pathological physiology of albicant and mosaic diseased sugar beet leaves.) Phytopath. Zeitschr. **8**(4) : 363–368, 1935.

The author gives the results of his observations and experiments based on chemical analysis and microscopical examination.

Der stand der Forshung über Viruskrank-heiten der Zuckerrübe. (The situation of the investigations on virus diseases of sugar beet.) Zuckerrübenbau **18**(1) : 4–13, 1936.

Review of the work done on research of virus diseases of sugar beet during the past few years.

Schreven, D. A. van

Kalkgebrek als oorzack van mergnecrose bij Aardappelknollen. (Lime deficiency as the cause of medullary necrosis of potatotuber.) Tijdschr. over Plantenziekten **40**(11) : 225–225, 1934.

This disease resembles a necrosis caused by a virus.

Virusziekten van de tomaat. (Virus diseases of the tomato.) Tijdschr. over Plantenziekten **11**(10) : 261–300, 1935.

A summary of the subject. Only one virus disease of tomato (tobacco virus No. 1) known in Holland. The author describes a Huissen disease.

Serrano F[elicisimo] B.

Pineapple yellow-spot in the Philippines. Philip. Journ. Sci. **58**(4) : 481–491, 1935.

General account of this disease first observed in Hawaii in 1928. Symptoms of the disease and transmission experiments are given.

Severin, H[enry] H[erman] P[aul], & Freitag, J[ulius] H.

California celery mosaic diseases. Phytopathology (Abstract) **25** (9) : 1935.

Shapovalov, Michael

Graft versus insect transmissions of curly top in tomatoes (tomato yellows) Phytopathology **25**(9) : 844–853, 1935.

This paper contains results which are very valuable. Insect transmission was more certain than graft transmission.

Effect of certain chemical on the "combination streak" virus of tomatoes. Phytopathology **25**(9) : 864–874, 1935.

This paper contains records of the effects of many chemicals on the two viruses causing tomato streak.

---, **& Dufrénoy J[ean]**

Cytologische beobachtungen an einer viruskrankheit von Typhus "streak" oder "Strichel". Path. Zeitsch. **8**(3) : 297–231, 1935.

Work on virus diseases of plants in United States of America. Trans. Lenin Acad. Agric. Sciences. pp. 24–31, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. A brief review. Refers to the wealth of plant material in the U.S.S.R. and the desirability of knowing more about the virus diseases.

Shepherd, E[dward] F[rederick] S[isnett]

A new disease of tobacco, possibly of the virus type. Mauritius Dept. Agric. Leaflet **40**, 3 p., 1936.

The author gives the symptoms of the disease, compares it with other tobacco virus diseases, gives distribution and recommends roguing.

Simmonds, J[ohn] H[oward]

Diseases of the banana. Queensland Agric. Journ. **43**(3) : 254–267, 1935.

Popular notes on banana virus diseases are included.

Skuderna, A. W., Price, C., Gulbertson, J. O., & Cormany, C. E.
The curly-top resistant beet variety. Facts About Sugar **31**: 17, 1936.

Slagg, C. M.
New and unusual diseases and injuries of tobacco. Sci. Agric. **6**(6) : 193–198, 1928.

Smith, Kenneth M[anley]
Remarks on the size of plant-viruses. Arch. Expt. Zellforsch. **15**: 1934.

Colour changes in wall-flowers and stocks. Gar. Chron. **93**(2537) : 112, 1935.

This is a brief discussion of color changes due to virus diseases in wall flower and other plants.

New virus diseases of the tomato. Journ. Hort. Soc. **60**(10) : 448–451, 1935.

The author describes the symptoms of three virus diseases and designates them by number.

A new virus disease of the tomato. Ann. Appl. Biol. **22**(4) : 731–740, 1935.

A description of a virus which attacks tobacco(*Nicotiana glutinosa, N. langsdorfii, Datura stramonium,* potato, cowpea (*Vigna sinensis*), *Mimulus, aster & Zinnia.*

A new virus diseases of tomatoes. Nature **135**(3422) : 908, 1935.

A description of a new virus disease attacking tomatoes and cowpeas (*Vigna sinensis*).

Plant viruses. A book. Methuen (London) 107 p., 1935.

A general discussion of the subject.

---, **& Bald, J[ames] G[rieve]**
A description of a necrotic virus disease affecting tobacco and other plants. Parasitology, **27**(2) : 231–245, 1935.

This author describes this new disease and gives the symptoms on several host. The method of transmission in nature is not known but it can be transmitted to cowpeas by spraying with an atomizer. The dilution end-points appears to be about 1: 10,000, the longevity in sap about 20 days, the thermal death point about 72° C. and the particle size 20–30 μ μ.

Two strains of streak: a virus affecting the tomato plant. Parasitology, **27**(3) : 450–460, 1935.

The author describes a green strain of tomato virus-I, on a variety of Solanaceous plants and also yellow variant. They can be separated by filtration. A complete cross-immunity exists between the two.

----------, & **Doncaster, J. P.**

The preparation of gradocol membranes and their application in the study of plant viruses. Parasitology **27**(4) : 523–542, 1935.

The authors give a detailed account of the technique established after three years study for the preparation of Elford's gradocol membranes and their application to the study of plant viruses.

The virus diseases of glass house and garden plants. Sci. Hort. **4**: 126–140, 1936.

Popular descriptions of virus diseases of many plants.

The problem of a plant virus infection. Nature **136**(3436) : 395–396, 1935.

This is a continuation of the studies by the author and Bald on a necrotic virus disease of tobacco. Parasitology 27(2) : 231–245, 1935. The virus found in the roots of apparently healthy tobacco plants.

Some diseases of ornamental plants caused by the virus of tomato spotted wilt. Journ. Roy. Hort. Soc. **60**(7) : 304–310, 1935.

The author gives a preliminary discussion of the diseases, explains the method of spreading and discusses the relation of the disease on several hosts.

Recent work on the plant viruses. Curr. Sci. **4**(8) : 565–569, 1936.

An excellent review of the recent work on plant viruses, especially the insect vectors, the nature of the virus and the chemical and serological studies.

Some aspects of the plant virus problem. Sci. Progress, **30**(119) : 413–421, 1936. (Rhodesia Agric. Journ. **33** : 134–142, 1936.)

An address before section K. of the British Association. The author gives a brief but excellent discussion of the subject.

Soltan, F.

Erfahrungen über die eisenfleckigkeit der Kartoffel. Deut. Landw. Press **61** : 84, 1934.

Sornay, P. de

La cana á Sucre. Plantation par boutures de tetes it dégénérescence de la variéte. (Sugar cane. Planting with terminal slips and varietal degeneration). Bull. Ass. Chim. Sucr. **42** (9–10) : 638–642, 1935.

The author discusses the different methods of plantings. He disagrees with Martin's theory of sugar cane sereh disease in regard to methods of planting. He discusses also sereh disease.

Spegazzini, C[arlos]
Sobre una nueva enfermedad del tabaco (Regarding a new disease of tobacco.) Bol. Oficina Químico-Agrícola, Buenos Aires 4: 1928

Spencer, Ernest L.
Studies on frenching of tobacco. Phytopathology **25**(12): 1067–1084, 1935.

This paper is recorded because this disease has been confused with mosaic. The author summarizes his results in part as follows: "In the genus *Nicotiana* frenching developed severely in *N. alata, N. langsdorffii, N. longiflora, N. rustica, N. sanderae, N. sylvestris,* and in 16 varieties of *N. tabacum,* but not in 12 other species of *Nicotiana* grown under similar conditions. Of the other solanaceous and non-solanaceous species, only *Datura stramonium, Lycopersicon esculentum,* and *Petunia hybrida* showed chlorosis characteristic of frenching." "No association was found between frenching and any pathogenic organism." "Experiments on the deficiency of each of the elements essential to plant growth failed to produce symptoms that resembled those of frenching." "Frenching was produced in plants grown in sand by the addition at daily intervals of a water extract of field soil. It also was produced by adding as little as 1 part of field soil to 2,000 parts of sand. In young seedlings, in sand, it was produced by the addition of top water from a deep well, over a long period of time." "The experimental evidence indicates that frenching probably is not a mineral-deficiency disease, but a toxicity disease produced by some toxic principle that is present in certain soils and that exerts its toxic action only under definite environmental conditions.

Spierenburg, D.
Een virusziekte in lupinen. Donkers strepen en vleppen op de stengels; afsterven der toppeu; gekroesd of violetbruin blad. Tijdschr. Plantenz. **42**(3): 71–76, 1936.

Spooner, E. T. C., & Bawden, F. C.
Experiments on the serological reactions of the potato virus "X". Brit. Journ. Expt. Biol. **16**: 218–230, 1935.

The authors report a common antigen in the sap of tobacco, *N. glutinosa, D. stramonium* and potato infected with potato virus "X". They describe the methods and give the reactions.

Sreenivasa Rao, Y. V.
Contributions to the study of the spike-disease of sandal (*Santalum album.* Linn.) XVIII. Investigation of the hexone bases. Journ. Indian Inst. Sci. **16A**(8): 91–93, 1933.

Contributions to the study of the spike-disease of sandal (*Santalum Linn.*) XIX. Study of mosaic associated with spiked areas. Journ. Indian Inst. Sci. **16A**(8): 94–95, 1933.

Srinivasan, M.

Experiments conducted by the Indian Institute of Science. Laboratory Experiments. Indian Inst. Sci. Bangalore, Invest. Spike-Diseases Sandal. **7**: 12–13, 1933.

The diseased and healthy plants respond seasonal influences somewhat different.

----------, & **Srinivasaya, M[ontnahalli]**

Contributions to the study of spike-disease of Sandal (*Santalum album*, Linn.) Part XVII. Hydrogen-ion concentration and buffering capacity as factors of disease resistance. Journ. Indian Inst. Sci. **17A**(14): 153–164, 1935.

Chemical and physiological studies.

----------, & **Rangaswami, S.**

A new device for the insect transmission of spike disease of sandal. Curr. Science. **4**: 97–98, 1935.

Stanley, W. M.

Chemical studies on the virus of tobacco mosaic. IV. Some effects of different chemical agents on infectivity. Phytopathology **25**(10): 899–921, 1935.

The results of testing the effect of 110 chemicals on the purified preparations of tobacco-mosaic virus. "The fact that tobacco mosaic virus was found to be unaffected over long periods of time by concentrations of mercuric chloride known to be germicidal is an indication that the virus is not a bacterial organism."

Chemical studies on the virus of tobacco mosaic. V-Determination of optimum hydrogen-ion concentrations for purification with lead acetate. Phytopathology **25**(10): 922–930, 1935.

The author has determined the optimum hydrogen-ion concentrations for carrying out the three principal steps in the lead acetate process for the purification of tobacco-mosaic virus proposed by Vinson and Petri. The method and results are given.

Isolation of a crystalline protein possessing the properties of tobacco-mosaic virus. Science **81**(2113): 644–645, 1935.

The author isolated a crystalline protein compound from mosaic tobacco which produced the typical disease when injected into Early Golden Cluster bean, *Nicotiana glutinosa* and *N. langsdorffii*. He describes the method and says that although the proof of the purity of the protein is not positive, there is no evidence of a mixture.

----------, & **Loring, H. S.**

The isolation of crystalline tobacco mosaic virus protein from diseased tomato plants, Science **83**(2143): 83, 1936.

They say: "The isolation from a different host plant of a protein possessing the same physical, chemical and biological properties as

those previously found for the protein from mosaic-diseased tobacco plant offers additional evidence for the identity of the protein with the agent responsible for the tobacco-mosaic disease.''

An improved method for the preparation of crystalline tobacco-mosaic virus protein. Phytopathology **26**(2) : 108, 1936.

Abstract of paper read before 27th Annual meeting of the American Phytopathological Society, St. Louis, Mo., December, 1935. A description of a new method.

Chemical studies on the virus of tobacco mosaic. VI. The isolation from diseased turkish tobacco plants of a crystalline protein possessing the properties of tobacco mosaic virus. Phytopathology **26**(4) : 305–320, 1936.

''A crystalline protein, which has the properties of tobacco-mosaic virus, has been isolated from an extract of Turkish tobacco plants infected with this virus. The extract was prepared by grinding frozen plants, adding disodium phosphate, and pressing out the liquid. The press cake was extracted a second time with dilute disodium phosphate and the two extracts were filtered through celite and combined. The virus protein was obtained from these extracts by precipitation with ammonium sulphate. The virus protein was reprecipitated with ammonium sulphate several times with loss of much color, and most of the remaining color was then removed with lead sub-acetate. The virus was adsorbed on, and removed from, celite several times and then crystallized in the form of small needles about 0.02 mm. long by the addition of a solution of 5 per cent glacial acetic acid in 0.15 saturated ammonium sulphate.'' ''The crystalline material has the general properties of a protein and its ineffectivity, chemical composition, and optical rotation were unchanged after 10 crystallinizations. The material is between 100 and 1,000 times more active than ordinary infectious juice preparations, one cubic centimeter of a solution containing 10^9 gm. per cc. of the protein usually proving infectious. The crystalline material reacts with sera of animals injected with a solution of the crystals or with infectious juice, and fails to react with the sera of animals injected with juice from normal plants. All of the evidence obtained up to the present time indicates that the crystalline protein is pure or possibly a solid solution of proteins, and hence, that tobacco-mosaic virus is a protein.''

Stevens, Neil E[verett]

An attempted analysis of the economic effects of cranberry diseases. U.S.D.A. Plant Disease Reporter **19**(8) : 112–128, 1935.

Extensive account of losses due to false blossom of cranberry.

Stevenson, F. J.

What's inside the potato. Amer. Potato Journ. **11** : 229–234, 1934.

Stewart, Fred C[arlton]

A potato seed plant roguing experiment. New York State Agric. Expt. Station (Geneva) Bull, **655**, 10 p., 1935.

The results of nine years experiments for the control of virus diseases.

Steyaert, R. L.

Étude du shedding en rapport avec la frisolée du cotonnier. (A study of shedding in relation to frisolée of cotton.) Bull. Agric. Congo Belge **26**(1) : 3–45, 1935.

Similar to tomosis. Not proved to be a virus.

Storey, H[arold] H[aydon]

Virus diseases of East African plants. I, II, & III. East African Agric. Journ. **1**(1) : 63–68; (2) : 148–153; (3) : 206–211, 1935.

Popular.

Report of the Plant Pathologist. East African Agric. Res. Stat. Rpt. **1934–35** : 12–16, 1935.

This report treats wholly on corn and cassava virus diseases.

On the future of research on the virus diseases of plants. Proc. Fifth Congress Int. Soc. Sugar Cane Tech. Brisbane, Australia p. 108–116, 1936.

The author predicts that the future studies of these diseases must center around species or strains of viruses and the vectors.

Strong, L. A.

Report of the Chief of the Bureau of Entomology and Plant Quarantine, 1935, 96 p., 1935.

This report includes the work done to control phony disease of peaches.

Summers, Eaton M.

Strains of the sugar cane mosaic virus in Louisiana. Proc. Fifth Cong. Int. Soc. Sugar Cane Tech., Brisbane, Australia, 723–729, 1935.

A very thorough discussion of this subject to date.

Sundararaman, S.

Mosaic disease of sugar cane in South India. Madras Agric. Dept. Bull. **32**. 1929.

The results of a survey for 1925–28, with a discussion of symptoms and effects, methods of infection and spread, and varietal resistance.

The diseases of sugar cane. A paper read at the M.A.S.U. Conference, July, 1930 and published in the Madras Agric. Journ. of August, 1930.

This paper contains brief discussions of mosaic and streak.

The mosaic disease of sugar cane. Leaflet **31**, 2 p., 1931.

A popular discussion.

Tasugi, H., & Ikeno, S.

(On the intracellular bodies associated with the mosaic disease of the lily (Preliminary report). Ann. Phytopath. Soc. Japan, **5**(1) : 30–43, 1935.

A mosaic disease of *Lilium speciosum L. rubrum.* A study of the intracellular bodies.

Tate, H. D.

Intracellular abnormalities associated with yellow dwarf of onions. Iowa State College Journ. Sci. **9**(4) : 677–683, 1935.

A very few irregularly distributed bodies.

Thilliard, R.

La culture du tabac de Sumatra an Cameroun. (The culture of Sumatra tobacco in Cameroon.) L'Agron. Col. **6**: 185–194, 1921.

Bestrijding der krul-en kroepoek-ziekte van tabak. (Control of the curl and crinkle disease of tobacco). Meded. Proefstat. Vorstenl and. Tabak (Java) **78**: 18, 1934.

Thornberry, H. H.

Quantitative studies on the filtration of tobacco-mosaic virus. Phytopathology **25**(6) : 601–617, 1935.

The author gives the results of extensive studies and finds that (1) when dilutions of virus are passed through Berkefeld "W" filters the filtrates are as infective as nonfiltered, (2) at pH 8.5 the virus is completely filterable and at 1.5 nonfilterable, (3) virus suspended in an acid medium is adsorbed to the Berkefeld filter at the beginning of filtration. After the filter surface is saturated with adsorbed materials at pH 5.6, the filterate is about as infectious as the non-filtered sample until the clogged pores retain most of the virus, (4) virus adsorbed to the filters from an acid suspension is readiiy eluded in phosphate buffer at pH 8.5, about 80 per cent of the virus is released in 10cc. of the buffer, (5) filtration of virus at pH 8.5 through Berkefeld "W" candles increased its infectivity 66 per cent, (6) the dismeter of the virus particles is estimated to be 18–38 mμ.

Effect of phosphate buffers on infectivity of tobacco-mosaic virus. Phytopathology **25**(6) : 618–627, 1935.

These studies are summarized as follows: (1) Valency of the anion or cation of the salts tested had no measurable effect upon infectivity of tobacco-mosaic virus, (2) dibasic phosphate salts at 0.1 molar concentration greatly enhanced virus infectivity, (3) optimum reaction for infection is from pH 7.0 to 8.5, (4) virus was inactivated in 1 hour between pH 1.5 and 9.0. At pH 10.6 complete inactivation

resulted in 4 hours, and at pH 11.2 in 5 minutes and in 0.5 molar H Cl. inactivation was complete in 1 hour, (5) the presence of aluminum sulphate greatly reduced infection but when the reaction was adjusted to pH 8.5 the original virus activity was restored.

Effect of tannic acid on the infectivity of tobacco-mosaic virus. Phytopathology **25**(10) : 931–937, 1935.

The inhibition of the virus when treated with tannic acid depends on the concentration of the acid and time of action. The activity of the virus is restored by removal of the tannic acid from the suspension. The inhibition of the virus when the plants were treated with tannic acid before inoculation depended on the concentration of the acid. Tannic acid in concentrations as high as 10 per cent had slight effect when applied after inoculation with the virus.

Particle diameter of certain plant viruses and *Phytomonas pruni* bacteriophage. Phytopathology **25**(10) : 938–946, 1935.

Thirteen plant viruses were used and the diameters determined at about 15 mμ. In one tobacco virus the particles were found to have a diameter of 11 mμ which was the same as that of the particles of *Phytomonas pruni* bacteriophage.

Thornton, J. K.

Blackberries: Possible source of streak infection in black raspberries. Phytopathology **25**(10) : 959–961, 1935.

The author reports a streak disease of Blackberries which is the same as that reported by Zundel in 1934 and gives evidence that it is the same as the streak of black raspberries.

Thung, T. H.

Infective principle and plant cell in some virus diseases of the tobacco plant II. Handelingen v/h. 7 de Ned-Ind. Natuurwetenschappelijk Congress. **1935** : 496–507, 1935.

This is a continuation of the first paper (in Dutch) published under this same title in 1931. It is primarily a study of immunity.

Phytopathologische waarnenings (Phytopathological observations.) Meded. Proefst Vorstenl Tab. **81** : 25–37, 1935.

Notes on "Kroepoek" disease and "pox" a new virus disease are included in this report. The last disease is transmitted by *Myzus persicae.*

Tireman, H.

Proc. Spike Conference, Bangalore, 1917.

Trotter, A[lesandro]

Le virosi del *Cestrum parqui* L' Hérit. (Virus diseases of *Cestrum parqui* L' Herit) Ric. Ossuz. Divulg. Fitopat. Campania ed Mezzogiorno (Portici), **4** : 18–24, 1935.

A description of the disease.

Troy, Zeliaette,

Aster yellows and its control. Flor. Exch. **85**(16) : 13, 1935.

A review of Kunkel's work.

Tschernyschova, O. P.

Schädlichkeit von Viruskrankheiten der Kartoffel. (Damage from potato virus diseases.) Arb. Forsch. Inst. Kartoff., **1935**: 59–84, 1935. (Bot. Zbl. (Abstract) **27**(5–6) : 170–171, 1935.)

Data on production on potato affected by virus diseases in U.S.S.R.

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Contribution to the diagnostics of potato virus diseases. Trans. Lenin Acad. Agric. Sciences, p. 42–50, 1936.

Paper read before the First Virological Conference, March 7–11, 1935. The author divides these diseases into four groups: (1) mosaics, including mild mosaic, rugose mosaic and streak, (2) leaf roll, (3) witches' broom, and (4) aucuba. Uses the Bechhold and Erbe method of testing the coloring of the flesh.

Twort, F. W.

The transmissible bacterial lysin and its action on dead bacteria. The Lancet **209**(5326) : 642–644, 1925.

This transmissible lysin has some of the characters of a virus.

Valleau, William D[orney]

A method for describing strains of tobacco mosaic virus. Phytopathology **26**(2) : 111–112, 1936.

Abstract of a paper read before the 27th annual meeting of the American Phytopathological Society, St. Louis, Mo., Dec. 1935. The author described methods for the determination of 18 viruses.

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Do necrotic lesions result in localization of tobacco-mosaic virus in *Nicotiana?* Phytopathology **25**(10) : 968. 1935.

The author gives the results of studies which show that necrotic lesions do not always result in a localization of the virus.

———————, **& Johnson, E. W.**

Only certain strains of tobacco mosaic cause mosaic burn. Phytopathology (Abstract) **25** : 967, 1935.

Varadaraja Iyengar, A. V.

Experiments conducted by the Indian Inst. of Sci. II. Indian Inst. Sci., Bangalore Invest. Spike-Disease Sandal 7 : 14–15, 1933.

Methods for destroying diseased trees.

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Biochemistry of the spike disease of *Vinca rosea* Linn. Journ. Indian Inst. Sci. **18A**(9) : 61–67, 1935.

The author compares the results with those of spike on other hosts.

Deamination in virus-infected plants. Nature (London) **135** (3409) : 345, 1935.

A chemical study of spike of Sandal.

The problem of *Lantana*. Curr. Sci. p. 1, 1935.

---, **& Rangaswani, G.**

Studies in the control of the spike disease of sandal. Part I. The role of infection centre and Lantana in the spread of disease. Indian Forester **61**(1) : 25–34, 1935.

The rate of spread of the disease is independent of the size and age of the sandal plant. *Lantana* increases the incidence of the disease. The disease can be controlled by removal and burning.

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Studies in the control of spike disease in Sandal. Part II. Use of plant poison in controlling the spread of infection. Indian Forester. **1935** : 103–111, 1935.

Arsenicals were the most successful chemicals. Girdling and smearing with the poison was most useful.

Verderevsky, D.

A new cotton disease in the Azerbaijan. Trans. Lenin Acad. Agric. Sciences **1936** : 74–78, 1936.

Paper read before the First Virological Conference, March 7–11, 1935, (English summary). A description of this disease which is transmitted by *Bemisia gossypiperda*.

Verplancke, G[ermain]

Étude des propertiétés des virus causant les maladies de dégénérescence de la betterave. (Study of the properties of viruses causing degeneration diseases of the beet.) Sucrerie Belge. **54**(7) : 118–127; (8) : 142–151; (9) : 162–168, 1935.

The results of experimental studies on yellows and mosaic. The author gives four types or symptoms of the mosaic,—sprenkel, nerven, marmor and porchen.

Étude d' une forme nouvelle de la "bigarrure" de la pomme de terre. Bull. Soc. Roy. Bot. Belgique **67**(2) : 105–116.

This appears to be a new disease. The authors give a description, a list of hosts and the results of experimental studies.

Vincent, C[hester] L[eon], & Jones, L[eon] K[ilby]

Resistance of potato varieties to infection by veinbanding virus. Phytopathology **26**(2) : 112, 1936.

Abstract of paper read before the 27th annual meeting of the American Phytopathological Society. St. Louis, Mo., Dec. 1935. A brief resumé of 12 years study on 1,055 strains of potato seedlings with reference to the veinbanding virus.

Vinson, C. G.
Virus diseases of plants. Purification of the virus of mosaic diseases of tobacco. Missouri Agric. Expt. Sta. Res. Bull. **237**, 16 p., 1936.

Wakeland, Claude, & Hungerford, C[harle] W[illiam]
Idaho recommendations for insect and plant disease control. Idaho Agric. Expt. Sta. Bull. **159**: 62–63, 1934.

Wartenberg, H., Linkowski, M., & Hey, A.
Der Tagesparzellenversuch. Beiträge zur methodik der Kartoffel abbauforschung. (The day plot experiment. Contributions to the technique of potato degeneration research.) Angew. Bot. **17**(1): 74–94, 1935.

The authors give an explanatory account of the "day plot experiment". Here is stated that basal roll, leaf roll and crincle coinincided with the variations in the absolute atmospheric humidity prevailing during the planting times in the previous years. Potato degeneration is a metabolic anomaly induced by environmental conditions. Due to weakening of the plant by primary physiological disease are predisposed to attacks of virus diseases. Conclude stating that potato degeneration may thus eventually result from a leaf roll arising from ecological conditions and a virus component.

----------, **Hey, A., & Urhan, O.**
Die elektrometrische Pflanzgutwertbestimmung der Kartoffelknolle. I Mitteilung (The electrometric determination of the seed value of th potato tuber. Note I.) Arb. Biol. Reichsant. Land-u. Forstw **21**(3): 331–362 ,1935.

This is a highly technical discussion on the foundations of the electrometric method of determining the value of potato tubers for seed, with a view to the elimination by this means of individuals suffering from *degeneration*.

Webber, Irma E., & Fawcett, H[oward] S[amuel]
Comparative histology of healthy and psorosis affected tissues of *Citrus sinensis*. Hilgardia **9**(2): 71–93. 1935.

A very thorough and complete study of the histology of the diseased trees. These studies suggest that the cause is a virus.

Weij, H. G. van der
Ziekten der Tabak. (Tobacco diseases) Meded. Deli-Proefst. ser. II. **91**: 4–11, 1935.

This report includes discussions on the virus diseases mosaic ("peh sim"), Rotterdam B disease, "gilah", "korab" and "daon lidah".

Winter, H. C., & Young, H. C.
Raspberry virus disease control. Ohio Agric. Expt. Sta. Bimonth-Bull. **21**(179): 54–58, 1936.

Popular.

Wolcott, G[eorge] N[orton]

The first records of the mosaic disease of sugar-cane in Puerto Rico. Journ. Agric. Univ. Puerto Rico, **19**(2) : 117–120, 1935.

A statement of early observations in Puerto Rico, which have not been published previously.

Wolf, Frederick, A.

Diseases of tobacco caused by viruses. Chapter VI treats of Tobacco Diseases and Decays. p. 110–197. Duke University Press, 1935.

The author gives a general discussion of virus diseases and descriptions of many of the recognized diseases.

Youden, W. J.

Statistical aspect of the production of primary lesions of plant viruses. Nature, **135**(3426) : 1075, 1935.

A discussion of the failure of Samuel and Bald to reconcile their work with that of the author.

Zacharewicz, E.

L' enroulement des feuilles de la vigne. Prog. Agric. Vitic. **104** : 280–282. 1935.

After 20 years experiments, author finds that the disease is infectious, probably a virus disease, calls it an incurable disease of the sap." (Plant Science Literature, 2(15) : 14, Oct. 7–12, 1935.

Zaumeyer, W[illiam] J., & Wade, B. L.

The relationship of certain legume mosaic to bean. Journ. Agric. Res. **51** : 715–749, 1936.

The bean is susceptible to the mosaic viruses of pea, white clover, alsike clover, white sweet clover, alfalfa, and sweet pea. The mosaic virus of red clover is not transmissible to the bean.

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A pea streak caused by alfalfa mosaic. Phytopathology **26**(2) : 114, 1936.

Abstract of papers read before the 27th annual meeting of the American Phytopathological Society. St. Louis, Mo., Dec., 1935. This appears to be a new disease, different from the streak of Hawaii.

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Pea mosaic and its relationship to other legume viruses. Phytopathology **26**(2) : 114, 1936.

Abstract of paper read before the 27th annual meeting of the American Phytopathological Society. St. Louis, Mo., Dec., 1935. The paper gives the results of a yield survey of hosts. Only 11 out of 3,057 seedlings grown from mosaic plants showed symptoms of disease.

----------, **& Kearns, C. W.**

The relation of aphids to the transmission of bean mosaic. Phytopathology **26**(7) : 614–629, 1936.

Aphids are not found in large numbers in the bean fields but the spread of the disease is dependent on the abundance of these insects. Eleven species from 17 different hosts proved to be vectors.

Zeller, S[anford] M[yron]

Cherry mottle leaf. Ann. Rpt. Oregon State Hort. Soc. **26**: 92–95, 1934. (1935)

A brief description of a virus-like disease on Napoleon cherry.

Simultaneous infections of strawberries with crinkle and yellows (Xanthosis). Plant Disease Reporter. **22**(13): 208–209, 1936.

These two diseases are distinct. The virus of yellows appears to mask the crinkle. The vector for both diseases is *Capitophorus fragaefolii*.

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