

INSTITUUT VOOR PHYTOPATHOLOGIE  
LABORATORIUM VOOR BLOEMBOLLENONDERZOEK  
TE LISSE

DIRECTEUR: PROF. DR. E. VAN SLOGTEREN

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**THE DAFFODIL SHOW DINNER.**

Held in the Restaurant of the New Hall of the Royal Horticultural Society, Greycoat Street, Westminster, on Tuesday, April 12, 1938, Mr. E. A. Bowles, M.A., F.L.S., F.R.E.S., V.M.H., in the chair.

The Chairman: I have made it a rule in my life to avoid as far as possible all public ceremonies, and especially taking the lead on such occasions, but in the regrettable and unavoidable absence of the President of the Royal Horticultural Society, I view with pleasure the duty and honour that has been thrust upon me of making a presentation to Professor van Slogteren. I have enjoyed the privilege of visiting him in his wonderful laboratory—the old one unfortunately, but I still hope to see the newer one that has arisen Phoenix-like from the embers of the great fire that destroyed the old one—and I was very much impressed with the efficiency and skill of the Professor who directs things there. We and all who love a bulb owe the Professor a great debt of gratitude for the wonderful work he has done to prevent the deprecations of pests, and also to help us to do all sorts of unusual, and I might almost say unnatural, things with bulbs in the way of retarding and forcing them.

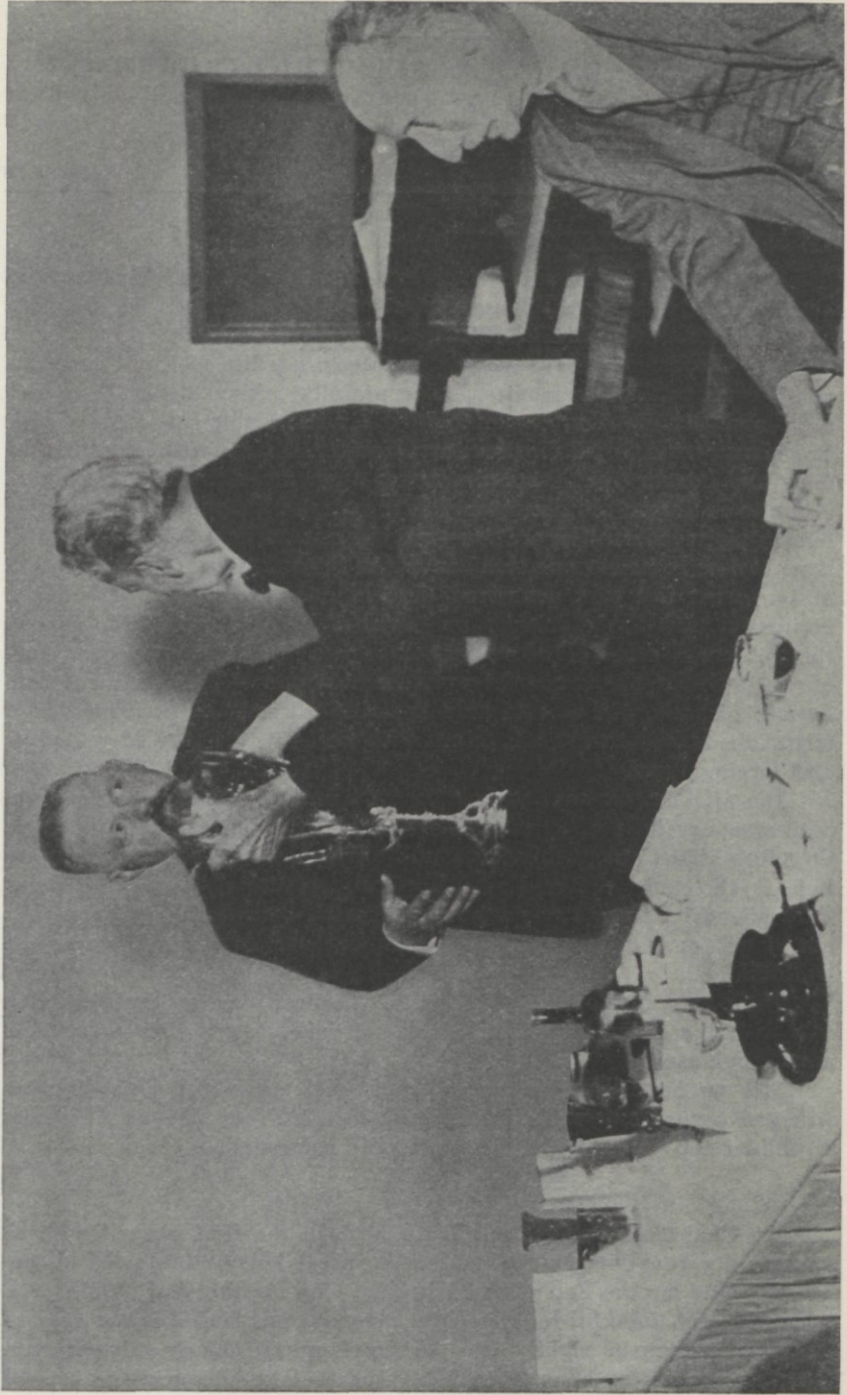
You all know as well as I do that we owe Professor van Slogteren a tremendous debt of gratitude, and it is with the greatest pleasure, therefore, that I accept this opportunity of honouring him by presenting him, in the name of the Royal Horticultural Society, with the Peter Barr Memorial Cup, a cup that is presented once a year to one who has done some great and good work for our favourite flower, the Daffodil.

Professor van Slogteren, I have the greatest pleasure in presenting you with the Peter Barr Memorial Cup. (The presentation was made amid applause.)

Now we have the second great event of the evening, which I know will prove very enjoyable. I am going to ask Professor van Slogteren to deliver the address which he has kindly consented to give.

Mr. Chairman, Ladies and Gentlemen: In the first place I wish to express my very sincere thanks for the great honour bestowed on me by awarding me the Peter Barr Memorial Cup for the year 1938.

I am very thankful for this great honour and I find it is not easy to express my feelings rightly in a foreign language. I can only tell you that the recognition of my work by your Society, composed as it is of



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so many Daffodil-enthusiasts and so many able specialists in this subject, is more than I have ever dared to expect.

Not only for me is this a great honour, but I also consider it a tribute to the members of our staff, who assist me so well with my work. I have to thank you also, Mr. Chairman, for the kind words which you have addressed to me.

I have been asked to give here a short address on some part of my work, and I have been informed that probably some of you would like to use this opportunity to put questions to me, and I desire to say beforehand that I have no objection to whatever question you may put. I am sure that many of them will be far too difficult for me to answer, but I have never been afraid to say that I could not answer a question through lack of knowledge.

I want to say a few words about the relation between the Daffodil, the grower, and the plant-doctor.

Some years ago a good friend of mine, a medical doctor, introduced me to the members of a medical society at Leiden as the colleague who had the greatest number of patients of the whole company present.

Comparing the work and the responsibility of a plant-doctor and a physician by the number of patients only, certainly my task would be absolutely hopeless. Still it is a great advantage for a plant-doctor that in his practice he is not troubled by imaginary diseases of his patients. Certainly, Dr. Bose has told us a lot about his discovery of the nerves of plants, but fortunately the plants have not yet discovered the means to express their complaints as do the human beings who visit the consulting rooms of neurologists and psychiatrists.

Does this mean that the plant-doctor has nothing to do with psychology? By no means! He has to give his prescriptions to the owners of the bulbs, amateurs or growers, and this often implies the necessity of taking into account their psychology.

Often a physician too, as you know, has to pay more attention to the people surrounding his patient to be sure that the latter gets the rest he needs for recovery.

Thus the number of the patients of the plant-doctor is reduced to more reasonable figures; the plant-doctor gladly accepts, if necessary, some treatment of an owner of Daffodils, and he has the advantage of a great solidarity of the bulbs themselves. Without any complaint whatsoever, they sacrifice their individual lives for the benefit of the other members of the same stock. And, till now, without too much risk of trouble with anti-vivisectionists the plant-doctor can even cut into pieces a diseased or even a suspected member of a stock for making his diagnosis on behalf of the other individuals of this community.

Where, however, begins and where ends the responsibility of the plant-doctor for the well-being of his patients, the Daffodils?

It includes all factors that influence the growth and the flowering, from planting till harvest, and as well the period between lifting and planting, often so wrongly called the resting period of the bulb.

It includes as well the whole domain of botanical science, anatomy, morphology, physiology, genetics and pathology. It is even impossible to draw a line between pathology and the other branches of botany just named, that concern all the vital processes of the living plant. Now comes the absolute necessity of a close co-operation between the grower and the scientist.

Above all the plant-doctor has to know the living plant in its reactions to the natural surroundings under all climatic and cultural conditions that influence the development and growth of the plant, and for this reason he cannot do without the help of the grower, who in this case is often to a great extent his superior. Not only because the knowledge of the grower of the living plant is often much more important, for the problems to be solved, than the knowledge of the scientist of the microscopical structure or the chemical composition of the plant, but no doctor can help his patients without the assistance of good nurses, and here again he has to depend on the grower.

For this reason the plant-doctor, just like the physician, has to give his whole heart to his plant patients, and as soon as he has done this he will meet with all the sympathy he needs from the grower. The plant-doctor must not exaggerate the danger or the economic importance of symptoms of a disease he thinks he has discovered in the plants, but must discuss this subject very thoroughly with the grower. Then the grower will lose the opinion that with the increase of the number of plant-doctors the number of plant diseases automatically increases. Then he will trust the plant-doctor when he warns the grower not to neglect some possible danger.

After all a plant-doctor is but a human being. You cannot expect him only to master diseases and to lose his practice through his own efforts! He has to be sure of his future and does not like to join the army of the unemployed. So now and then he must discover a new disease, and if he cannot find it himself, some of his colleagues at home or abroad will help him. He can then either agree with his colleagues and together urge the grower to pay attention to this doctor's problem, or he can disagree and oppose his colleagues by trying to prove that the other plant-doctor is wrong. So they all remain in the game and can therefore be happy together in the future.

But, now, to be serious again, the plant-doctor never need be afraid of lack of work when he does his work well. To be able to solve the disease problems he has to study all the vital processes of the healthy plants as well as of the diseased ones, and by doing so he will find methods to influence more favourably the growth and the flowering of Daffodils that do not need any treatment for sickness or disease.

When we studied the problem of nematodes, we had to get the optimal result from the treatment, to study not only the killing of nematodes and the temperature of the hot-water bath. At least as important even as the killing of the nematodes was the response of the healthy bulbs to the treatment, for even when less than one in a thousand of the bulbs is infected, the whole stock has to be treated.

The duration of the treatment and the temperature of the hot-water bath, the lethal dose for the nematodes did not alone determine the result. The date of treatment and no less the storage conditions before and after the hot-water bath influenced the result. The relation of the date of treatment, the date of lifting and of planting, had to be studied, and by doing so we not only mastered the initial difficulties of killing the nematodes without doing harm to the crops, but ultimately found methods that also improved the healthy crop. We can not only kill the nematodes and *Merodon* now, but also to a great extent master basal rot. We found many a treatment that stimulates the growth of the normal crops, and for this reason now the healthy bulbs for a great part are treated.

This study of all processes in the bulbs and the influence of different storage conditions on the growth and the flowering of the bulbs, caused us to find methods to stimulate the capacity for early-forcing of the Daffodils through cool-storage. We can now help the growers to eliminate the retarding influence of the summer temperatures upon the development of the flowers and none of us, I dare say, if we look nowadays at the large assortment of Daffodils in our glass houses and flower markets in the latter part of December and the early part of January, would have thought this possible only a few years ago.

By international co-operation the conditions for shipment of bulbs to other climates can be considerably improved and our mutual friend, the Daffodil, gains popularity all over the world.

Because of this we cannot do without a mutual exchange of the experience of growers, exporters, and plant-doctors of all countries. Personally, I have always done my utmost to promote this international co-operation, and I consider the honour bestowed on me now a proof that this has been appreciated in this country.

We shall certainly need international co-operation in the future. Every year I have the pleasure to receive in our bulb district and in our laboratory a number of Daffodil enthusiasts and of scientists. I have always been glad to show them all our experiments without any reserve, receiving in return very valuable and welcome criticism.

As I told you before, I have already been told that probably some questions will be put to me and, if so, I dare say that of one question I am already fairly certain. This is about the yellow-stripe in the Daffodils. This is not a new disease. For a long time past we have supposed it to be a virus-disease, and so did other plant-doctors in England as well as in America.

Virus-diseases of human beings as well as of animals and plants are now the centre of interest of the world of scientists as well as in that of agriculturists and horticulturists.

After Stanley's discovery, who isolated from virus-diseased tobacco plants a substance that could be crystallized and re-crystallized again without losing the capacity of transmitting a virus-disease, the scientific world seems to be divided into two parties. One party believes the virus to be a dead protein product, the other party does not believe



PETER BARR MEMORIAL CUP

Awarded to Professor Dr. E. van Slogteren  
For his valuable work in connection with daffodils  
April 12th, 1938

this and still accepts the virus to be a "contagium vivum fluidum" as it was called by Beierineck. I cannot go into details of this controversy, but it must strike everybody that generally the more chemist the scientist, the more he believes in a dead substance; the more he studies living beings, men, animals, or plants, the more he still hesitates to discard the idea of a living substance.

I believe that many scientists, especially the chemists, are already more strongly inclined to accept the dead protein theory than Stanley himself does for the moment.

For us Daffodil specialists the difficulty has been, till now, that a scientifically sufficient proof of yellow-stripe being a virus-disease has not yet been given and the natural mode of transmission of the disease is not yet sufficiently known.

McWorter some years ago said that he had proved the possibility of transmitting the disease, but the few figures of his very short publication have not yet convinced his colleagues. A more elaborate publication which was promised is still lacking, and neither here in England, nor in Holland, could the results be repeated. In December 1956 Hassis showed me in Ithaca records of his experiments in which he had seen a transmission of the disease in glasshouse experiments. He did not work with a great quantity of material, but his work seemed very trustworthy to me. This work has not yet been published.

We tried in vain for many years to get a transmission of the disease, but only this year we have succeeded, owing to the strenuous work of Dr. de Bruyn Ouboter, and I dare say that we have now a sufficiently founded scientific base to accept that yellow-stripe is a virus disease.

We got a result of about 57 % infections among a great number of experiments in the open field, with only one suspected plant in the 450 controls. The latter is in my opinion of the greatest value for the valuation of the results of our experiments.

We now have a basis to build upon in further investigations. The problem however is by no means solved by this. We have not yet found a vector that transmits the disease under normal field conditions, but we may say we have found some circumstances that seem to favour the spread of the disease.

Diagnosis of the disease must become easier for all varieties and we must be able to draw a line between those symptoms that are caused by a virus-disease and those that are less dangerous. Only in this way can we secure that the growers destroy the diseased plants that may spread the infection through the stocks.

Probably the remedy against this disease has to be found in an accurate selection of pure and not infected propagating material from the stocks, and if we can discover the way of the transmission of the disease in the fields, we may be able to keep the selected stocks free from yellow-stripe in the future. We demonstrated our first results a few days ago to some of your countrymen scientists, Dr. Caldwell and Dr. James, from Exeter University College.

We have been able to transmit the disease by rubbing the expressed

sap of virus-infected foliage into the foliage of healthy plants, and by injecting the juice of infected leaves with a subcutaneous syringe into a healthy leaf. We also had success by grafting a diseased bulb and a healthy one together, and even by planting them very close together and leaving them in the soil. We found in a lightly infected stock a higher percentage of infection transmitted in the healthy plants surrounding a diseased one, than in those not neighbours of an infected plant.

Early lifting in a few experiments seemed to check the spread of the infection. We used rather much material for infection in the year of our successful inoculations, and found that in the year 1937 only the infections done between March 18 and May 1 gave positive results. All infections before March 18 and after May 1 gave only negative results.

Much work has still to be done and for this problem we request the international co-operation of all growers of Daffodils and all plant-doctors for the sake of our friends, the Daffodils.

The Chairman: I now have the honour and pleasure of proposing the toast of international co-operation between both amateur and commercial growers of Daffodils, the plant-doctors, and, last but not least, the Daffodils themselves.