SOUTH AFRICAN REPUBLIC.

REPORT

ON THE

INTERNATIONAL RINDERPEST CONGRESS,

HELD

AT PRETORIA

from the 2nd to the 13th August 1897.

GEDRUKT TER STAATSDRUKKERIJ VAN DE ZUID-AFRIKAANSCHE REPUBLIEK.
PRETORIA — 1898.

To His Honour the State-President

of the South African Republic.

I have the honour to submit to Your Excellency herewith the report on the International Rinderpest Congress, held at Pretoria from the 2nd to the 13th August 1897, for the purpose of acquainting the Governments of South Africa with the most powerful means of combatting the rinderpest, in accordance with the invitation of the Government of the South African Republic, dated 15th July 1897, addressed to the Governments of the Orange Free State, the Cape Colony, Natal, and the Portuguese and German possessions.

I have the honour to be with profound respect

Your Excellency's obedient servant,

(Signed) C. E. SCHUTTE,
Landdrost of Pretoria.
Chairman of the Sessions
of the International Rinderpest Congress.

By resolution of the Executive Council of the South African Republic, dated July, 1897, it was decided on the proposal of the French experts, called upon by the Government of the South African Republic, for the purpose of studying the diseases of microbic origin, which torture the country and especially the « rinderpest,» and after having heard the declarations and proposals of Mr. Jean Danysz, and after having accepted the organisation and plans of working, framed by him to « invite all the Governments of South Atrica to take part in an international Congress, the regulations and order of working of which were indicated bij the following articles:—

ARTICLE 1. An International Congress will be held at Pretoria from the second of August up to such time as the work will be completed, for the purpose of becoming acquainted with the most suitable means of combatting the rinderpest.

2. Delegates of all the constituted countries of South Africa were invited to take part, to wit:

Orange Free State;
Cape Colony;
Natal;
The Portuguese Possessions and
The German Possessions.

3. The Governments of each of the above mentioned countries have been invited to send two official delegates to the Congress.

Besides those official delegates invited by the Government of the South African Republic, the delegates of all South African Agricultural Societies shall also be permitted to take part in the business of the Congress.

4. The Landdrost of Pretoria, Mr. C. E. Schutte, is appointed Chairman of the Congress.

5. Regulations of the Congress:

§ 1. On every day of the Congress will be held:

A general meeting;
A meeting of delegates.

§ 2. With regard to every proposal, discussions will first have to be held at the general meeting and afterwards at the meeting of delegates.

§ 3. The reports on the general meetings and of the meetings of delegates will be made in four languages, viz., Dutch, French, German and English.

The reports of the sessions of each day will be printed and distributed amongst the members of the Congress on the evening of the same day.

§ 4. All proposals must be dealt with by the general meeting and by the delegates.

§ 5. The proposals dealt with by the general meeting and framed by the delegates will be put to the vote at the first ensuing general meeting and accepted or rejected by the members present by majority of votes.

§ 6. Only the official delegates will be allowed to vote.

§ 7. The sessions of the Congress will be public; all persons present at the general meeting will have the right to take part in the discussions.

Programme of business:

1. Description of the character by which the rinderpest is distinguished.
2. History of the epidemic in Africa and especially in South Africa.
3. Criticism on the general plan of methods of inoculation followed up to the present.
   - *a.* Grobler's Waterberg method (mixture of gall, virulent blood, serum, &c.)
   - *b.* Professor Koch's method, inoculation with gall from animals which died of rinderpest.
4. Proposals for resolutions regarding the application of those methods.
5. Treatment for the prevention and cure of the rinderpest, by means of the defibrinated blood of salted animals, method Danysz, Bordet, Theiler.
   - *a.* General idea of the principles of that method.
   - *b.* Conditions under which that treatment can and must be applied.
   - *c.* Organisation of such treatment.
   - *d.* General view of the results obtained.
6. Criticism on the measures to be taken to stop the progress of the rinderpest.
7. Proposals for resolutions regarding the joint acceptance of measures for combatting the epidemic.
8. The erection of a central international station having for its object:
   1. To collect all information regarding the progress of the epidemic and the statistics of the result obtained by the application of the different methods of treatment.
   2. To publish the data obtained and to treat the rinderpest over the whole of South Africa.
   3. To continue the study of the disease experimentally.

First day.—Monday, 2nd August, 1897.

The Congress was opened at 10 o'clock in the morning by the Acting State Secretary, Mr. van Boeschoten, who welcomed the delegates on behalf of the Government of the South African Republic and delivered the following speech, to wit:

The object of the Government in convening this Congress, was and is to combine all efforts for combatting rinderpest.

The delegates know that the South African Republic have already gone to very great expenses to combat the general enemy; still, if by the Congress the desired result is obtained, namely, to help the farmers, the Republic will have reason to congratulate themselves for having taken the initiative in convening this meeting. The Government will shun no further sacrifices for repairing the devastations caused by the rinderpest.

The Government has thought fit to invite the Landdrost of Pretoria, Mr. Schutte, to accept the chairmanship of the Congress.

The Landdrost has indeed a very large experience in rinderpest matters, and for a considerable time witnessed the work of the French savants, Drs. Danysz and Bordet, and of the Government Veterinary, Surgeon Mr. Theiler.

As regards the latter, it is superfluous co communicate to the Congress that those gentlemen will join their efforts to those of the delegates, and will co-operate in the general work.

Mr. van Boeschoten finally wished the members of the Congress much success in their work, which would, no doubt, be for the benefit of the whole of South Africa.

The Chairman, Landdrost Schutte, thereupon delivered his opening speech, the text of which, being translated in different languages, was handed to the delegates, and reads as follows:—

Gentlemen, this is the third time that a rinderpest Congress is convened in South Africa.

The first two, those of Mafeking in May, 1896, and of Vryburg, in August and September, 1896, which were convened and organised by the Government of the Cape Colony, had for their object the joint study of certain measures, which were to stop the epidemic as much as possible in its course,

They would then gain time in order to seek for more powerful preventative means, in order to protect the animals against the disease by means of vaccine other ways, and in order to cure the animals already sick.

At that time it was indeed known, that, although the rinderpest had already shewn itself in olden times, and had repeatedly played havoc amongst the herds in Eurape, Asia and North Africa, still no remedy had been found to cure or to prevent the disease.

It was known that in Russia, where in some parts of the country the rinderpest rages uninterruptedly, a system of isolation and a series of quarantine measures had been introduced, while all animals infected were killed.

In our countries, this same defensive system was wanted to be introduced,

You know, gentlemen, that notwithstanding the large pecuniary sacrifices, the Government of the South African Republic have not hesitated in bringing in order to protect the country against this evil, yet they have not succeeded in putting a stop to the spread of the rinderpest.

The epidemic, it is true, was spread more slowly than was the case at the commencement, but still with an irresistible power. Some months ago it entered the territory of the Cape Colony, some days ago it entered the territory of Natal, it now stands at the frontier of the Portuguese Possessions and will perhaps also break out there some day or the other.

So strong, in fact, is the power of infection of this terrible disease, that notwithstanding all our efforts, notwithstanding all measures which have been taken, it is to be feared, nay, it is certain, that the Rinderpest will rage everywhere in all countries of South Africa.

But although these sacrifices and all these efforts did not have the result of procuring an entirely satisfactory result, still they have been the cause, as I already remarked, of stopping the Rinderpest in its

course. We gained time on the epidemic and that time has not been lost.

The Governments of nearly all countries of South Africa, whether acting independently or jointly, have entrusted the task of studying the rinderpest and of finding a cure against it to their respective Veterinary Surgeons or Savants, whom they requested to come out from Europe.

The Governments of the South African Republic and of the Orange Free State did for this purpose send their Government Veterinary Surgeons, Messrs. Theiler to Buluwayo, Henning to Bulubay, and Hutchins to Cubrenos.

Subsequently, Messrs. Theiler and Pitchford, the latter Principal Veterinary Surgeon to the Government of Natal, received instructions on the 1st October 1896, to erect an experimental station for the study of the Rinderpest in South Africa, in the district of Rustenburg.

In November 1896, the Government of the Cape Colony in conjunction with the Governments of the other South African Countries, erected an experimental station at Kimberley, the management of which was entrusted to Professor Koch.

Finally in January 1897, the Government of the South African Republic called upon Messrs. Danysz and Bordet, Bacteriologists of the Institute Pasteur at Paris, to erect an experimental station at Waterfall in the district of Pretoria, in order to study the diseases caused by microbes, and amongst others also the Rinderpest.

Gentlemen, I do not think it necessary to give an elaborate explanation of what these gentlemen have done, but I wish to give them a word of praise for their efforts.

Like true scientific men they have assisted each other without any jealousy, they have given all their intellect, and all knowledge acquired in the first European schools with no other object in view than to contribute, as much as possible to the well-being of those countries which had entrusted the promotion of their interests to them.

The work of the Congress, which I have now the honour to open, and the results obtained and at present known, will pay homage to them and give due appreciation to their merits.

At the present moment, my task is to point out that they have joined for the purpose of being all the better able to work and that they may serve us, as delegates of the several Governments of South Africa, as an example to also join our efforts in order to be better able to help them in combatting the joint enemy.

We have learned to confide in them, when, on coming out from Europe, they frankly declared that they did not bring the remedy against the rinderpest with them, but only the means to study this disease and—if possible—to find the remedy.

Now that this remedy has actually been found, it behoves us to join in our confidence in their science and in their devotion. Let us give proof of this by following their advices, for this is the foundation of what they desire, namely to help us in order to combat the feared enemy in the most powerful and quickest manner possible. The rinderpest, as you no doubt are aware, is no special disease puculiar to these countries, like horse-sickness.

Before the outbreak of the epidemic, which at present rages in our country, South Africa had never heard of Rinderpest.

I need therefore not be wondered at, that our Boers, on hearing of this fresh calamity, knew of no means to combat it.

In Europe, the Rinderpest is known for centuries, and our Governments therefore considered it appropriate to turn to European savants, in order to obtain the necessary means against this desease.

The results which have been obtained will show you that the Governments have looked upon the matter in the proper light.

You have already been in a position to become in part acquainted with these results from the report which was sent to you at the same time that the letter inviting you to take part in the Congress, was forwarded to you.

Since the publication of that report, thousands of animals have been treated with equally good resnlts. It is therefore beyond doubt, that at present we are in possession of a remedy against the rinderpest, which enables us to save the majority of our cattle from death, and at the same time to salt the animals treated for the further period of their life. But the knowledge that a remedy against a disease does exist, nay, even the knowledge of such remedy, and the application and preparation thereof are two different matters.

As I already remarked at the commencement, the two first Congress' about the runderpest, could have no other object than the study of measures, laws and resolutions, which might tend to hinder or to stop the epidemic in its course by means of quarantine, etc.

Now that we are in possession of an acknowledged satisfactory remedy to combat the disease in a direct manner by the application of a treatment to animals, already sick or which may become sick, we have only to investigate how such treatment will have to be applied, in order that the Boers may reap the benefit of it and may apply it under the most difficult circumstances. Moreover care must be taken to organize the defense against the rinderpest in the future in such a manner that not only a large majority of the animals is saved and salted, but also for the purpose of being fully prepared to meet a renewed attack.

For all these reasons, gentlemen, we wish to propose to you to study the different matters contained in the programme of working, and which will be duly submitted to your consideration, as large and in an as much as possible elaborate manner.

Gentlemen, we must not conceal from ourselves the fact, that we have a great work before us, we have to save the riches of our country, the only wealth of our burghers.

It will depend on the resolutions here to be taken whether the arrangements of defense will be good or bad.

The task and the heavy responsibility of enlightening our Countries as to the treatment of their true interests, rests upon our shoulders; therefore we have to put all our energy and devotion into the work which has been confided to us.

We will subject the rinderpest in its origin and character to our consideration, we will study its history and the circumstances under which it has shown itself and developed, and those under which it has come to a stop at different times and in different countries.

We will subsequently investigate the principle of vaccination, as a preventative and the cure applied to rinderpest, the value of those different methods and the application thereof in practice.

After having thus accounted for the value of the treatment and the application, for combatting the disease in the most powerful manner in each special instance, we will revise the laws and resolutions, which have been issued and the measures which were taken in connection with the rinderpest in these countries. Probably we may find some of them being no longer applicable under the present circumstances, while other stipulations on the other hand will have to be confirmed in order to facilitate the battle and to secure a good result of the campaign.

When we have finally become acquainted with the nature of the disease and with the circumstances under which it has become developed, and under which it has remained existing in some countries and when we have also become acquainted with all the measures which we mean to propose and their probable effect, we will consider the use of the erection of a Central and International Station, where the study of the rinderpest may be continued experimentally, where all information respecting the disease may be collected, where the direction will be indicated to be followed in all countries of South Africa.

This gentlemen is a short review of the programme of our labour, which will serve us as a guide, in the case of some point having been omitted, which have also to be discussed, you are kindly requested to add them to it.

This programme, as you will have noticed, also contains the principal stipulations regarding the regulations, which we have thought fit to make, in order to arrange the different questions which are subjected to our consideration, to give each delegate time to take his decisions and to frame them and also in order to facilitate the reduction and the printing of the official reports of each session.

At this Congress, where men of different nationalities have come together, we felt obliged to adopt one single language the Dutch, as official language.

At the same time we have placed at your disposal four secretaries, who will frame a review of the sessions in the Dutch, English, French and German languages, and two interpretors, who, during the sessions, will translate into French and German, what is spoken in Dutch and English.

Each resolution, which will be discussed and proposed bij the general meeting, will be subjected to the opinion of the delegates, who in this manner will have time to thoroughly investigate each proposal and to make known their wishes in respect of them.

The reviews of each general session and the formulated wishes of the delegates will each day be framed and printed in four languages.

Every member of the Congress will every day, at night, receive a review in the language, which he understands best, of the session, which has been held in the morning. In this manner every member will be in a position to fully understand the importance of the resolutions to be taken and is consequently able to vote with conviction.

On each day of the Congress will be held:

1. A general session.
2. A meeting of delegates.
3. A meeting of the Commission of organisation with official delegates.

Each general session of the Congress will comprise:

1. The speeches of the members as registered;
2. A general debate, in which all the members of the Congress may take part, namely: the the official delegates and those of the Agricultural societies.

   No registration beforehand is required to speak in connection with the general discussions,
3. The proposals to the resolutions to be taken.

In order to make possible the work of the Secretaries and the printing and distribution of the reviews of the same day, I kindly request the speakers to lodge with the general Secretary of the Congress the contents or a review of their speech, as soon as the same will have been delivered.

The reports of the sessions will therefore contain:

1. The speeches, which are delivered at the general sessions in extenso, or an extract therefrom.

   These speeches must be lodged with the general secretary before one o'clock;
2. A simple review of the speeches, of which no copy was lodged with the secretary;
3. A report of the general discussion, stating the names of the speakers, who take part in it and the meaning of their words.
4. The exact contents of the proposed resolutions.

We have accepted these regulations in the hope that bij working methodically we will also work successfully, in the hope also that each day will contribute its share of facts and resolutions obtained, which are exact, well studied and well described.

The general sessions of the Congress will be public, all delegates will have the right to speak, but only the official delegates have the right to vote in connection with the resolutions, which are on the order.

The public will have no access to the meetings of the delegates, but each delegate will have the right, to introduce to the meetings, those persons which they desire to invite.

The Governments of all Countries, which we requested to be represented, have each sent two delegates to this Congress.

Those delegates are:

Orange Free State: Messrs T. Brain, Chief Rinderpest Commissioner and O. Henning, Government Veterinary Surgeon.

Cape Colony: Messrs. Drs. Edington and Turner.

Natal: Messrs Lloyd and Haslam.

Portuguese Possessions: Messrs Dr. Mario de Nascimento and Dr J. Ferrar d' Azevedo.

German Possessions: Consul von Herff.

South African Republic: Messrs C. E. Schutte, Landdrost of Pretoria, and A Theiler, Government Veterinary Surgeon.

The Agricultural Societies in South-Africa have also been intimated that they can have themselves represented at the Congress, bij one or more delegates.

Messrs Danysz and Bordet will attend the Congress as advisory members, delegated by the Governmeut of the South African Republic.

Mr. Bordet will give us a general report of the labours at the Waterfall Station, as regards rinderpest and the treatment with blood from salted animals.

Mr. Danysz, who has kindly taken upon himself the organisation of the Congress, will continue to lead the work thereof and will submit to you a plan for the organisation of the treatment of the rinderpest in South Africa. Gentlemen, I must now bring this address to a close, I wish to concentrate your kind consideration to this one point, for which we have requested the co-operation of all countries of South Africa, to the great object of this Congress, namely to consider jointly and minutely the present position, so that we may prepare ourselves for a new defensive journey under the most favourable circumstances.

The reports of this Congress, will, I hope, form a permanent collection, of trustworthy documents, of the greatest importance in the history of the rinderpest, documents which will be the bases for new investigations.

I hope that with this Congress, a new page will be turned over in the history of the battle against the terrible epedimic.

Although up to the present we were obliged to return, to cause ourselves to be dictated, the time has now arrived for the attack and by working with joint forces, I have full confidence that we shall yet carry victory with us.

(Sgd.) SCHUTTE,
Landdrost of Pretoria,
Chairman of the Sessions of
the International Rinderpest Congress.

At the finish of this address, the Chairman communicated that the Congress would meet at half past two.

The work to be done by this session was fixed in the following order:—

1. Resolutions, regarding the order of the work of the Congress.
2. Decision as regards the order of work for the next day

Monday, 2nd August 1897.

AFTERNOON SESSION, SECOND MEETING.

The session was opened by the Chairman at two thirty.

The General Secretary intimates that the following delegates will be sent by the Agricultural Societies.

Mr. A. W. Roselt by the Johannesburg Agricultural Society.

Mr. Jan Vos, by the New Castle, (Natal) Agricultural Society.

Messrs J. J. Enschedé and Nicholson by the Pretoria Agricultural Society (Mr. Wilson to fall in if necessary).

Mr. James Ayliff, by the Port Elizabeth Agricultural Society.

The Chairman invited the delegates of the Agricultural Societies to be present during the business and to make such remarks, as they might think fit.

The first point on the order touched the resolution to be taken regarding the order of the work of the Congress.

The programme as proposed by the Commission of organisation was adopted by the Congress.

The second point on the order touched the decision to be taken as regards the order of the work for the following day, 3rd August:—

The programme for the next day as proposed by the Chairman, comprises:

1. General characteristics of the rinderpest and Symptoms of the rinderpest.
2. History of the rinderpest.
3. Method of preventative inoculation.
   Waterberg method.
   Professor Koch's method etc.
4. Report on the results obtained.
5. Discussion.
6. Proposals.

In the afternoon the delegates were to visit the experimental station at Waterfall.

This programme of work was unanimously accepted.

The Chairman thereupon intimated that number 1 of the programme would be introduced by Mr. Henning of the Orange Free State.

Numbers 2, 3 and 4 by Mr. Theiler, Veterinary Surgeon of the South African Republic.

The following remark was made by the Natal delegates:

« The Chairman having made mention in his opening speech that a very effective remedy against the rinderpest has been discovered, we request the Government of the South African Republic to kindly place us in possession this evening of a complete report regarding the method and the results obtained, in order that the Conference may be in a position to discuss the report and the results obtained.

We moreover would request that the results obtained by the foregoing method, be explained to the Conference or to a commission of the Conference.

The Chairman ih reply to this proposal intimated that the report regarding the investigations of the French bacteriologists and of Dr. Theiler as also of the results obtained, would next Wednesday be handed to the delegates in Dutch, French and English.

Second day.—Tuesday, the 3rd August 1897.

The session was opened at 9 o'clock in the morning

Number one of the programme titled « General Characteristics » of the rinderpest came under discussion.

The question was treated by Mr. Henning, Veterinary Surgeon of the Orange Free State.

Mr. Theiler did not agree with speaker as regards the length of time of infection.

According to his experience did the time of infection never last longer than six days.

Mr. Turner shared Mr. Theiler's view regarding the ordinary duration of that time.

But the time of infection may be decreased by infecting the animal with virulent blood, taken after a number of changes from animal to animal. By these changes, the infectious material increases in strength, the time of infection becomes shorter and may even reach 60 hours.

On the other hand, the time of infection may exceed the normal time if the animal has only been infected with a very small dose of virulent blood, for instance with 1/2000 c.c.; under those circumstances it may reach 13 days. According to Mr. Henning, the rinderpest is always accompanied by fever.

This certainly is generally the case, but speaker had noticed an instance, when there was no fever. A cow after having been inoculated with infectious material in order to obtain gall, threw a calf, in the course of the disease and died.

The calf however lived for nine days.

The temperature of the calf remained normal until after the eighth day, when the thermometer showed 103 degrees on the animal, but it showed not a single symptom, and ate.

The ninth day it collapsed and died.

The blood of the heart, in small doses, caused rinderpest to a young animal.

Calves has been found in the body of their mothers, which died of rinderpest, and the inquest disclosed the characteristic symptoms.

Mr. Haslam was of opinion that Mr. Henning's remarks only applied to the disease as shown in natural state, but that his opinion with regard to the important question of duration of the time of infection did not agree with the experiences of the laboratory.

The course of the disease differs, according to the reasons by which it is caused, a fact very well known to observers.

Those who have studied rinderpest in India, will no doubt agree with Mr. Hennings remarks.

In the case of many diseases, the duration of the infection is variable.

The infection does not always retain the same characteristics and the virulency caused by it, is not always the same.

According to Mr. Henning, there is a chance of the animal being cured, if, for seven days, it has resisted the disease.

In India people are not so optimist, they only consider the cure probable after the tenth day. The treatment with large quantities of phenicine mixed with oil and methylene alcohol dit according to speaker, give favourable results.

As regards the symptoms noticed in the case of inquests being held, one of the most characteristic signs of the disease, as appearing in India, consists in the changes of the slime of the mouth.

In India at the commencement of a disease amongst cattle, the occasional and rare cases, which are shown far from the infected places, are often regarded as cases of inflammation of the slimefleece of the mouth. In India also much importance is attached to the infection of the herds by the water. and the animals are therefore as much as possible prevented from drinking at suspected places.

Mr. Bordet considered the facts, communicated by Mr. Turner regarding the duration of the infection, to agree exactly with the theoretical data.

The increased violence of the infectious material in consequence of the changes, is a general fact. Notwithstanding, no communications are made with regard to the decrease of the time of infection in the rinderpest, in case the infectious material has only undergone a very limited number of changes; in that case the fever regularly appears on the fifth day after the inoculation. It would also be worth knowing how many changes from animal on to animal the infectious material of Mr. Turner had roughly undergone, when he caused the disease with a shorter infection. As to what concerns the duration of the infection in voluntary cases, the valuations of different observers are not to be trusted, as, outside the laboratory, we never know

correctly at which moment the virulent material has entered the organisnus.

Mr. Turner replied that the number of changes or transitions, which the infectious material, employed by him, underwent, were considerable, about two hundred.

Commandant Erasmus made mention of certain irregularities which he experienced in the duration of the infection.

On the other hand, experiments had also shewn, that blood taken two hours previous, caused the disease two days earlier, than blood, taken four hours previous.

Mr. Henning replied that notwithstanding, the virulency of the blood of rinderpest for some time entirely remains the same.

Speaker was however of opinion that the duration of the infection might differ according to the quantity of blood inoculated.

As to what concerns the possible absence of fever in rinderpest, Mr. Henning did not think that the instance mentioned by Mr. Turner was quite evident, as the fever might have shewn itself by the calf, before it was born.

Mr. Turner agreed with Mr. Henning in regard to the resistance of the virulent material in wel preserved blood.

Blood, kept for ten days in a bottle and not exposed to the light, had given the rinderpest with a dose of 0. 1 c.c.

Mr. Bordet, from experiments taken at Waterfall, agreed that the virulent material in the blood, does not for a very long time retain its power.

Blood, preserved in ice for about a fortnight, does no longer cause rinderpest, not even when injecting large quantities of it.

Unfortunately the loss of power does not gradually take place.

In the reverse case, namely if the virulent material gradually became weaker, before having got entirely exhausted, it migt be expected that, thanks to this fact, a vaccina material should be obtained by means of pestblood, which for a longer or shorter period be retained.

Under the action of certain influences, such as light, the virulence of the blood can much sooner disappear.

Messrs Theiler and Pitchford have taken some experiments on the action of the sunlight which Mr. Theiler will kindly communicate to the Congress.

In the case of annimals which have had the disease, but are cured, the virulent material can remain in the blood for a very long time. The blood of an animal which is improving, taken ten days after the fever has abated, gave rinderpest to young animals.

Mr. Theiler then communicated his experience with regard to the action of the light on the virulency of the blood.

The virulent blood exposed to the sunlight for two hours, looses its actions entirely. Other experiments have shewn that 0.5 % of carbol annuls the virulency of the blood.

Mr. Koch has proved that a similar quantity of glycerine mixed with the blood, produces the same action.

At the instance of Mr. Danysz the discussions were closed and the following proposal framed by him, accepted unanimously.

Mr. Danysz proposal reads as follows:—«We request Mr. Henning to kindly take upon himself the task of giving a correct and short description of the symptoms of the rinderpest, during the disease and at the inquest, and to make prominent the difference existing in that

respect between the pest and the other diseases, which can rage amongst the cattle of South Africa (for instance the Texasfever or «rooiwater,» inflammation of the lungs).

It would be useful to distribute such a description amongst the Boers at the same time with the prescriptions regarding the treatment of the rinderpest, so as to enable them to know exactly what disease they have to deal with.

It is necessary that the Boers as soon as possible and as correctly as possible, learn to discover those different diseases amongst the cattle: this is at present all the more necessary as the treatment of the rinderpest, with blood of immunised animals, is employed more and more and it is absolutely necesary that such blood does not contain any germ of the disease.

The second point of the programme was introduced bij Mr. Theiler namely that regarding the history of the rinderpest in Africa and more in particular in South Africa.

THE RINDERPEST IN SOUTH-AFRICA.

Communication of Mr. Theiler.

In former times, the rinderpest has already often made its appearance in North-Africa but it does not transpire that it has before made its appearance in South-Africa, at least we do not possess any document or historical traditions, which can bear witness to the spread of the disease. Certain evidences confirm that the pest has last been introduced into North-Africa by cattle from Rumelia sent out for the Italian troops at Massauah; according to another view, the pest was introduced by cattle from India; at the same time, about 1893 intelligence was received of a murdering epidemic raging in West-Africa and surrounding countries; soon after travellers intimated that North of the Zambesi, cattle and game succumbed in large numbers.

It appears that for some time the pest was kept back by te Zambesi stream; wich was called by travellers «cattle disease of the Zambesi.» At the end of February 1896, a herd introduced the disease into Buluwayo.

This cattle was sold to the highest bidder and the pest was thus spread in all directions.

When it was observed how dangerous the disease really was, it had already spread into Khama's land.

From the first, the Chartered Company has done much to prevent the disease, from spreading and ordered the animals to be slaughtered and stopped the transport.

In the meantime the Kaffirs rebbelled and they were obliged to give the spread of the disease a free hand.

Even as the action of the Chartered Company had been energetic at the beginning, so slow was that of English Government in Bechuanaland.

In the latter country, the disease was spread without any obstacles being put in its way, and it followed the transportroad along the Crocodile river as soon as the oxwagons.

The rinderpest appeared along the entire frontier of the Transvaal, from there to enter the interior.

It first appeared at Lenokwani in the district of Zeerust, when it was observed at the end of March.

The Government of the South-African Republic caused the frontier to be closed and for some time it really appeared as if the pest was to be overpowered.

The Cape Government invited the different Governments to a conference, in order to discuss the measures to be adopted against the pest.

The first conference took place at Mafeking and the second at Vrijburg.

At the first conference it was proposed to combat the pest by means of such measures as were taken in Europe by cutting off the communication with the infected areas and by slaughtering the animals affected.

Already at the second Conference it was acknowledged that it was impossible te realise the systematic destruction of those herds and that the guarding of the roads of communication by guards was also very difficult.

In order to secure relief to those guards, it was proposed to enclose the infected places by means of wire, and to stop the destruction unless outside the enclosures in case the disease should go beyond them.

It was soon observed that very serious difficulties stood in the way of the destruction of the herds.

The repugnance shewn by the white population against such measures might be overcome, but a revolution amongst the kafirs was anticipated; moreover the number of herds were of such extent, that such a large number of people should have been required as could not be brought together.

In fact it was a question of hundreds of thousands of animals, f.i. along the Marico and Crocodile rivers, where the animals came to drink at both shores, as also along the Molopo and small pans, where the animals from the neighbourhood gather to drink.

Although up till then we succeeded to bring back the pest, by attacking it in the front, a new feature made its appearance, the pest advanced in bounds.

It broke out at places several hours on horseback from infected herds with a great spread and without it having been explained from what cause.

This was repeated in a very alarming manner and although all cattle transport was stopped in the Transvaal, the disease spread more and more.

The repugnance shewn against the slaughtering of the herds on the one side and the reports which came in, communicating certain favourable results by inoculation, on the other side, caused the Transvaal Government to come to the conclusion to stop slaughtering the infected animals and to allow of the treatment of the disease.

From that time onward the pest became general. Wherever it appeared, very primitive methods of inoculation were adopted.

Fortunately, a treatment of the disease was in the meantime discovered by Professor Koch, by means of which the devastations caused by the disease were cut down to one half. In the Transvaal, the slaughtering of the herds appeared to give favourable results, where it had been applied systematically.

Notwithstanding more people were against the adoption of such measures than in favour of it.

In the Orange Free State, where the pest broke out at the end of September, no recourse, as far as I know, was taken to the slaughtering of animals, but it was endeavoured to stop the disease by quarantine measures.

The Cape Colony was not so soon discouraged, she began to fight the battle anew in British Bechuanaland

and tried to stop the pest by slaughtering the spans of oxen coming from the North.

At the time the first Conference was held, the pest already raged at Mafeking, at the time of the second Congress it had already passed Vryburg and having remained quiet for some time, slowly spread southward.

The Orange River appeared a serious obstacle, nevertheless the pest soon appeared South of that river.

The pest has now also broken out in Natal, spreads gradually to the South, and is no longer away from the coast. The Governments of all South African States have done everything in their power in the first place to annihilate the pest, and subsequently to at least stop its progress. For this purpose they have sacrificed considerable sums of money, and if their object in view has not been attained, yet they have done their duty.

Notwithstanding the loss we have suffered, the satisfaction remains that at least to a certain extent we have been able to stop the progress of the infection, truly only for a short time, but yet long enough to allow of the practical application of two methods capable of securing to the different South African States the preservation of the greater part of their cattle.

Mr. Henning said that in the Orange Free State there was one district, where the owners of cattle had unanimously decided to kill all animals showing symptoms of rinderpest. This was in January, 1897. Last week the disease appeared again in the district, after having entirely disappeared in the first instance. This shows that the disease can be caused to disappear by killing the sick animals, but under the present circumstances, the disease should always end by breaking out again in the same part of the country.

In Griqualand West, the disease broke out, and two days afterwards attacked the district of Hay. The sick animals were killed, but the course of the cattle-pest could not be stopped all the same.

It is to be regretted that the Buluwayo authorities at that moment could not make a proper diagnose; if the disease had then be discovered, much evil would have been prevented.

Mr. Haslam then asked some information regarding the spread of the disease in South Africa. In India did the disease, after having shown itself in one place, often jump over considerable distances, without following a regular course.

Mr. Theiler said that the disease came on quite unexpectedly in this Country, right in the centre, without any precautionary measures could be taken.

Mr. Meintjes asked some information regarding the carrying of the disease by game.

Mr. Henning said that at the time when he was in the service of the English Government, hunters told him that the antilopes and the bucks died of rinderpest. This fact had also been observed in Europe in the Zoölogical Gardens.

Professor Koch's experiments have thrown no light on the question of infection of small game. He did, however, not think it necessary to take special measures against the spread of the infection by small game, because he knew that notwithstanding all, the disease was bound to spread by force through the whole of South Africa.

The time having expired, the session would be recommenced to-morrow.

The Chairman asked the delegates whether they

agreed to visit the Experimental Station at Waterfall in the afternoon.

Although from the programme of the day still the following points, namely, 3, 4, 5, and 6 remained unfinished, still the following matters were added to the programme of to-morrow, namely:

1. Voting without discussion on proposals made in the previous session.
2. Report on the treatment of the rinderpest by defibrinated blood of salted animals.
3. Report on the results obtained by that method.
4. Condition in which the treatment can and must be applied. Erections of stations.
5. Proposals and resolutions regarding the application of this method.

Third Day. — Wednesday, August 4, 1897.

The session was opened at 9 o'clock in the morning by the Chairman.

Mr. Pitchford, Veterinary Surgeon, to the Government of Natal, attended the meeting and requested leave of the Chairman to take part in it, not as an official delegate, but only for the purpose of being present at the discussions and to take part in them.

The proposal of Mr. Danysz, supported by Mr. Theiler (the text of which was taken up in the report of yesterday s session) made for the purpose of requesting Mr. Henning to give a description of the various cattle diseases, on behalf of the Boers, is unanimously accepted.

Next came under discussion the investigation of the points, which ought to have been treated at yesterday's meeting, but which had to stand over through want of time.

In the first instance number three of that programme was on the order.

This point was treated by Mr. Theiler; it concerns the history of certain methods of inoculation, employed against the rinderpest. Remarks on the Waterberg method by Dr. Theiler follow:

At the time of the second Rinderpest Congress held at Vrijburg, we still more or less expected to be able to prevent the rinderpest from pushing on to the districts not yet affected, by means of employing preventative measures, consisting of killing the sick animals, disinfection of infected areas and also of persons who had been near sick animals.

Already then we were bound to agree that the best preventative, namely the killing of the animals, which got sick could not be applied to South Africa with good results, because of the local circumstances and conditions.

But in reality we must acknowledge that all these efforts are powerless when it comes to stopping the spread of the disease.

At the present moment we may confidently assert that the whole of South Africa has been affected by the plague and we can also observe that the sanitary measures taken against the spread of the rinderpest have everywhere been modified. We are now in a position to apply other means to combat the rinderpest, means by which, certainly the spread of the disease to the South can not be stopped, but which can be applied

for the purpose of saving the largest possible portion of the animals.

We, in the South African Republic have already for some time become aware that inoculations are the only means of repelling to a certain extent the devastations which are caused by rinderpest, and it is now our chief task to salt as soon as possible a considerable number of animals.

In fact, we know, that if that task is once accomplished, the rinderpest will disappear of itself.

The idea that such an infectious disease as the rinderpest had to be treated by inoculation, soon became evident to our South African Boers.

Already at the commencement original methods had become spread, at a time in fact that the nature of the disease was only very incompletely known.

Amongst these methods, the one best known was that consisting of the injection of a mixture of blood of the heart, the exsudation of the abdominal cavity, of gall and often also of the contents of the bowels.

It was proved that by the injection of such mixture, the disease could be caused, but it was at the same time observed that in certain instances those injections remained without effect.

It was acknowledged that in such cases the injection might prevent the disease of making its appearance.

The fact that this mixture did not always cause the rinderpest, was explained because of the virulent material being so easily destroyed.

At the time of the second congress, held at Vryburg, we were not yet in a position to procure all the required information on that head.

At present it is different, several experiments have shewn how easily the virulent material may be destroyed.

In that manner, people have been able to make sure from experiments taken by Mr. Koch, Mr. Fitchford and ourselves, the virulent material destroyed, by exposing it to the sunlight for two hours.

The action of a temperature of 31° C. for four days, produces the same result, as also a 25 days stay in ice chambers.

Mr. Koch has more over proved that the glycerine is sufficient to annul the virulency of the blood and that the gall either from healthy animals or from animals which died of rinderpest, produces the same effect.

Thanks to this knowledge, we now fully understand why the injection with the mixture, above referred to did not always cause the disease, and also why that mixture generally becomes less dangerous after it has been preserved for about two days, before being used for injection.

In many instances it has been proved that a much larger number of animals recover, when the infection has taken place by this means, than when it is due to the contact with sick animals.

At present it would be hard to give a complete explanation of those facts, but it may safely be admitted that the infection caused by the injection of a small quantity of this pestblood, is generally less serious than that caused by the natural infection, it is also known that the virulency of the disease is not always the same and that there are more or less good natured forms of rinderpest.

In other cases again, it was observed several times, that the application of that method to a herd, partly affected by the rinderpest, stopped the course of the disease.

It must therefore be admitted that in certain cases, this treatment allows of a temporary salting, the duration of which however was never very long.

That method must however no longer be recommended, in fact it has already practically been abandoned by the Boers of the South African Republic, because it does not secure the cure of a sufficient number of animals. In one of the cases observed by us, for instance, out of 1300 animals inoculated, only 60 remained.

The proportion of the animals cured to those which died is therefore not quit 5 % and is therefore very near to that observed in the case of herds affected by natural infection.

Mr. Theiler finally laid a proposal on the table, supported by Mr. Brain and reading as follows:

«The different methods, subjected to the foregoing deliberations, must in future no longer be applied, because they have contributed to the spread of the rinderpest without giving sufficient guarantees as regards the salting of the animals treated.»

Subsequently Mr. Theiler discussed the details of the method of Professor Koch and the remarks, to which the application of that method has given rise.

Remarks of Mr. Theiler:

Method of inoculation against the rinderpest of Professor R. Koch.

Before making any remarks as to what experience has taught us in regard to the application of the method of Dr. Koch, it will be good to go into the principles on which the method is based.

The method adopted by Professor Koch, consists of the inoculation of animals still healthy, with 10 c.c. gall, taken from an animal just dead of rinderpest.

According to Mr. Koch, the animals treated in this manner, after certain time will be salted against the disease; this being salted is regarded by Dr. Koch as being of an active nature.

The quantity of gall, which must be injected and that of 10 c.c. has been decided upon as a result of the following experiment:

If healthy animals are injected with 1, 2, 3, 4, 5 10 c.c. of gall, originating from an ox, which died of rinderpest, and if these same animals. 10 days afterwards are inoculated with 0.2 c.c. pestblood, it is shewn that the animals which received less than 10 cc. gall, become sick, while those, which receved 5 cc. or more, recover.

The animals which have received 10 cc. of gall, may be considered as having become salted.

This salting, according to Mr. Koch, is of such a nature, that after four weeks, the animal will be able to resist an inoculatiton with 40 cc. of virulent blood without the slightest trouble.

When injecting different animals with 10 cc. gall and subsequently inaculating each of them with virulent blood, not at the same moment, but alternately (in case one of them has been innoculated the second day, the others respectively the 4th, 6th, 8th, etc.), it has been found that those animals which have been infected two days after the gall-injection, died of rinderpest, those infected four days after having been injected with gall became sick, but recovered while those which have been inoculated after that, did not get the disease. The salting, therefore, takes place from the 4th to the 6th day.

The influence of the gall on the healthy organism, is not shewn by general characteristics.

Usually no increase of temperature is observed; at the place of injection is a certain local reaction, which is shewn by a swelling. It is of importance to know whether such local reaction is caused in connection with the characteristics of the gall, with a view to the immunisation against rinderpest.

Will the animals be able to resist the rinderpest after the injection with gall, if this local reaction has not taken place?

For instance, in the case of inoculation against inflammation of the lungs, we know that the appearance of local symptoms are required to procure the immunisation.

It must at once be observed, that the gall, from healthy animals, when injected under the skin, causes quite similar local symptoms.

Therefore from the observation of such symptoms it must in no way be concluded that the animals will in future resist the rinderpest.

Besides, it has been proved that those symptoms are all the more conceivable according to the gall being richer of germs of putrefaction. The action of the gall on the organism must be regarded as that of a vaccine. If therefore the gall contains diluted virus, we must take it that such diluted virus can be created by various influences, which work on the germ in a manner of entire virulency. Mr. Koch, and after him Messrs. Kohlstock and Turner, have tried to explain the nature of the vaccine contained in the gall.

They have mixed gall of a healthy animal with rinderpest blood and have shewn that such mixture prepared in accordance with certain proportions, does not cause rinderpest. But it must be added, that it does not immunise either.

The normal gall has therefore in the case of those experiments, exercised a destroying and powerful action on the virus without, however, changing such virus into vaccine.

Subsequent experiments taken by Dr. Koch have also shewn that the gall, originating from animals, which died after having been sick for only two days, only showed very weak, and even no protective characteristics at all, while on the other hand, the gall from animals cured from rinderpest, but which died from the effects of the disease, does not possess any preventitive capacities.

It has further been proved that the most powerful gall is drawn for about six days from sick animals. This gall must be of a dark green colour, transparent, and without any bad smell. The inoculation must take place as soon as possible after the gall has been drawn. It is of the utmost importance that those present at the inquest and who have drawn or taken the gall, are carefully disinfected, previous to the injections taking place.

The foregoing considerations lead us to accept the following practical conclusions as of the utmost importance:

1. The gall, as described, gives no rinderpest but causes the animals to become immunised.
2. This immunisation commences on the 6th day and becomes stronger on the 10th day.
3. During the first five days following on the gall injection, the animals are not protected by the vaccine.

Consequently, in case a herd already partly affected, is treated with gall, new cases of rinderpest may be seen to occur up to the 12th day.

4. In case the animals contract the disease shortly after the injection with gall, they are more liable to die, than when shewing symptoms much longer after such injection.

Mr. Kohlstock has declared in his last report that animals on which experiments have been made, three months after the gall injection, at that time have shown thorough resistance to it.

In the South African Republic we have applied the Koch method to thousands of animals and the results obtained, may be arranged in two distinct catagories, which must be treated separately.

1. The application of the method on uninfected herds.

At the experimental station at Waterfall and on the adjoining farms, we have treated thousands of animals with gall, with due regard to the necessary precautions. Only in two cases we have had reason to believe that the gall-injection has by itself determined the virulent disease, without, however, being able to confirm this fact with absolute assurance. In those two cases the gall employed was of a light green colour.

But shortly after the method commenced to be applied in the whole of South Africa, the results obtained in the various countries generally, proved to give but little satisfaction.

The farmers complained that the application of the method, spread the disease and many argued that the injection with gall, caused the rinderpest.

In certain cases the imortality was very large, in others it was limited.

In certain cases also, reports indicated distinctly that in certain places the pest broke out after the injection of herds, which, till then, had remained quite healthy, although the mortality was small.

The circumstance that from the 8th day the pest broke out amongst a considerable number at the same time, caused the conclusion that the disease was brought about through the inoculation with gall, because we know that a period of eight days is exactly the time corresponding with that of the period of typical development of the Rinderpest, caused through the inoculation with virus.

At the same time, however, it might be justly argued that those cases of rinderpest should not be attributed to the influence of the gall itself, but to accidental infections caused during the vaccinations and to be imputed to the carrying of the infection.

The question should at the present moment already have been settled, but it must be admitted that in most instances at least, the pest has not been caused through the proper action of the gall, but is due to certain circumstances, by which the injection is accompanied.

However it appears to be an indisputable fact, that an animal injected with gall, is only temporarily immunised.

At Waterfall we have innoculated animals with virulent blood, which shortly before had been injected with gall, and we have observed that within the typical time, a re-action commenced, only characterised by an increase in temperature, without auy distinct symptoms being visible externally.

From these experiments we had to conclude, that the immunisation was not perfect, and that it is therefore defective and liable to diminish soon.

Those animals which have recovered from a severe attack, and thus obtained a strong resisting power, can, however, resist the injection with virulent blood, without showing any signs of fever.

Many farmers, after having applied the treatment with gall to their cattle, have exposed their animals to infection, and declare, that after a comparatively short time, the disease broke out.

One of the most powerful speaking examples in this connection, was observed by Commandant Erasmus. Mr. Erasmus inoculated 30 animals with gall and brought them amongst an infected herd ten days afterwards. The twenty-first day after the injection with gall, the rinderpest broke out, and at the moment on which his report on the experiment was written, 18 of his animals had already died, and the other were still sick.

In another case, the rinderpest broke out on the sixteenth day after the animals had been brought in contact with each other, and out of ten animals, three recovered. In a third case, the disease broke out 35 days after the injection.

The last case which was brought to our notice, was observed at the commencement of the preceding month, in the case of a herd treated during the first days of March.

There are, however, also cases of animals, which were injected for at least four months, and up till now have not contracted the disease, although more than once they had occasion to contract it. In this manner, we have at the Waterfall experimental station, a calf, injected four months ago, repeatedly brought in contact with sick animals, without ever giving us the slightest trouble.

It must therefore be admiteed that according to these examples, animals may be immunised by gall, without having at any moment shown external symptoms of the disease.

On the other hand it must also be admitted, that in practico the gall method can not be regarded as a sure preventative against the rinderpest, it has in fact been observed that the immunisation is only of a short duration and is only shewn during one to five months.

The farmers have acknowledged this fact and have on their own account made certain improvement in the treatment, in which manner some of them have obtained favorable results by injecting the animals with quantities of gall of more than 10 cc.; others have repeated the gallinjections twice or three times; others again have made use of the fact that animals injected with gall, and brought in contact with sick animals, can contract the desease in a not deadly form and have consequently a short time after the gallinjection, exposed their heads to the contraction of the rinderpest. As regards the reasons, causing certain kinds of gall to immunise stronger than others, no theory can be fixed at present.

Mr. Koch preferably used a kind of gall of a dark green colour, but in practice very often only gall of another colour is obtainable; and good results have also been obtained by employing yellowish or brownish gall.

There is no doubt that the different kinds of gall do not all have the same result, but the look of the gall does not give any information as to its value and a microscopic investigation does not furnish any further information.

2. Application of this treatment on infected animals.

The result evidently differs according to the circumstances, but as a rule must be adopted that animals, showing no symptoms of the pest up to the 16th day after the inoculation, are immunised at least for a certain time; the animals infected at the moment of the injection die; the animals which have been infected some days after the injection, have the more chance of recovering, the longer the infection take place after the treatment with gall.

It thus happens that in the case in a herd, partly affected and then treated with gall, only a few animals have taken up the germ of the disease at the moment of the injection, the results obtained may indeed be very favourable.

If on the other hand all the animals have already been infected, the result will be decidedly bad.

If a statistic were to be made regarding the results obtained in practice by the method of Dr. Koch, it is evident that these different considerations should have to be taken up, whereby at the same time it would be understood in how far, the results obtained might differ according to circumstances.

The inoculation with gall, bringing a true vaccine into the organism, also produces the difficulties connected with every vaccine, which in the case of rinderpest, are indeed very serious.

The immunisation is only obtained at the expiration of a fairly long time, and the method can therefore «à priori» hardly be recommended for the treatment of the herds, already affected by the disease, or in cases where the immediate immunisation, by which the serum is obtained, give evident advantages.

Another inconvenience is the difficulty, which is often experienced, in procuring sufficient quantities of gall of good quality.

All those who have commenced the vaccination by means of gall, know that many inquests are often required before a decent quantity of gall in good conditon is found.

However it my be, it is beyond doubt that the largest inconvenience attached to Mr. Koch's method, is that the duration of the immunisation is comparatively short.

We have not applied the injection with gall followed by inoculation with virulent blood, at least not on a large scale, but the experiments have shown, that it may be a means of increasing the immunisation obtained by the injections with gall, because in those instances, the inoculation with virus, was, during our experiments followed by a feverish reaction; in numerous cases, no doubt great advantage will be found in the application of this prescription. We hope, that the gentlemen delegates of the Cape Colony and of the Orange Free State will kindly replenish our information regarding the results obtained by the gallmethod, by means of the numerous experiments taken by them.

Another fact which is well worth consideration, is that animals previously treated with gall and which contract the rinderpest after a certain time, under the influence of the curing blood, will more easily recover than animals on to which no treatment whatever has been applied.

This fact will again be brought under discussion in connection with the method of treatment with the blood of immunised animals.

As wil then be said, that it may perhaps be useful

in certain cases to treat the animals with gall, and then, if necessary, to submit them to the treatment with preventative blood. We finally request the different delegates to kindly give all the information on the information on the subject, they possess, so as to make it possible to get a thorough idea of the method in question.

Mr. Meintjes then communicated the results of his experiments regarding the gallmethod.

At Middelburg, the inoculations had given good results. The gall, either brown or green, worked well.

Mr. Turner thereupon communicated the following with regard to Dr. Koch's methods:

Remarks made by Mr. Turner, Medical Officer of Health for the Colony of the Cape of Good Hope regarding the method of Professor Koch.

Mr. President and Gentlemen:

I much regret that I received notice of this important Congress too late to be able te make all my arrangements I do not mean to convey to you that I have thereby experienced any personal inconvenience, even had I done so the kind reception which I received here would at any rate make me forget it. But I received notice to go and attend this conference at a moment when I was not in possession of my notes, and it was impossible to procure them before mij departure from the Colony if I wished to be in Pretoria at the appointed time.

I am therefore obliged to trust to my memory and to offer my excuses if the statistics which I shall lay before you are perhaps less numerous than they might have been and are given in round figures.

Much has been unjustly said about Dr. Koch's too speedy departure from South Africa. These reproaches have been repeated in an article in a paper, which has only now come under my notice, Dr. Koch is in no way responsible for this, perhaps, too hasty departure.

I am certain that Dr. Koch left against his wish. While the investigation in connection with the rinderpest did not offer the slightest danger to the experimentor, an Indian plague, on the other hand, is a very dangerous thing to study, Dr. Koch directly he received instructions from his Emperor to proceed to India, felt that the least delay on his part, might be attributed, by those fond of criticism, to fears for his personal safety.

Dr. Koch was in the position of an officier, who is ordered into action and could not hesitate.

This I must say in the defence of a man who gained the respect and friendship of all who had the privilege to come in touch with him.

I also wish to take this opportunity to express my high regard for another collegue. I attach all the more importance to it, because the ideas which I shall express, are not always in accord with his own. I refer to Dr. Hutcheon, the Chief Veterinary Surgeon for the Cape Colony.

I am fully convinced that without the work which was carried out by Dr. Hutcheon, work so extended and so complicated as to be beyond the powers of any ordinary man the plague at the present moment would have reached Capetown, and neither Professor Koch nor our French collegues would have had any serious chance of success.

The Cape Colony in the first instance, and also indirectly the whole of South Africa, owe much to two men, Mr. Faure, Minister of Agriculture and Mr. Hutcheon, his assistent in the stubborn battle, which they have fought in the face of immense difficulties.

Their sanitary cordon has been broken as is inevitable, with all such cordons under similar circumstances. But when the history of the epedimic shall come to be related, it will be clearly proved that they are the two men, who have made possible the results, which we justly hope to obtain.

Dr. Koch had fully established his method consisting of inoculation against the rinderpest, by means of the injection of 10 c.c. gall, taken from a sick animal on the 6th day of the fever.

As a result of his experiments, he felt sure of success and was of opinion that the care of the details might be left in the hands of less experienced men. The reason why Dr. Koch preferred the gallmethod to that of serum or any other process, capable of giving immunity, for there are no doubt. other methods by which this object may be attained, was that the immunity given by the gall, promised to be more lasting. Moreover the serum appeared not only to be less active, and only capable of giving a passive immunity, but have another drawback viz. its inconstant and incertain power.

This is not the occasion to discuss the many points of great scientific importance with regard to the gall-method. I will therefore confine my remarks as much as possible to the practical application.

As regards the manner in which the gall must be procured, I can only say that the easiest and most practical way is to take the gall from an animal only recently dead of rinderpest. This must not be disregarded whenever there is an opportunity to employ it, although as a general rule it is not necessary.

In fact it has often been observed that the gall, after the animal has collapsed, is in a condition of putrefaction injurious to its activity as a vaccine. Besides, when an animal is found dead in the field, it cannot be guaranteed that it did not succumb to the secundary fever, a period when the gall no longer possesses any useful qualities.

It is better to inoculate the animals with virulent blood, because in that case the stage of the disease is accurately known. The gall for instance taken on the 3rd day of the disease is inactive, te most favourable moment is the 6th or 7th day of the fever. I prefer to choose the end of the 6th day, in order to avoid the sudden collapse which may at that time soon occur.

In any case, the temperature of the animal must be taken in the morning and at night and the days must be counted from the exact moment the temperature rises.

The dose of blood injected must be moderate and not exceed 1 c.c. Much discussion has taken place regarding the colour of the gall in order that it may be fit for use.

Dr. Koch recommends the use of dark green gall, clear and without smell. This kind of gall is no doubt the best, but the colour is of no real importance. Dr. Koch himself has immunised animals with brown, yellow and even with gall containing blood; the reason why he recommended green gall was that other kinds of gall are often contaminated with microbes, as these organisms change the shade of the green gall to brown or yellow.

It must be admitted that the power of immunising animals, is not possessed by all kinds of gall, not even by those of the required colour. I think that the activity or inactivity of the gall may be ascertained by means of a speetroscope, but I will not now expatiate upon that point.

The indisputable fact that certain kinds of gall are inactive, probably explains the examples mentioned by Mr. Theiler where the rinderpest broke out after the very short interval of 16 days; in that case the animals were not immunised at all.

Already at the time when the method had scarcely been introduced, the fear was expressed that the animals during vaccination might communicate the disease to other animals, not protected by any treatment whatever.

It was then proved that this fear had no foundation, because animals not immunised might without fear be left in contact with animals treated with gall; it was moreover shown that blood taken, at different intervals from oxen in the course of the immunisation with gall, and injected into other unprotected animals, did not cause the slightest disturbance.

An animal injected with gall is no more able to spread the disease, than a child inoculated with vaccine is able to spread the smallpox.

This unjustified fear however had a serious result; It induced the authorities only to admit inoculation in the infected areas or in the immediate neighbourhood of the epidemic.

The consequence of this has been that the application of the method has nearly everywhere been regarded as capable of spreading the disease in it virulent form, and it is very much to be regretted that such an erroneous opinion should have been disseminated.

The gallmethod is often entitled «Koch's cure for rinderpest» this term is very generally used in the newspapers.

Dr. Koch never asserted that by his method animals already sick could be cured; on the contrary he always emphatically contradicted such assertions.

He himself showed that the animals died, if two days after the injection with gall, they were inoculated with a small quantity of blood, and he himself showed that the immunity was only complete after the 6th day.

These experiments have been repeated and indicate that the perfect immunity is not obtained before the 7th or even the 8th day.

A contaminated animal amongst a herd, can therefore continue to infect the other animals up to the 7th day, perhaps even longer; the animals which have been infect.d last will have a long incubation period.

The idea that an accidental contamination of the gall by virulent blood, would explain the origin of the disease, is without foundation.

It has been proved that the addition of virulent blood to gall, in proportion of 10 pCt. after a short time of contact, is without influence on the efficacy of the gall.

The mixture may even contain up to 50 pCt. of blood without the injection of 10 c.c. of the mixture necessary causing fatal disease.

Even the normal gall has the power of destroying the virulence of the blood, if it is allowed to work for some hours. As a fact, the gall destroys the virulence of the rinderpest virus.

If it is therefore presumed that a particular sample

of gall is capable of producing the disease, the mixture of this sample with others would be inoffensive, because such mixture would destroy the virulence of the one particular sample.

Cases in which disease has appeared after gall injection and which have been imputed to the action of the gall itself, do not authorise such an opinion, if carefully investigated.

The injections when taking place extensively, are done with mixtures of different kinds of gall, and their action is consequently not depended on any peculiarities of one or other of the kinds employed.

It must here be remarked that these cases in which the disease is reputed to have followed gall inoculation are, in most instances herds, of which it is known that they were infected, or they are in the immediate neighbourhood of the disease moreover instances similar to the following are of frequent occurrence: 40 animals are inoculated, four become sick, and two died; On the same day, the same gall was used by the same person in the case of 44 animals, none of them became sick and none died.

In the case of three herds, one consisting of 60 head, two others of 60 and 66 head, the same sample of gall was used by the same operator. In the first instance, 6 animals became sick and four died, while in the other instances none were attacked. Several examples such as these, may be discovered by those who take the trouble, to read the veterinary surgeons reports.

In the case of these experiments and others of a similar nature, the gall is the same, the person who employs it is the same, yet the results obtained are greatly different.

The only factor which we do not know, is the condition of the herds. It appears irrational to me to attribute the differences observed to one of the two factors which we know and of which we know that they have been invariable, and not to attack the essential importance to the factor susceptible of variations.

Notwithstanding the respect I entertain for my veterinary collegues, I maintain that the infection with rinderpest virus is followed by a long period of time, sometimes of more than a week, during which it is impossible for the most able expert to say whether the animal has been infected or not.

Consequently when a herd is declared to be in a healthy condition, it can only mean that the expert has not been able to discover any infected animals amongst the herd.

For instance in one report it was stated that 133 head of cattle were not infected, on the 9th of May they were injected with gall, 133 became sick and 100 died.

In a note it was mentioned however that an animal belonging to this herd, had died of the disease on the 8th May.

Now, gentlemen, if the injection in this instance had taken place on the 1st May instead of the 9th, the herd in question would have been declared healthy, and the disease which no doubt would have broken out as well as the mortality produced by it, would have been entered to the account of the injection with gall.

At Pniel, the disease appeared after I had inoculated a herd, which was considered healthy; it is true that the rinderpest raged on the adjoining farm, but the herd which I treated was nevertheless considered healthy

Two days after the inoculation, an ox which had not been treated which had been employed for carrying the wood for the kraals, in which the animals to be treated were confined got the disease and died.

It will therefore be seen that only through very careful investigation, which however in practice is very often impossible—is it possible to say how the herds became infected.

I was so fully convinced that the gall could not cause the rinderpest, that I requested the Government of the Colony to have 200 animals transported to the Robben or Dassen Island to allow me to inoculate them.

In case the rinderpest broke out, the Colony would not have run the slightest risk, and if a single case of rinderpest resulted, the question would have been settled.

My request however was not granted.

Up to the 13th June, I never had occasion to work with a herd, which I could quarantee as being entirely free from any suspicion of infection.

On that day, Dr. Smart authorised me to inoculate 113 of his animals at Britstown; the animals wery very thin owing to the drought; the next day 60 other animals belonging to another farm were treated with the same gall.

As I had foreseen, not one of these animals showed the least sign of rinderpest.

I should consider it a happy circumstance if the gall in certain instances could produce rinderpest as I should then have much more confidence in the duration of the immunisation produced by gall.

Repeated experiments have shown that 10 days after the injection with gall (taken at the correct moment) the animal can not be infected by injection with virulent blood nor by the contact with the focus or the slime-fleece mucus from the nostrils of a beast suffering from rinderpest, or by confinement in a stable, occupied by animals suffering from rinderpest. The animals treated in the first instance by Professor Koch, were experimented on three months, and two weeks after at Susannah. They were inoculated with virulent blood and remained perfectly well. They were immunised and we confidently hoped the treatment would prove capable of producing a lasting immunisation.

Experience afterwards obtained, has taught us, that the power of resistance due to the injection of gall, although the duration of it may differ, cannot be regarded as protective for more than three or four months on an average. Animals inoculated during the second half of February, or the beginning of March, are now contracting rinderpest when exposed to the infection.

At the same time it affords me pleasure to be able to say, that the disease only shows itself in a slight form and that they pretty generally recover.

These animals moreover outside become infected some time after gall inoculation. The sick derive considerable benefit from the curative action of serum immunising. For instance, animals injected four months previous with gall, commenced to show symptoms of rinderpest in July.

It was at first supposed to be a disease of the liver. The nature of the disease was discovered when the number of cases increased. When Dr. Kolbe and I visited the farm, fifteen animals were sick.

We at once proceeded to have the herd injected with 30 c.c. of defibrinated blood of salted animals; the injections took place a fortnight ago, since when just one single animal has been sick and not one has died.

A short time ago Dr. Edington recommended the mixture of the gall with glycerine, in the proportion of two parts of gall and one part of pure glycerine. He also recommends that the mixture should be kept for ten days and then to inject it in doses of 15 c.c., containing therefore 10 c.c. of gall.

Dr. Edington declares that this mixture is incapable of producing rinderpest, that it can be kept as long as necessary without any change, and that all kinds of gall may be used for the preparation of it.

A little while ago Dr. Edington also intimated, that the mixture produced as perfect an immunisation as that resulting from the injection with fresh gall.

These statements, if founded, were of much practical importance. That although Dr. Koch's opinion, as to the action of glycerine on the virus was known to me, I conducted an investigation as to the correctness of Dr. Edington's statements.

Dr. Kolbe and myself inoculated about twenty animals with a mixture of gall and glycerine; the quantity injected in all these cases, being fixed in such a manner, as to agree with 10 c.c. gall.

The result of the experiment showed, that the addition of glycerine to the gall, was injurious to the latter's immunising capacities, even a quantity of glycerine, as small as 5%, was sufficient to destroy the immunising power of the gall. In cases in which quantities of glycerine equal to 30% were employed, five or ten days are not necessary, only five hours will cause this destruction.

These animals were inoculated with 0.2 c.c. of virulent blood on the tenth day and contracted the rinderpest in the worst form and died in the proportion of 60% to 70%.

The mixture of gall and glycerine evidently possessed but a very weak immunising power, the protecting influence exercised by it, only depended on the presence of a small quantity of a chemical substance, no doubt belonging to the antitoxious. The immunity thus produced is only passive and of short duration.

The department of agriculture in the Colony of the Cape of Good Hope, thereupon experimented largely on more than 100 animals, I think 150 head; the inoculation took place at Belmont. Ten days afterwards the animals received 0.2 c.c. of virulent blood.

From these animals ten were inoculated by my colleague, Dr. Kolbe, so that there could arise no doubt as to the action of the virulent material employed, all of them remaining uninjured.

In consequence of the experiment, the Government Veterinary Surgeon recommended the use of the method known under the name of the Edington method, as being more certain and less expensive.

As the results obtained by Dr. Edington differed so widely from those obtained by Dr. Kolbe and myself, I proceeded to make some investigations in the matter and found that Dr. Edington, without making any mention of it, had considerably increased the dose of the gall he employed.

I have a telegram here, which was sent to me by Dr. Edington. It reads as follows: «Mr. Faure informed me, that you will take part in the Congress at Pretoria, and requested me to inform you as to the present condition of affairs regarding the glycerined gall..... ..... All kinds of gall are used here for the preparation of the glycerined gall. either procured from animals which are quite sick, from dead animals, or from animals which died at the end of the stage of collapse.

If the gall has become strongly putrified and contains many flacks, it can not be employed however, but a slight smell of putrefaction is of no importance.

The gall is mixed with the glycerine in proportion of two to one.

All mixtures prepared on the same day, are mixed themselves, and can only be used after eight days or more.

The dose for animals of medium size is 20 c.c., for very young calves 12 to 15 c.c. is sufficient, for oxen of a very large size, the quantity must be 25 c.c.

Ten days after the injection, the animals must be inoculated with 0.2 c c. of virulent blood, dissolved in 5 c.c. of water, in ordinary condition or with a small quantity of salt; no distillated water must be used. A good proportion is obtained when one ounce of virulent blood is mixed with a quarter of a bottle of water previously sterilized.

The results obtained by this method, have undoubtedly been good.

From ten animals exposed to the infection and afterwards inoculated with virulent blood, all but one resisted the disease. Thirty-four animals at Kimberley showed no mortality, some of these latter received up to 5 c.c. of blood without contracting the disease; 125 animals at Belmont have been vaccinated; no mortality.

There was no mortality either amongst 60 animals treated at Steijnsburg.

The increase in the dose of gall which I have mentioned, has therefore clearly been demonstrated by the telegram.

All this would be of but little importance, if the gall remained equally active.

But this is not the case, as is shown by the experiments made by Dr. Kolbe and myself.

The increase of the quantity of gall explains why the animals which were subjected to the experiments at Belmont, resisted the virulent blood, In consequence of that increase, the time of the passive immunity was prolongated for more than ten days.

Gentlemen, we now know that the gall method does not cause immunisation for a longer period than four months.

If recourse is taken to a subsequent injection with virulent blood, the period of immunisation appears to be increased.

It would be unreasonable to abandon that method to have recourse to mixtures, the immunising power of which depends to such an extent on a subsequent inoculation with virulent blood, the influence of which we are hardly acquainted with up to the present.

The fact that nearly all kinds of gall may be employed was acknowledged by Dr. Koch and I have already stated why he recommended the use of green gall.

Certain kinds of gall do not vaccinate and the addition of glycerine to such liquid, can be of no use whatever.

The question which I have here treated is very important to the whole country, and I must request the delegates, who by their technical knowledge and their experience are authorised to pronounce an opinion, to do so for the benefit of these, whose wealth is dependent on the result of this discussion.

Before speaking of the application of the method by serum, I will await the communications of our French collegues, who have carried out their studies of this manner of treatment with so much success.

Commandant Erasmus communicates to the congress the results of the inoculations, which he has made according to the Waterberg method and that of Dr. Koch.

He is of opinion that the gall of a light green colour is not good, he prefers the dark green or brown gall.

Mr. Erasmus does not agree that the gall is not apable of producing the rinderpest.

The gall when freshly taken (since 2 hours) can give the rinderpest, while gall, kept for 13 hours, does not provoke it.

Mr. Henning speaks about the gallinjections applied in the Orange Free State and about the colour which the gall must have. Experience has learned that green gall becomes brown when kept.

In the Orange Free State, some days after the gall inoculation, an inoculation with virulent blood is applied. The results obtained are satisfactory.

The meeting was closed.

An other meeting will take place in the evening at half past five, and the programme for the next day, Thursday, 5th August, To-morrows meeting, will be opened at 9 o'clock in the morning.

Wednesday, 4th August 1897.

EVENING MEETING.

In the absence of the Chairman, Mr. Schutte, Mr. Theiler Government veterinary surgeon of the South African Republic takes the chair.

After a few considerations, the order of labour for the next day is fixed in the following manner:

a. voting in the proposal of Mr. Theiler supported by Mr. Brain;

b. continuation of the discussion in connection with the gall method;

c. proposals regarding this method;

d. explanation of the method for the treatment of Rinderpest with the blood of cured animals;

e. results obtained by this method;

f. discussion;

g. Proposals with regard to the use of the two methods (gall method and method with curative blood).

This programme is unanimously accepted.

The meeting is closed.

Thursday, 5th August 1897.

The meeting was opened at 9 o'clock in the morning.

Mr. Nascimento being indisposed, did not attend the meeting, and had excused himself by letter.

The first point of the labours for the day, came on the order, namely voting on the proposal Theiler, Brain, the text of which appears in the report of the previous session regarding the Waterberg method.

The proposal was unanimously accepted.

Dr. Danysz requested that the discussions on the question whether the gall injection could or could not cause rinderpest, might be continued.

Mr. Brain was of opinion that the disease could be caused by the injection of gall. In his opinion it is moreover necessary that the gall should cause the disease, at least in a light degree.

The gallmethod had more been applied in the Orange Free State than in all the other countries of South Afraca together, and up to the present it has shown itself recommendable.

In proof thereof, Mr. Brain referred to several statistics relating to herds which are still healthy, and which had already been affected at the moment the injection with gall took place.

It has been observed that when the pest finally breaks out amongst a herd, which has been injected with gall, a very great number recovers. In short, did the method of Dr. Koch give very good results.

Mr. Consul von Herff then gave some information to the Congress regarding the measures taken against the rinderpest in the German possessions of South West Africa framing it as follows:

Remarks by Mr. Consul von Herff. In connection with the question now under discussion, I consider it usefull to bring to the knowledge of the congress what has been done up till now in the German protectorate of South West Africa to combat the rinderpest,

I therefore take the liberty of submitting to you the information, which have been officially received by me in that respect.

The propagation of the rinderpest in the German protectorate has been opposed by the establishment of a region, bare of cattle, along the Orange River, eastern frontier up to Olifantskloof (Gobabis) in North Western direction up to the middle of Damaraland (Grootfontein). During the time that the rinderpest guard of the part of country kept isolated were obliged to return owing to lack of water has the pest broken out between Gobabis and Grootfontein, introduced by a Boer driving cattle.

That boer went in a straight line up to Windhoek and infected East Hereroland, North of Olifantskloof and the country to the North East up to Windhoek.

Later on the pest appeared at Grootfontein and in other places in Damaraland, also in consequence of the passing of sick transport-animals on the road to Swakopmundt, it also broke out at several places up to the coast.

The road has now been closed for transport with oxen.

Thanks to the vaccination according to the Koch method, we have succeeded in localising the pest at Windhoek and at Otimbingue, at which places 60 to 70 % of the cattle has been saved.

The result was much better in the case of noninfected herds, the inoculation of herds already infected, caused the figure of mortality to be considerably increased.

The rinderpest has caused much injury to the cattle of the natives in Damaraland, but the figures are not known.

Such was the state of affairs in the German protectorate at the end of June, the South of the Protectorate has thus far remained unaffected.

Dr. Kohlstock is at work in the protectorate since the beginning of June, and with the assistance of other surgeons, conducts the vaccination according to the method of Professor Koch.

Dr. Kohlstock is of opinion that the most unfavor-

able results, which have been observed in any case, must be ascribed to the carelessness of those to whom the operations were entrusted, and who had not used the precaution of isolating the animals already affected; in this manner whole herds had been lost.

Mr. Haslam asked some information of Mr. Brain regarding the proportion of animals which were saved, by the application of the Koch method. How many animals get the rinderpest after having been injected with gall?

Mr. Brain intimated that in the Orange Free State every body had the right to inoculate.

Dr. Danysz intimated that hundreds of animals had been treated with gall at Waterfall, without any rinderpest symptoms having been observed.

Many animals, which have been inoculated in March, without giving any trouble, now get the rinderpest.

The inoculation with gall is a means of keeping the disease at a distance for a certain time.

Dr. Danysz, in opposition to the opinion of Mr. Brain does in no way consider the gall as a cure. It takes several days to establish the immunisation which is only of a passing nature. The method has certain inconveniences attached to it; the infection of the animals at the moment of the injection, is often very difficult to avoid and it is sometimes difficult to obtain gall of a good quality.

Mr. Theiler returned to the assertion of Messrs. Henning and Brain, acknowledging that the gall can cause the pest.

Mr. Theiler was of opinion that the assertion was not founded at all or only in some very rare cases. He thought that when the rinderpest, appears in numerous instances after the injection with gall, this is not due to the influence of the gall itself, but to the accidental infection of the animals through the inoculation during the operation.

Mr. Turner said that the question whether the gall can cause the disease is still an open one. Before the application of the Koch method 85 pCt. of the animals died; after the application of the method only 10 pCt. died.

Dr. Danysz, in reply to a question by Mr. Murray whether the use of the Koch method, should be recommended in connection with the epedimic now raging in Natal, said that it should be recommented for districts not yet affected on condition that the operation takes place by competent persons and not by the Boers themselves.

Dr. Bordet was of opinion that one of the inevitable precautions which must be taken is that the inoculation of the animals with gall is not done by the same persons who have attended the inquest of the dead oxen and who collected the gall.

The carrying of virus on to the animals which are vaccinated, must be avoided.

Mr. Turner consulted the meeting regarding the value of the mixtures of gall and glycerine.

Mr. Henning sticks to his opinion that the gall from itself, in certain cases can produce the disease.

Certain facts clearly showed this, at the same time setting aside the assertion of the infection by accidental contamination.

Mr. Theiler in reply to Mr. Turner said, that in his opinion, the glycerine could only weaken the already weak immunising power, which can be caused by the gall. Such mixtures did not appear to him as recommendable.

Dr. Bordet was of opinion that by exposing the

gall for one or two days to the ordinary temperature, its virulency and consequently the dangers of the injection, decrease. He attributed a large number of the accidents which have been observed to accidental contaminations, to which the attention of the Boers have never been sufficiently drawn.

Mr. Turner observed that a considerable advantage attached to the gall method is the fact that the treatment does not perceptibly weaken the animals. Nobody else having anything more to say on the subject, the discussions were closed.

The following proposal was then handed in by the delegates of the South African Republic:

«The delegates of the South African Republic having come to the conclusion that in certain parts and under certain circumstances, the inoculation with gall, according to the method of Professor Koch, has given favorable results, propose not to take any decision regarding the future application of this method, before the congress shall have finished the discussions regarding the treatment with the blood of immunised animals and has learned the results obtained by the latter method. The delegates then wish to make a joint proposal regarding the question.»

Mr. Haslam, seconded by Mr. Lloyd, was of opinion that in the stead of this proposal the following amendment might be substituted: «that the resolutions regarding the method of Dr. Koch, shall not be proposed to the Congress until after the investigations and the discussions of all the methods and proceedings to combat the disease.

Messrs Danysz and Turner hand in the following proposal regarding the principle of Dr. Koch's method.

From the joint experiments and observations procured by the Congress, follows:

1. The gall works as an attenuated virus, a vaccine capable in the most instances of giving a certain but temporary immunisation.
2. After the inoculation with gall, some animals can get the disease in a deadly form. The circumstances which provoke this apparition of the virulous infection, have not yet been distinctly determined.
3. Because of the indications already given, the vaccination with gall can not be regarded as protecting the animals in a definite manner against the rinderpest. The vaccination with gall can be regarded as a means capable of delaying the apparition of the epedemic in the still unaffected districts and applied under those circumstances, it can render good service.

Art. 6 of the programme came then under discussion. The method of vaccination and the treatment of the rinderpest by means of the blood of animals which are strongly immunised is exposed by Dr. Bordet.

Treatment of the rinderpest with the blood of immunised animals

The treatment of the rinderpest with the blood of vaccinated animals is only an application of the principle of serotherapy on this disease. I think it altogether superfluous to expatiate at large on what constitutes serotherapy, nor on the services rendered by the study of this matter in the case of various infectious diseases and certain processes of virulency.

Everybody knows in fact that since the time,

Behring and Ritasato made known the preventative and curative power of the blood of immunised animals against diptheriæ and tetanus, the study of these properties has in every country occupied a great number of scientists.

The application of the principle of treating diptheria was realized by Behring and Roux, and from that time onward rapid and great progress has been made in that direction.

With a view to the preventative qualities, the blood of the animals cured from various diseases was examined, and in a great number of cases, the existence of these characteristics could be ascertained.

To this purpose, the blood even of men having suffered from infectious diseases, as for instance, the cholera and typhoid was examined and it very often transpired that the blood of such persons possessed a preventative power more or less potent against the disease, from which they had suffered and from which they got cured.

The idea to look for a means of treating the rinderpest in the serotherapy, by using the blood of immunised animals, consequently occupied the mind of all who made it their object to find a remedy against this plague.

In Europe, Semmer was the first one to discover that the blood of animals, cured from the rinderpest, possessed a preventative power against this disease, but amongst those who experimentally continued the study of the rinderpest in South Africa, Messrs. Theiler and Pitchford were the first to state to this important quality.

Afterwards, at the time that experiments were made in that direction at our experimental station at Waterfall, Professor Koch at Kimberley made the same observations.

It was very desirable for the various countries affected by the rinderpest to benefit by the existence of such precious qualities of the blood of vaccinated animals.

It was indeed necessary that the application of the serotherapy to the treatment of the rinderpest should pass beyond the theoretical boundaries to become the base of a real practical method, because in order to fight the rinderpest, which spreads so easily and so rapidly, it was necessary to have at disposal a procedure capable of giving to the animals an immediate power to resist the disease.

No other method, hitherto employed, satisfied this important condition.

Starting from the general principle of serotherapy, which so clearly disclosed the study of the various diseases, made since many years, it became necessary for the practical treatment of the rinderpest, to establish a series of precise directions.

For the purpose of carefully establishing the methods even in its details, it was necessary to study all the conditions under which the principle of the serotherapy applied to rinderpest should give the best and most lasting results.

In the report handed in to the Government of the South African Republic by Messrs. Danysz, Theiler and myself, on June 15, 1897, we have indicated the various regulations to which in our opinion must be adhered in order to obtain satisfactory results by the method based on the curative qualities of the blood of immunised animals.

I have no intention of quoting the report again, I

will only shortly recapitulate the points, to which, in our opinion, special attention should be paid.

The first item of importance concerns the means to be employed for the purpose of obtaining the most active material, and consequently refers to the condition of the immunised animals at the time they are required for bleeding purposes.

Evidently it must at once de defined during which period an animal which has passed through the disease and has got cured, possesses the blood containing the most energetic qualities.

Experience has taught that the blood of immunised animals very soon after the cure, obtains preventative qualities, but that the greatest power is obtained averaging from six weeks to two months after the animal has recovered.

This quite agrees with the information, previously obtained in Europe by the study of serotherapy, regarding other diseases.

The preventative quality of the blood, is not the strongest immediately after the cure has been effected, it gradually increases up to a certain point.

The qualities of the blood of immunised animals nearly remain constant for a certain time, but about the 5th or 6th month after the disease, they commence to decrease in such a manner that, for instance, an ox cured for eight or ten months, can only give an unsatisfactory protective blood.

The most powerful blood will therefore be obtained from immunised animals from the second to the fourth month, which moment should preferably be chosen for bleeding and utilisation of the blood.

The production of the preventative substances of the blood is the result of a reaction of the organism against the disease.

The more serious the disease has been, the more the influence exercised on the body of the animal will be noticeable, and consequently, the reaction, which is produced by the protective qualities, will also be much stronger.

The knowledge previously obtained was sufficient to show, that in the case of rinderpest, out of animals which got cured and which are required for bleeding purposes, as much as possible such animals must be chosen which have shown in a very serious manner the characteristic symptoms of the disease.

This stipulation also refers to oxen which are wanted for vaccination purposes.

The preventative qualities of the blood of immunised oxen against the rinderpest, are really very strong, in regard to those which are found in the blood of animals which have suffered from various diseases, and got cured. As regards the latter, no blood will be found in the case of animals which only experienced one single attack, which can as regards activity, be compared with oxen which have had the rinderpest.

To make it possible for the blood of vaccinated animals to exercise a really powerful influence, it is in the case of most other diseases necessary that the animals should repeatedly be injected with the microbe of that disease or with the poison produced by those germs.

In order to obtain a very powerfully acting curative blood against the diptheria, repeated injections with the diptheria poison are required.

These repeated injections cause the protective power of the blood which must afterwards be tapped, to be materially increased. Thanks to the experiments

made for years on the subject, people were once more led to try, whether the activity of the blood of immunised animals against the rinderpest, could not be augmented, by means of repeated injections with the germ of this disease.

Animals recovered from the rinderpest may be injected with virulent blood, coming from dead or sick animals, and it is stated that in conseqnence of these injections, the preventative power of the blood is considerable increased above the average.

The immunised animals which were subjected to such a treatment, have secured us the most active blood. In this manner we have succeeded in obtaining blood which was so active, that animals injected with 40 cc., only got the disease in a very light degree and survived a prolonged contact with the rinderpest.

It is therefore highly desirable that this treatment of cured animals, takes place to the largest possible extent, and we are led to believe that when this task is accomplished, the results obtained by the treatment of the rinderpest with the blood of immunised animals, will be much better than those at present obtained.

In consequence of the hurry in which most people are to preserve their cattle, they are in many instances obliged to take recourse to the use of oxen which recovered from the rinderpest, but which have not been subjected to any subsequent treatment.

Therefore at present, too simple a treatment is very often applied, which has not yet undergone the necessary improvement.

The examination of the results, hitherto obtained, show how much attention must be paid to the condition of the immunised animals which are required for vaccination purposes.

The animals, the blood of which is utilized, are at present exclusively chosen from those, which had a spontaneous attack of the rinderpest, and which got cured without any treatment whatever.

But the time will soon arrive, that people are obliged to take recourse to animals which are cured in consequence of some scientific interference, for example, in consequence of the treatment with protective blood.

Where it deserves recommendation to inject the spontaneously cured animals with rinderpest virus, still more it does so, to subject animals which have recovered in consequence of treatment, to such an operation.

That treatment has in fact given to the cattle the power to more easily bear the disease, but whilst diminishing the fierceness of the latter, it has also decreased the reaction by which the disease is accompanied.

An ox, which, thanks to the protective blood, only shows a light degree of rinderpest, will, in future, not give such powerful blood as an animal which has recovered spontaneously and without assistance.

The injections with virulent blood to animals, supported by the preventative blood, very often cause a very perceptable fever, while on the other hand the feverish reaction, after such an inoculation, usually stays away, or is hardly perceptible in the case of animals which were very seriously attacked by the rinderpest.

The previous treatment with virulent blood is still more to be recommended in the case of artificially cured oxen, and will cause the blood later on to be given by those animals, to be more powerful.

In many instances also, the previous injection with virulent blood, will give to the farmer the certainty that the oxen which he employs and the history of

which is not always known to him, are indeed well immunised, and can therefore comply with the most indispensable condition as regards the useful proprieties of their blood.

After the blood has been drawn, how then must it be injected?

In this respect there can be no doubt possible. The blood must be injected in the condition of defibrined blood and not in the condition of serum.

The preparation of serum is very often badly done, and often causes a very considerable loss of useful material.

Experiments have moreover shown, that by equal quantities, the defibrined blood possesses the same, probably even stronger power than the serum.

One of the most important questions remain, namely, that regarding the quantity of blood which must be injected to the animals which are to be vaccinated, and the manner in which those animals are to be treated.

As has already been remarked, by subjecting the immunised oxen to subsequent injections with virulent blood, a blood may be obtained capable of protecting with remarkable small doses.

Up to the present, however, the use of such blood has been very limited.

The application to animals not yet infected of two subsequent injections, is therefore demonstrated in an absolute manner, the first one to be applied immediately after the animals have been exposed to infection, the second one, five or six days later on.

The most favorable moment for the second injection is at the end of the incubation, which, as is known, lasts five days, it is the moment at which the virus is going to invade the organism and causes perceptible disturbance to it.

Should the injection take place later on, it would be less active, because in that instance it would have to contend against an already too far advanced infection. The recess of five days observed between the two injections, makes it possible for a same vaccination to employ the same immunised oxen, which otherwise would not be able to resist without injury, two bleedings of following one another too quickly.

Everybody knows, that the injections with preventative blood only secures to the inoculated animals a resisting power, in which they take no active part, which is in proportion to the quantity of injected blood and disappears in accordance with the protective substances escaping from the organism.

In order to obtain a powerful and lasting resisting capacity, the inoculated animals must at least contract a light degree of the disease.

It is therefore necessary to infect the oxen, which have been subjected to a protective injection with the blood drawn from immunised animals.

The means of contamination, which is the simplest, the easiest and at the same time best known to the bacteriologists, is the direct injection with the virus of the disease, and in the case of rinderpest, the injection with virulent blood.

But the application of such a means, in the case of this disease, is almost impracticable, which should not be wondered at, with a view to the manner at present known, in which the preventative blood acts.

Even as the simultaneous inoculation with antidiptheria serum and a small quantity of diphteria poison, does not cause the animals any inconvenience, but at the same time does not give them any lasting

resistance against the poison either, no more is the inoculation with blood protecting against the pest and a small quantity of virus, sufficient to give a lasting resisting power to the animals. Under these circumstances, the protective blood acts too powerfully in upon the virus, prevents any disease and consequently also the production of an active immunity.

If on the other hand the inoculation takes place hurriedly, not even with a small dose, but with a large quantity of virus. the protective power of the blood injected in the first instance, may be overpowered, and the disease may appear in the most serious degree.

Especially in practice, it is extremely difficult to find an intermediate dose, in other words, to administer against a certain dose of protective blood, a dose of virus, which is just sufficient to cause the disease in no deadly form. But, by bringing the animals, which received protective blood, in contact with the rinderpest, they are caused to pass through a series of light and subsequent contaminations.

After the expiration of a certain time. the dose of virus, brought into the body of the animals, under these circumstances, becomes sufficient to cause a fairly light attack of the disease; the fresh inoculation which might subsequently be done, will be of lesser and lesser importance, because at the same time that the disease develops, the inclination of the animal to obtain an increasing resisting capacity against the disease, is also developed.

It may therefore be concluded, that the infection through contact, when applied in practice, is to be preferred to the infection exclusively caused by virulent blood.

These are the conditions for the application of the method, which, in our opinion, must necessarily be clearly defined.

But it is also necessary, that these conditions are arranged in a series of distinct directions. Provision should equally be made for the various cases which may occur in practice, so that even under most different circumstances, the persons who undertake the vaccination, can mark the course they have to follow in each special instance.

We have for these reasons thought it useful to collect all these explanations on a few pages, which will provide for most of the difficulties which might be met by the vaccination, and from which the required information and advice may be drawn.

These instructions will be brought to the knowledge of the members of the Congress.

The meeting was then adjourned till Friday morning at 9 o'clock.

Friday 6th August 1897.

The meeting was opened by the Chairman at 9 o'clock.

Messrs. Murray and Lloyd the Natal delegates, communicated in writing that they were obliged to return to their country.

In the first instance came on the order the voting on the proposal of the delegates of the South African Republic and the amendment to it proposed by Mr. Haslam. The amendment was accepted (the wording was taken up in the report of the meeting of the previous day).

Notwithstanding the meeting accepts the proposal of Messrs. Danysz and Turner not as regards the future application of the method of Dr. Koch, but the conclusions drawn from the experiments already made (text taken up in the reports of the previous days session).

Subsequently a proposal was accepted of Messrs. von Herff and Dr. Turner, thus composed:

The statistics communicated to the Congress, show that the herds injected with gall, in accordance with Professor Koch's prescriptions, when still in good condition and who get the rinderpest after three or four months, as a rule only get the disease in a very light degree.

In fact in such cases the mortality is not greater than from 5 to 15 pct.

The exceptions to that rule which have been discussed, are not of such a nature as to justify an unfavorable conclusion, as regards the value of the Koch method

Another proposal was accepted of Messrs. Henning and Theiler:

The Congress is of opinion that for the vaccination against rinderpest use must be made of pure gall, which has not been mixed with any substance whatever, as the addition of foreign substances can only injure its immunising capacities.

Then came on the order the discussion of the method, based on the use of the blood of strongly immunised animals.

In connection with this subject, the Secretary read a written communication of Mr. Lloyd:

Mr. Chairman and Gentlemen, as the rinderpest in Natal is very much on the increase, I very much regret my inability to attend the Congress any longer. It will therefore be impossible to me to be present at the discussion regarding the treatment of the rinderpest by the serum, or to make the following communication on the subject personally.

Perhaps it is not known that in the month of September 1896, the respective Governments of the Transvaal and Natal decided to request Messrs. Pitchford and Theiler to make experiments as regards the rinderpest and to find if possible a means or a vaccine against that disease.

Consequently a camp was erected at Marico, the costs of which would be equally born by both Governments.

During the month of December the camp was removed nearer to Rustenburg. On the 19 December Mr. Pitchford communicated to his Government that certain very favourable results had been obtained and I think Mr. Theiler shared this view.

The experiments were continued and the favorable results lasted.

They were mentioned by Drs. Danysz and Bordet in their report of 15 June 1897.

In the month of January Mr. Theiler suddenly received instructions from his Government to return and to place himself at the disposal of the two French savants who had just arrived, without the Natal Government receiving any communication on the subject.

Mr. Theiler thereupon left the camp at Rustenburg and went to Pretoria. Mr. Pitchford remained and continued the experiments for about six weeks and the information obtained during that period, were communicated to Mr. Theiler.

Now that these circumstances have been made known,

the Congress will observe that Drs. Danysz and Bordet, from the time of their arrival, were placed in the favorable position of having at their disposal the results of four months continuous and succesful labour, conducted by Messrs. Theiler and Pitchford.

I have now read the report which has been presented to the conference by Drs. Danysz and Bordet, and for so far I can see, there is but little difference between the results communicated in that report and those obtained by Messrs. Theiler and Pitchford in 1896.

The latter gentlemen obtained certain results but could not take advantage of them, Mr. Theiler because he was recalled by his Government and Mr. Pitchford because up to the middle of June last, there was no rinderpest in Natal.

No doubt the Congress will appreciate the labour, performed by each of the experts in the case of the serotherapy of the rinderpest in South Africa.

sgd. C. B. Lloyd,
Commissioner of Agriculture,
Natal.

In this connection, Mr. Theiler made the following remarks:

I am the only one here present, who is in a position to give correct information on the subject discussed by Mr. Lloyd in the letter which has just been read.

It is correct that the Governments of Natal and of the South African Republic caused experiments to be made regarding the rinderpest.

Mr. Pitchford and myself found out that the blood of cured animals, was a preventative to protect the animals against the rinderpest.

It was moreover known that the blood of the cured animals, has a protecting capacity against many diseases.

As regards rinderpest, Messrs. Lemmer and Russie, had already before given some indications regarding this capacity of the blood of cured animals. We stated therefore that repeated injections with serum, originating from cured animals, cause a protection against the inoculation with virulent blood and produce a temporary immunisation, and also that such injections with serum may also protect against the contact with rinderpest.

But these statements were not sufficient to produce a practical method, by which permanently good results could be obtained.

Several important points had to be correctly set forth, the merits connected with the method as at present applied, must no doubt be ascribed to the experimenters at Waterfall.

The plan of the experiments to be conducted by the French bacteriologists had moreover already been fixed on their arrival here and comprised in the first instance the study of the characteristics of the serum of the cured animals.

They did not at all occupy themselves with experiments made before their arrival in Africa, but commenced their studies of the question from the start.

The experiments would therefore have arrived at exactly the same results if the experiments made, in the first instance by Mr. Lemmer and afterwards by Mr. Pitchford and myself (the latter were moreover not published) had not been made.

Besides, the french bacteriogists, in ther report sent in to the Government, made mention of all the experiments made before in this connection, but nobody would

foster the idea that in order to obtain results from the study of the rinderpest, they would require the results of the expiriments made two months previous by Mr. Pitchford and myself.

The experimentors of Waterfall have in the first instance procured to the country the advantage of the useful capacities which in the case of rinderpest, the blood of cured animals, possesses.

Mr. Landdrost Schutte then took the word and drew the attention to the fact that since the appearance of the rinderpest in the Transvaal, the farmers had inoculated the animals with all kinds of remedies. until in January last, the french bacteriologists arrived here at the request of the Government.

As soon as the Government learned that Messrs Danysz and Bordet proposed a means against the rinderpest they nominated a commission. of which speaker was a member.

That Commission investigated it and obtained the following results:

1st Experiment: On the farm of fieldcornet A. Botha:

a. 5 animals have, had viz.,

1 calf 60 c.c. of blood of a cow, 3 months immunised and twice injected with rinderpest blood.

2 small oxen 80 c.c. blood of a cow; twice injected with rinderpest blood.

2 big oxen, 100 c.c. blood of a cow, twice injected with rinderpest blood.

Result: All five animals salted.

b. 80 animals previously inoculated with gall, each received two injections of 100 c.c. of blood. This blood came from 3 oxen, who had been salted for three months and who had received injections with virulent blood.

Result: All these oxen are immunised. It may have been remarked, that the herd of fieldcornet A. Botha had been inoculated with gall two days before. The disease broke out fifteen days after the inoculation amongst that herd.

At the moment that we inoculated these animals with blood from our salted oxen, out of the 150 oxen inoculated with gall, 56 had already died and a large number was sick, and daily new cases were observed.

The two injections with 100 c.c. have caused the mortality to be stopped at once.

2nd Experiment: A lot of 65 oxen, belonging to Messrs. P. Kruger and Prinsloo has been inoculated twice with an interval of six days with 100 c.c. of blood.

The first time blood has been employed of oxen already immunised for a long time; the second time that of two oxen immunised for three months and injected twice with rinderpest blood.

Result: All these animals have been more or less seriously ill, five of which, three small calves, died after a rainy day, the 60 others have been immunised.

It may here be remarked that these immunised animals became sick between the 8th and 15th day after the injection, the 5 which died only became sick 15 to 20 days after.

3rd Experiment: 10 oxen belonging to the same gentlemen have once been inoculated with 100 c.c. of blood of an animal immunised for two months and which had received no rinderpest blood.

Result: 5 dead and 5 salted.

4th Experiment: 22 oxen have twice received an injection of 100 c.c. of blood with an interval of 6 days. The blood was taken from an animal salted for three months and which had received two injections with rinderpest blood.

Result: 2 dead and 20 salted.

5th Experiment: Out of 7 oxen, 6 have received two subsequent injections of 100 c.c. and one a single injection of 100 c.c. of an animal immunised for two months and experimented upon with virulent blood.

Result: The ox, which was only injected once, died, the other six have been immunised.

6th Experiment: 30 animals already have each received one single injection of 100 c.c. of blood of an immunised animal, namely, from an ox which had been immunised for two months and experimented upon with virulent blood.

Result: 20 dead, 10 immunised.

7th Experiment: A lot of 70 animals, Manager, Mr. Thomson, had been inoculated with gall, the disease broke out 12 days afterwards. At the moment when those animals were more or less sick, they were thrice inoculated with an interval of 8 däys with blood of two oxen, immunised for three months and *not experimented upon.*

Result: 9 dead, 61 immunised.

8th Experiment: Out of a lot of 76 animals, belonging to Mr. McKenzie, at the time of the injection, 11 were visibly sick.

They subsequently received four injections of 100 c.c. of blood of an animal immunised for 3 or 4 months and not experimented upon.

Result: 9 dead, 67 immunised.

9th Experiment: Two sick oxen, one of whom very seriously have received, the one 600, the other 200 c.c. of blood from an animal which was immunised and had been experimented upon with injections of rinderpestblood.

Result: A few days after the injection, the oxen were quite cured.

These, the Landdrost added, are the results which have been obtained in the first instance. Other experiments have been made or are still being made and the results of which will be made known at the next meeting of the Rinderpest Committee at Pretoria on the 23rd of August next. (1)

1) It will be necessary to get the received results, such as the Landdrost has remarked in his speech, which were made known at the meeting of the Rinderpest-Committee of the 23rd August, taken up in this report as a foot-note.

Minutes of the meeting of the Rinderpest-Committee held at the Landdrost Court Pretoria, on the 23 August 1897.

Present, Landdrost Schutte, Commandant Erasmus, Messrs D. du Plessis of Rustenburg, D. Opperman, M. Pretorius, E. A. Radloff, from Ladybrand, O.F.S. G. Colby, Bethulie, O.F.S. as also Messrs Danysz and Theiler.

The Chairman opened the meeting and read the minutes of the previous meeting.

On the order:—

Reports of the Members:

1st Report. Commandant Erasmus and D. Opperman.

1st. Experiment. 34 salted animals were twice injected with 100 c.c. of immunised animals.

Result: 15 dead. 19 salted.

2. 514 animals already infected, were each injected with 100 c.c. 224 already dead, 290 salted.

3. 240 healthy, each 200 c.c. infected at once, injected on the 6th day with 200 c.c.; 4 became sick, the others not.

4. 65 infected animals were infected twice with 150 c.c.; 23 died, the others were salted.

5. 23 animals received twice with an interval of 6 days 150 c.c. they have all been salted.

Mr. Otto Henning discussed the results obtained in the Free State by the method now under discussion. He learned that Mr. Bordet had arrived in the Orange Free State for inoculation purposes and to teach the method to the Boers. As Government Veterinary Surgeon he regretted that Mr. Bordet had not come to see him. He had to make certain objections against the method and ended by saying that in his opinion the French experts had too great a belief in their method.

Dr. Bordet replied that he had come to the Free State privately and for the purpose of teaching the

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6. 78 animals received the first time 100 c.c. the second time 150 c.c.; of these one died and more than half of them are salted.

7. 340 animals, of which 33 sick, were inoculated with 120 c.c and 4 days later again with 120 c.c. Result 56 dead, the others salted.

8. 365 animals still healthy inoculated each with 120 c.c. the 4th day again with 120 c.c. out of these 7 died, all others were slightly sick, most of them are salted.

9. 60 very sick animals, injected with 300 c.c. nearly all healthy.

Report of Fieldcornet Pretorius, ward Aapjesriver during Mei 1897, at H. Erasmus, 96 animals inoculated, 60 of them salted 36 dead.

Botha, 36 animals (healthy) 33 salted, 3 dead.

A. J. van der Berg, 24 animals (sick) 17 salted, 7 dead; P. Venter, 17 animals (sick), 14 salted, 3 dead.

In the month of July 3 1897, by the same N. Pretorius, 130 animals twice inoculated, 75 salted and 55 dead.

5 July 1897. G. Marneweck, inoculated 119 infected animals, 52 salted and 67 dead.

7 July 1897. J. M. Strijdom, 60 infected animals, which had been previously inoculated with gall. The disease stopped at once. Later on at the same place 200 uninfected animals inoculated, 132 salted and 68 dead.

10 July 1897. P. Mulder, 130 animals, 121 salted, 9 dead.

22 July 1897. P. and M. Mulder, 244 healthy, 119 salted, and 45 dead.

The report of Mr. du Plessis could not be handed in, as the experiments were still being made and no definite result had yet been obtained.

Report of Mr. Landdrost Schutte, already handed in at the International Congress, see also page 14 of the Waterfall Station report of 13th June 1897.

Report of Mr. Jooste from Potchefstroom handed in by Dr. Danysz:

1. 300 animals treated, of which one died directly after the injection, the others have been sick and salted.

2. June on Losberg, from P. L. Steijn 170, and from W. P. Steijn also 170, all uninfected, 1 of these died the others were salted.

3. At Langlaagte, over 300 animals treated of which 22 died were uninfected, the great loss in this instance is ascribed: *a.* to a single injection of 120 c.c. and *b.* to the cold.

4. Le Roux, at Klipriver, 12 to 14 July, 253 animals already sick for 9 days, of those 79, who were not sick, were injected, 27 dead.

5. At Doornkop, 14 June 1897, 403 animals treated; 17 died mostly from the cold.

6. Eikenhof-Kliprivier, 19 December 1897, 490 animals are getting sick.

7. C. A. Brink, 57 animals, 27 salted, 30 died.

8. Zwart Zwanepoel 33, Langehoven 112, Jan Steijn 123, Zwartkopjes 112, v. d. Merwe 768, all inoculated, the rapport on these is still to follow.

Report of Mr. E. Radloff, 10 July 1897. 16 oxen salted for about three months, 8 of these with 100 c.c. and 8 with 130 c.c. of rinderpestblood.

17 July 1897. G. C. Winssen, Ladybrand, 95 uninfected, the 1st time inoculated 23 Juli 1897, the same animals a second time. The result on 7 August 1897 was that 4 days after the injection, some became sick. Two days after they began to swell and died; there are 52 dead but not a single one died of rinderpest, 41 animals salted, 2 sick. The animals died of blood-poisening on the farm Beginsel-Glocoln.

19 July 1897. 95 oxen uninfected, of these 15 were infected and two sick. On 26 July 1897 they were inoculated for the second time, when one of the sick animals died, the others were healthy.

27 July 1897. 101 animals for the 1st time, of which 15 sick.

2 August 1897. 15 oxen for the second time. of these 101 animals.

2 August 1897. 94 animals, infected for the first time. All these were injected with 100 c c. of blood, and at once brought into contact with sick ones.

The results of the inoculation were at 19 July 1897, 13 sick, of those of 27 July 1897 and 2 August 1897 nine died, 3 sick and 3 dead from the inoculation of 2 August 1897.

At Kiebel, Ladybrand, of H. H. Werner 24 July 1897, 60 animals injected, of which one sick and 31 infected. 30 July 1897, 2nd

method to a Boer, who had come to Waterfall to ask his advice. Under those circumstances he was not obliged to visit the Government Veterinary Surgeon. He further drew Mr. Henning's attention to the fact that in the Orange Free State a great many vaccinations had taken place, without any special method being followed, the most important instructions have not been followed up, in consequence of which the results obtained, if sometimes unsatisfactory, do not speak against the method.

Mr. Wolmarans said that in his experience, when the method is properly applied, the animals got the rinderpest but 90 to 95 per cent. may recover.

Mr. Haslam asked the Delegates how many in the hundred were saved by the application of the method?

Mr. Henning replied that in certain cases 90 per cent. of the animals could be saved, but when the serum is weak, the majority of the animals died.

Dr. Bordet remarked that if the extent of the mortality has to be discovered, it will in the first instance be necessary to know whether the method has been applied according to the instructions or not. According to the results obtained up to the present, the figure of mortality has been 15 per cent. in the case of herds already affected by the Rinderpest and 8 per cent. in the case of herds still in a healthy condition.

Mr. Theiler asked some particulars of Mr. Henning regarding the manner in which the inoculations had taken place.

Dr. Bordet regretted that the Veterinary Surgeon of the Orange Free State had not given any practical information regarding the manner in which the method had been applied in the Orange Free State. Many persons inoculated without any control or supervision. It is a pity that the Orange Free State did not commission a single Veterinary Surgeon to Waterfall, in order to obtain information regarding the method. Therefore Messrs. Bordet, Theiler, and Danysz deserved no reproach as regards the often little results obtained in the Orange Free State.

Mr. Brain replied that the Government of the Orange Free State never received any official information regarding the method or methods Bordet, Theiler and Danysz.

Mr. Turner made known his views regarding the method based on the capacity of the blood from strongly immunised animals. That method has a splendid future, especially in the case of herds already affected because it immediately produces resistance. Its use in the case of herds already affected is all the more striking because it necessitates the bringing in contact of the animals already treated with sick animals.

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injection repeated, all with 100 c.c. ran for 3 days amongst pest animals. The results on 7 August 1897, are 3 dead and 2 sick.

At Elma, of S. Stokdeal.

18 July 1897, 53 animals, of which 2 sick.

24 July 1897 and 25 July 1897, 51 animals for 2nd time, the sick ones died.

24 July 1897 and 25 July 1897, 120 infected animals for 1st time.

31 July 1897, 73 animals for 2nd time.

31 July 1897, 34 animals for 1st time uninfected.

Result on 7 August 1897, 18 July 1897, 3 are dead and of those on 27 July 1897 10 are dead and 10 sick, which animals had little chance to get through. Of some animals in this report of Mr. Radloff it can not be said with certainty that they have been ill, and therefore neither that they were salted.

Report of Fieldcornet Glas, at the farm of Mr. Jordaan at Krokodilriver, 131 head inoculated of which 72 were salted.

The meeting was opened at three o'clock in the afternoon.

Mr. Theiler again drew the attention of the Congress to the usefulness of employing the curative blood in the case of herds already affected.

Mr. Turner fully agreed with Mr. Theiler's views.

Mr. Haslam asked whether the animals treated with curative blood are indeed strongly immunised?

Dr. Danysz declared that all the animals, which showed the signs of the disease and which were cured by the blood, are strongly immunised.

Dr. Danysz further explains the rules, under which the method of the blood is applied in the different parts of the Transvaal. The question was already explained to the meeting of Fieldcornets which took place on July 26th, 1897

Plan of organisation of the treatment of the rinderpest by the blood of immunised animals by Dr. Jean Danysz.

The experiments made on some thousands of animals, have proved to us that the treatment—if well applied—of animals still healthy, by the method based on the use of the blood of immunised animals—a method explained by my collegue Dr. Bordet at the previous meeting—can cause 80 to 90 per cent. of the herds treated, to be cured and immunised. Can similar results be obtained in practice? Or, in other words, is it possible—knowing the treatment—to lay down the necessary regulations to treat the herds, which have been left before they are affected and have been destroyed and to save 80 to 90 per cent. of those herds, by immunising them against the pest? The information which we have in our possession, justify me in declaring —as you can moreover see for yourself, if you go through this information with me—that this is possible, but that the good result of the enterprise will entirely depend on the measures which will be taken to guarantee the more or less perfect application of the so highly renowned treatment. The injections with defibrined blood of immunised animals will never result —as was the case with the injections with gall, made under bad conditions—in spreading the epidemic and in increasing the evil. The immunised blood will never spread the epidemic, and always save a certain number of animals treated, which otherwise would have succumbed. At the same time it is evident that when all necessary precautions are not previously taken to prepare a sufficient number of animals, or if blood is employed of badly prepared animals, or if finally, the necessary precautions are not taken which are inevitable to work with a sufficient aseption—a great number of animals will succumb before they could be treated and the treated animals will succumb in a much larger proportion than when treated in the manner to be indicated by me. We know that on the average two months are required for the immunisation and preparation of an ox, to obtain from an animal thus prepared a quantity of defibrined blood, sufficient to treat 25 animals every fortnight with, and that from such an ox blood may be taken for about two months, the 3rd or 4th month after the cure has been effected.

An ox thus prepared therefore can, after two months, furnish the quantity of blood necessary for the treatment of 100 animals, each of which can again for two months following on the cure, in their turn furnish

the blood which will be necessary for the treatment of 100 others; so that, starting with 100 well prepared oxen, in 6 months time a quantity of defibrined blood may be obtained, sufficient to treat all the herds in South Africa with. Therefore, in order to arrive at this result, it is above all necessary to think of preparing immunised animals, capable of furnishing defibrined active blood and at the same time of teaching the farmers to apply that treatment to their herds. The first of these two operations is in fact the only one which the Boer can only apply after a long study and after having been properly instructed, while on the other hand, every Boer, after having once or twice seen it, will be able to learn the treatment, that means to say, to bleed an ox, to defibrine the blood, and subsequently to inject it in his herds.

In those countries, which are, so to say, without means of communication and of rapid transport, and in which it would also be impossible to collect the thousands of litres of defibrined blood of an aseptical kind, there is, in my opinion, only one means of arriving at a satisfactory solution of this question namely, by erecting small stations at nearly every place, where a good many animals still remain to be treated: which stations, if necessary, might be portable, and at which stations persons, specially instructed, would be charged with the preparation of immunised animals, and at the same time to teach the Boers how to apply the treatment in a rational manner. Instead of conveying the defibrined blood, prepared oxen might be sent from place to place only to be bleeded, whenever their blood could be utilized.

In order to explain in as explicit a manner as possible how these statious must be installed, and how they would have to work, I have collected all the particulars of this organization in a set of regulations, which I would also like to submit to your consideration.

Regulations for the local stations erected for the purpose of insuring and directing the cattlepest in the South African Republic.

Art. 1. In every place where the necessity for it is felt, a station will be erected through the care of the Landdrost of the district, at which oxen, immunised against the rinderpest, will be prepared and where the farmers will be taught how to treat their herds.

2. The technical management of each station will be entrusted to an assistent of the experimental station at Waterfall.

The administration of the station will be entrusted to the Landdrost of the district or to somebody appointed by him for the purpose.

3. Every assistent must have at his disposal some white and some black assistants, one or two riding horses, and some head of cattle for the purpose of continually keeping up a medium of the epidemic.

4. The place to be chosen for the erection of a station, must have meadows, sufficient to keep from 100 to 200 oxen for two months.

5. In the erection of the station must be included one or two klipkraals and a small laboratory provided with all requisites and instruments for bleeding and injection purposes.

6. The duty of an assistant, chief of the station, will be before all the preparation of immunised animals. The assistant will not be obliged to treat the animals

of that region, but to teach the Boers how to apply that treatment.

The assistant will always continue to stand under the direct orders of the Chief of the Central Station at Pretoria.

7. Every local station will receive from the Central station one or more animals which have been immunized and prepared in order to commence the treatment of the animals, which will be sent to it.

8. Every Boer, owner of a herd, desirous of treating his animals with defibrined blood, can send to the station of his ward 5 per cent. of his herd for the purpose of being there immunised and prepared.

9. The animals immunised and prepared at the station, will be returned to the owners as soon as they are ready for bleeding purposes; the owners of such animals must, however, bind themselves to allow their prepared animals, after having been employed for the treatment of their own herds, to be bled every time the Landdrost or the Chief of the Station requests it.

10. Every Boer shall have to pay for each animal treated the sum of one shilling, to be used for the payment of the expenses in connection with the station.

11. The animals prepared at the station, must serve:

1. For the purpose of treating other animals brought to the station.
2. For the purpose of treating the herds of their owners.
3. For the purpose of treating, whenever necessary, other herds from that neighbourhood.

12. All farmers are invited to betake themselves to the stations of their respective wards, there to be taught to treat their herds themselves and to procure the instruments necessary for the treatment. Nobody making any further remarks, the discussion on the method of curative blood was closed.

Several proposals were handed in.

Dr. Bordet proposes the following motion, supported by Messrs. Danysz and Theiler.

In consideration of the importance of the resolutions which will be taken in connection with the share, in future to be attributed in combatting the Rinderpest, to each of the two methods, previously discussed, we propose to the meeting, to postpone the handing in of proposals on this subject till to-morrow, in which manner each of the members shall have more ample opportunity to hand in the proposals which he will think fit to make on this important question.

Messrs. von Herff and Theiler handed in the following proposal:

The animals which have been treated with gall and which afterwards get the rinderpest, recover under the influence of the curative serum, more easily than those which have not been subjected to the treatment with gall.

Proposal of Captain Haslam:

The Congress is of opinion that the gall to be utilized for inoculation purposes, must be taken with particular precautions, either from animals which died of Rinderpest, or from animals seriously affected by that disease.

The Congress further states the existence of contradictory evidences relative to the question whether or not the gall, by itself can cause the Rinderpest.

Proposal of Messrs. Theiler and Henning:

The more or less temporary immunisation, pro-

duced by the treatment of animals with the vaccinating gall, may be strengthened by a subsequent injection with pestblood.

Proposal of Mr. Danysz, supported by Messrs. Turner, Bordet and Theiler, regarding the principles of the method of the curative blood.

Messrs. Pitchford and Theiler at their experimental station at Rustenburg have stated that a certain number of animals, injected with serum from immunised animals and subsequently infected by being brought in contact with sick animals, showed a slight sickness of which they recovered.

The experiments conducted at the Waterfall station, have enabled Drs. Danysz and Bordet to instantly confirm the observations of Messrs. Pitchford and Theiler and further to describe in a sufficient manner and with correctness, in what manner the blood of immunised animals could and had to be used in order to give certain results and also to fix the method of treatment of the rinderpest, which was explained in their report of the 15th June, 1897, and subsequently explained by Dr. Bordet at one of the previous meetings of the Congress.

Those points, which must be fixed correctly in order to make this method of treatment practically applicable, may shortly be taken together as follows:

1. The immunising capacities of the blood of immunised animals originate from the presence in such blood of a chemical substance, having the same characteristics as that, which is found in the serum prepared against other diseases.

2. The blood of the animals, which have got through the disease, can, when taken 10 days after the cure, that means to say, after the temperature has fallen off, still be virulent.

3. Two months after the cure, this blood possesses the greatest power against the action of the virus.

This power remains about the same for two or three months, it then gradually weakens until the blood of animals cured since 10 months, does only possess a very weak immunising action.

4. Repeated injections of virulent blood, under certain circumstances increased the protective power of the blood of the immunised animals.

We have thus found that a dose of 40 c.c. of defibrined blood of a well-prepared animal, as regards the curative action, can be equal to 200 or even 500 c.c. of blood taken from an animal not prepared.

5. The inoculation even with a strong dose of pestblood in the case of an animal, which has become cured by itself from a serious attack, gives to such animal for more than 45 days no thermal reaction worth mentioning, while the injection of pestblood in the case of cured animals, one or two days after the fall of temperature, gives a very good reaction within the typical time.

Those same animals injected once or twice under the same conditions, can show the same characteristic reaction.

6. The passive immunity given to the animals, solely by the injection of blood of salted animals, is only of short duration (10 to 20 days), it becomes daily weaker.

7. According to the results communicated by the Rinderpest Commission of the South African Republic, the blood obtained under the aforementioned conditions, and at two different times with an interval of six days, injected into the animals still healthy and contaminated

immediately after the first injection with 100 c.c. for the first time and with 100 c.c. the second time, allows of the animals to contract a disease, of which they recover in the proportion of 90 per cent.

8. The injection with a strong dose of defibrined blood of immunised and well-prepared animals, allows of even those animals being cured which are most severily affected.

9. The immunisation, given to the animals treated in this manner, may be regarded as an active and lasting immunity.

Mr. Haslam then requested in writing to be permitted to lay before the meeting on the next day, certain means for combatting the rinderpest, which differed from those which had hitherto been discussed.

Messrs. Danysz and Bordet proposed the following amendment to the proposal handed in by Messrs. Henning and Theiler.

It is desirable to mention in the proposal of Messrs. Henning and Theiler the correct period at which the injection with pestblood must be applied.

The order of labour for Saturday the 7th August was then fixed as follows:

1. Discussion on the proposals handed in.
2. Remarks of Captain Haslam regarding the other means which can be employed to protect the herds against the rinderpest.
3. The adoption of resolutions with regard to the selection of the method of treatment (method with gall and method with preventative blood) which in future must be applied against the rinderpest.

The meeting adjourned.

Saturday, August 7th, 1897.

The meeting was opened at 9 o'clock.

Captain Haslam has the word:

Mr. Haslam is surprised that the only means by which the disease could be combatted, should be considered as impossible to be applied to South Africa. And yet everybody agrees that without quarantine measures, the rinderpest would have spread much quicker.

In fact, from evidence taken, there appear to have been cases in which, by the destruction of the herds, the disease could not be kept back, and there are cases, in which the sanitary cordons have been broken through.

This proves, that the measures had been badly taken, *vide* the fact that certain States have succeeded in preventing the disease from entering their territory at a time when it fiercely raged in the neighbourhood of the frontiers.

People are therefore not justified in saying that the only means, which can successfully be applied against the rinderpest, consist in the inoculation for the purpose of producing the disease in a slight degree. On the contrary, so long as no preventative has been discovered against the rinderpest which does not necessitate the presence of the disease, the only recommendable means to fight against the spread of the rinderpest, is the application of quarantine measures. In India, no recourse is taken to the destruction of the sick herds but the spread of the disease is prevented by means of isolation and disinfection.

These precautionary measures should be introduced into South Africa, without objection to money and with the assistance of very severe laws and a sufficient staff.

The laws should be severe and also severely applied to those who are guilty of contravention of the regulations made.

As regards the method of treatment at present applied, Mr. Haslam considers it insufficient and disapproves of the necessity of making the appearance of the disease necessary; the results moreover depended on so many circumstances.

The endeavours of the experimenters and savants should, notwithstanding, be encouraged as much as possible, but incomplete measures should not everywhere be applied, while their application is surrounded with dangers and do not procure a lasting immunisation.

In short, Mr. Haslam is of opinion that with a view to the degree at which the knowledge has up to the present arrived, the only method by which South Africa may be freed from the continual presence of the Rinderpest consists in the destruction of the affected herds, as is also done in Europe, or in case this measure for political reasons is not applicable, in the isolation and disinfection, a measure adopted in India.

The Chairman wished to remark, after the Congress had heard Mr. Haslam's remarks, that the measures recommended by him for combatting the rinderpest, had already been applied in the Transvaal.

Isolated places had been erected, and burghers and Kaffers commandeered as guards, but notwithstanding all quarantine measures, the pest had spread. Recourse was then taken to the slaughtering of the beasts, and the corpses were buried six feet under the ground.

Precautions were taken against the contamination by the water for drinking purposes and all contraventions of the quarantine regulations were severely punished.

In districts where thousands of animals had already been killed, the Government at the urgent request of the population, put a stop to the slaughter. After the vaccinating inoculation with the Waterberg method had been commenced, some animals were saved, thanks to the Koch method some more were saved, and since the Waterfall method had been applied, still more were saved.

The principle of taking quarantine measures will never be approved in the Transvaal.

Mr. O. Henning is of opinion that quarantine in Africa will not give the same satisfactory results as they do in India. All these methods have been applied here, and everything has been tried to prevent the pest to spread. The systematic preventative inoculation is the only means of putting a stop to the plague.

Messrs. Brain and Theiler defended the same view.

Dr. Danysz urged that the quarantine measures, which can be applied in Europe, are not applicable here, owing to circumstances characteristic to this country especially in regard to the extraordinary difficulties which are met with if the affected animals are wanted to be isolated.

Mr. Consul van Herff gives his view by making the following proposal:

The experience made in South Africa shows that we have succeeded in stopping for a certain time the spread of the rinderpest by the application of quarantine measures. In Natal and in the German Possessions of S.-West Africa, they have perhaps for a longer time been protected against the spread of the rinderpest owing to

natural safe-guards, namely, the Drakenberg and the Kalahari desert, which form a block in the way. But also in countries where such natural safe-guards did not exist, the quarantine measures have kept back the rinderpest. This fact is important and must not be lost sight of in the battle, which will still have to be fought against the rinderpest. I therefore wish to recommend, that where possible, the unaffected districts be divided in two parts, the one removed from the affected places, and the other situated between the first and those parts of the country already infected.

This intermediate strip of country must be about 20 miles in extent:

1. In the affected areas it would be recommendable to apply the method of Messrs. Danysz, Bordet and Theiler.
2. In the unaffected areas adjacent to the area where the infection is, the Koch method or the modification of it, should be applied.
3. In the area, separated from the infected parts, by the intermediate and still unaffected strip of country, no vaccinations must be made, but these districts should be protected by quarantine measures, as long as possible.

By adopting such measures, the rinderpest would be kept back for a certain time, and during this period it might be investigated whether it would be possible to arrive at the following object:

1. To entirely extermine the rinderpest by the application of the two abovementioned methods as well in the affected districts as in those not yet affected, thus to save in an absolute manner a part of the cattle in South Africa.
2. To improve upon the method of vaccination at present in vogue, and in this way to obtain more favorable results in the future.

Captain Haslam supports this proposal.

Dr. Turner declares that he has advised the Government of the Colony to proceed to slaughter the sick animals, on the other hand at the same time proceeding with inoculation, because the inoculations require some time. The quarantine is impossible in South Africa, because the oxen are used as means of transport.

Dr. Danyz does not agree with Mr. von Herff's proposal, because the inoculation with gall can spread the rinderpest. A neutral, uninfected area would not present much advantage, because it has been shown that the pest may jump from one place to another. The quarantine measures would not compensate for what they would cost.

Mr. von Herff asked Dr. Danysz whether in Europe the pest also advances by bounds.

Dr. Danysz replied that the fact has not been observed in Europe, but it must be taken in consideration, that in Europe the rinderpest can be combatted by means quite different from those which can be applied here.

Mr. Haslam explained to Mr. von Herff that in India the pest also advances by bounds. The meeting, in his opinion, is so unanimous that the measures adopted in Europe, cannot be applied to Africa, that it would be difficult to insist any longer in favour of the quarantine. However, the latter method succeeds in India where the rinderpest is only spread in the

districts where no recourse is taken to similar measures. When the rinderpest can jump from one place to another, this is only due to the fact that the germ of the disease is transported by means of skins, horns, etc. The plan of Mr. von Herff must be taken into serious consideration. When will the spread of the rinderpest in South Africa be stopped, if the methods which are desired to be applied, are not improved?

Mr. J. Ayliff, delegate of the Agricultural Association of Port Elizabeth, asked whether the inoculations will not result in the continued existence of rinderpest in South Africa?

Messrs. Chairman, Henning and Theiler believed that whatever is done, whether inoculations take place or not, the rinderpest is in the whole of South Africa and will remain in it for a certain time. The only problem which must be dissolved is the vaccination and the saving of the greatest number of animals possible.

The discussions were closed.

Proposals were handed in regarding quarantine measures and the slaughtering of sick animals.

Proposal of Messrs. Theiler and Henning:

«The experience made in all States of South Africa has shown that it would be impossible to cause the rinderpest to disappear here, by only applying the measures which are taken in Europe only and in India against this disease».

Proposal of Messrs. Otto Henning and Brain:

«The only means of preserving a considerable portion of the herds, consists at the present moment in those countries affected by the rinderpest, of the systematic application of vaccine inoculation».

Dr. Bordet is of opinion that these two proposals could easily be taken in one.

Mr. von Herff did not share this view, because he would be able to vote in favour of the first and not in favour of the second.

The meeting was adjourned.

The meeting of Monday next to commence at nine o'clock in the morning.

The proposals handed in to-day will be put to the vote at the next meeting.

Monday, 9th August.

The meeting opened at nine o'clock.

Dr. Nascimento, absent through indisposition, excuses himself by letter.

The order of the day contains in the first instance the voting on the proposals handed in the previous day.

The proposal made by Dr. Danysz, supported by Messrs. Turner, Bordet and Theiler, is treated respecting the principles of the method of treatment of the rinderpest by the blood of strongly immunised animals, the text of which appears in the report of the proceedings of yesterday's meeting.

The different points contained in that proposal are successively accepted and approved without modification.

Subsequently is approved the proposal, handed in yesterday, of Messrs. von Herff and Theiler, saying that animals previously treated with gall, and which afterwards contract the rinderpest, recover more easily under the influence of the curative blood than the animals which have not previously been subjected to inoculation.

The proposal of Dr. Haslam, mentioned yesterday, is equally put to the vote and accepted.

The proposal of Messrs. Henning—Theiler, saying that a subsequent injection with virulent blood increases the immunity given to the animals by means of gall, was put to the vote and accepted with five against four.

The meeting is closed.

There will be a meeting in the afternoon at two o'clock, when discussions will take place in connection with the use for the future of the method discovered up to the present.

AFTERNOON SITTING.

The meeting is opened in the afternoon at two o'clock.

The proposals which have been handed in with regard to the future use of the different methods applicable to the rinderpest are as follows:

1. Proposal of Messrs. Von Herff and Haslam.
2. Proposal of Dr. Bordet, supported by Messrs. Theiler, Turner and Danysz.
3. Proposal of Mr. Haslam, supported by Messrs. Henning and Turner.

The text of the first proposal has been taken up in the report of yesterday's meeting.

The text of the two other proposals will be given further on.

After the reading of the proposals has taken place, the Chairman rules the following motion, supported by Dr. Danysz:

«Taking in consideration that all proposals handed in on Friday or Saturday last have to be examined and classified before being submitted to the Congress for discussion and voting, we propose to appoint a sub-commission which will be occupied with the work. The proposals thus classified and specified will subsequently be submitted to the consideration of the Congress».

This motion was accepted.

The Chairman asks the meeting whether they wish to have this sub-commission appointed by secret vote, or whether they prefer that it will be composed of members to be appointed by the Chairman.

Messrs. Brain and Von Herff are in favour of the latter solution, and their views are shared by the Congress.

The Chairman thereupon appointed Messrs. Turner, Danysz and Henning to form this sub-commission.

The meeting was closed.

The next meeting will take place to-morrow Tuesday, the 10th August, at 9·30 in the morning.

Tuesday, 10th August 1897.

The meeting is opened at 9.30 in the morning.

The sub-Commission appointed yesterday, met on the evening of the same day, and submits to-day its conclusions arrived at to the Congress. The translations of these conclusions being incomplete, the meeting was postponed until the afternoon at half-past two. The Congress will then have at their disposal correct and complete translations.

AFTERNOON MEETING.

The meeting is opened at 2,30.

The proposal elaborated by the Sub-Commission is

communicated to the Congress. It is put in the following terms:

« The Sub-Commission of the Congress, consisting of Messrs Turner, Danysz and Henning, appointed at the meeting of the 9th August 1897, with the object

1. to lay before the Congress a combined plan in connection with the measures to be taken and the methods to be applied for the purpose of combatting the rinderpest in the most efficient manner;
2. to draw up precise instructions regarding the practical application of each method in each particular instance;

Proposes to the Congress the adoption of the following resolutions:

Considering the combined resolutions previously adopted by the Congress and in particular:

1. as regards the gall, the proposal of Messrs Danysz and Turner, and the proposal of Messrs Henning and Theiler, the texts of which will be found in the reports of previous meetings.
2. As regards the defibrined blood of immunised animals, the proposal of Mr. Danysz, supported by Messrs. Bordet, Theiler and Turner (see report of the meeting of Friday, 6th August).
3. As regards the measures of quarantine, the proposals of Mr. Von Herff (see meeting of the 7th August), and of Mr. Haslam.

The Sub-Commission proposes:

1. to submit to discussion paragraph after paragraph the proposal of Dr. Bordet, supported by Messrs. Danysz, Theiler and Turner, after having taken up in it the proposal of Mr. Haslam, proposal of Dr. Bordet, supported by Messrs. Turner, Danysz and Theiler, regarding the principles, in accordance with which the battle against the rinderpest will in future be fought.

Considering that it must be admitted from the reports on the treatment of the rinderpest, and also from the various opinions expressed by the members of the Congress, that the manner in which the rinderpest must be combatted, depends to a large extent on the condition in which the herds are at the moment in which the inoculation is commenced. « For example, in those parts of the country where the rinderpest might break out at an isolated spot, and at a large distance from the nearest infected places, the Government must preserve the right to have the affected animals slaughtered and to prevent the spread of the disease by taking resource to such disinfection and isolation measures as they may think fit.» *) We have, without any important alterations retained our opinion regarding the method of Professor Koch, which opinion in several reports has been made known to the interested Governments, and confirmed at one of the previous meetings by several of the members of the Congress and by which the method is acknowledged to be of real use if applied under precise conditions and with particular precautions.

We are af opinion not only that this method must not be abandoned in the future, but also that it may

*) This sentence gives the text of the proposal of Mr. Haslam, which was taken up by the Sub-Commission into Dr. Bordet's proposal.

sometimes be combined to advantage with the method recommended by Messrs. Danysz, Bordet and Theiler, consisting of injections with blood of immunised and prepared animals, which injections are followed by bringing the animals into contact with the rinderpest. We also believe that the work which must be reserved to each of the two methods varies according to circumstances, especially with regard to herds which are still protected against the rinderpest, immediately menaced by it or already affected.

It seems therefore apparent that these three cases must be considered separately:

First case: The herds inhabit districts or regions not yet infected by the rinderpest, and to which, for certain reasons (f.i, considerable distance between the infected points) the cattlepest is not likely to extend very soon.

Under these circumstances the gall method, pure and simple, is the only one which should be applied, but such application must in those parts necessarily take place most carefully, gradually and with all the necessary precautions, in order to avoid the appearance of the rinderpest at several points at the same time, it must therefore only be entrusted to the hands of competent men.

Second case: This concerns herds, which are still in a healthy condition, but near enough to where the pest rages to justly fear an approaching infection. In such cases, the difficulty for the inoculator is to judge whether the animals, thanks to certain precautionary measures (i.e. isolation of herds) may be expected to be protected against infection for another two or three weeks, or whether they are menaced by an immediate infection.

In case the first instance seems likely to be arrived at, it may be recommended to take recourse to the method consisting of injection with gall, subject however to certain regulations to be fixed by the Congress. Although as a rule it will not give to the animals a complete and long lasting immunity, still it will secure them a resisting power, more or less great, which to a certain extent will facilitate the treatment with blood of immunised animals, which latter treatment would afterwards become necessary if the rinderpest should break out amongst the herd.

In case the disease should make its appearance amongst some animals a few days after the injection with gall, owing to an imprudence in the treatment, the blood method would immediately have to be applied, If on the other hand the animals are threatened by an immediate or very near affection, (which at the present stage is unfortunately often the case), the blood method is the only one to which recourse must be taken.

Third case: Herds already sick, or which have recently been exposed to the infection as regards these herds, the treatment with blood of immunised, and as much as possible of prepared animals, is indeed the only one in which up to the present can be confided with safety.

The Congress accepts the motion of the Sub-Commission.

After the reading of the whole, each point of the above proposal was re-read and separately considered, before being submitted for discussion.

Discussing the first part of the proposal, containing the sentence: « we do not only believe that this method (of Professor Koch) in future must not be abandoned

but that . . . . . etc.» Mr. Von Herff is of opinion that from the expression « must not be abandoned » might be deduced that the Congress has had the intention to abandon this method. Mr. Von Herff moreover wishes to have altered the sentence « by which this method is acknowledged to be of real use» to «by which this method is acknowledged to be of great use.» In Mr. von Herff's opinion the insertion of the adjective « great » would be fully justified by the results made known by the delegates of the Cape Colony, Orange Free State and the German possessions.

Dr. Danysz replied that the expression « must not be abandoned » is correct, because the gall method, with a view to the duration of the immunity given to animals being not so good as the method with the curative blood ; with a view to the parcentage of mortality, the gall method is not at all better than the other method. The expression used in the proposal quite agrees with what has been said by the Congress.

Mr. Captain Haslam remarks that the expression « great use » speaking of the Koch's method, has already been employed in the proposal relative to that method and which has been accepted.

Dr. Bordet is surprised that so much time is lost with the discussion of such an inferior question as the insertion of an adjective in the proposal.

The whole Congress acknowledges the use of the method of Dr. Koch, and not a single member has ever doubted the services which can and will in future be rendered by that method.

Nobody will have any objection to the text containing the expression « great use » instead of « real use » ; on the contrary ! but as the firstmentioned expression has not been inserted, the insertion at the present moment would make it appear as if the consideration in regard to the method of those who signed the proposal is doubted.

The beginning of the proposal Bordet is thereupon accepted.

On the order the examination of that part of the proposal which appears under the heading « First case," and which refers to the manner in which the herds must be treated in districts not yet affected bij the Rinderpest, and when no immediate fear need be entertained for the appearance of the disease.

The Chairman proposes to leave out the sentence commencing with « under such circumstances, the gall method pure and simple is ———— etc,» and replace it by the following sentence : « Under such circumstances, both methods may be employed, the one, according to which recourse it taken to defibrined blood of immunised animals as well as the one of the gall.

In fact. produces the use of gall method, the rinderpest, on the other hand the rinderpest is required to be able to apply the blood method.

Therefore the use of the two methods is bound up to the presence of the Rinderpest in the country.

The question as to the method by which most animals can be saved, has to be settled by the Congress.

The Landdrost is of opinion that the blood method is always able to save more animals than the Koch method, moreover the first one has the advantage of giving a more complete and more lasting immunity.

Mr. Turner is of opinion that the Chairman in proposing this amendment does not show that confidence in the method of Dr. Koch, which it deserves.

He is further of opinion that in districts not yet

affected, the inoculation with gall, is the only one which should be applied.

Mr. Haslam is inclined to share Mr. Turner's view, but he feels bound to remark, that the information collected by the Congress on the question whether the gall can or cannot produce the Rinderpest, is rather contradictory.

Dr. Danysz fully agrees with the Chairman, and he is pleased that the Chairman has made the remark.

It is not desirable to admit the gall method as the only one in parts not yet affected; it has not yet been proved that the inoculation with gall does not cause the rinderpest to spread; the preference given to this method is therefore not justified; why not allow of the use of the blood method also? For those parts, the use of both the methods should be recommended.

Mr. Turner states that a great number of experiments have shown that the pest is not spread by the gall method.

In places free of the pest, the use of gall should rather be recommended than a method which necessitates the presence of the disease.

The bloodmethod is only to be recommended in those parts which are affected by the cattlepest. but for those parts which are still protected, the exclusive use of the Koch method must be prescribed. Mr. Turner is in favour of keeping the first part of the proposal in its entirety.

Dr. Bordet is of opinion that if anything should be more precisely indicated in the proposal, it would certainly be required to state more clearly that the practice of inoculation of whatever nature in uninfected districts is not at all indispensable, the suppression by the Sub-Commission of some words in the text has caused this idea, which was clearly expressed in the original text, to be concealed.

It is to be feared that the proposal, as it is worded at present, will make the farmers believe that the vaccinating injections are absolutely and immediately required, even when the appearance of the Rinderpest need not be feared.

With little delay reference should still be made in this paragraph, relating to uninfected districts, to the possible use of certain preventative and quarantine measures.

Consul von Herff thinks that Drs. Danysz and Bordet at one of the previous meetings have positively declared that the injection with gall when properly applied and with observation of the necessary precautions, does not provoke the rinderpest.

In connection with this opinion, it was proposed to frame very precise iustructions for the future use of the Koch method. This plan has been distinctly laid down in the proposal Bordet.

It is for these reasons desirable that the text should be accepted without modification.

Mr. Haslam remarks that the question whether by the method of Dr. Koch, the rinderpest can be spread, has already been discussed, and that the opinion of the Congress has already been expressed in this respect.

The Congress has also expressed its opinion regarding the value of the blood method, and these questions have been settled in principle.

Dr. Danysz replies, that it is no longer a question of principle, but of application.

He would fully agree with Mr Turner, if Mr. Turner could guarantee that by the injection with gall,

applied by other people than himself, the disease would not be spread.

The inexperience and the absence of precautions, to which to a large extent the spread of the pest is due, must not be lost sight off.

However the case may be, the two methods are equally to be recommended, if on their application, the prescriptions laid down, are only complied with.

Dr. Bordet states that certain members of the Congress consider the proposal too imperative, and that the use of one of the two methods in districts still safe, is too strongly excluded by it.

The use of the Koch method in these districts, appears to him to be clearly defined, and he has clearly expressed this opinion in the proposal submitted by him, and to which the signature of most of the members of the Congress has been obtained.

On the other hand it must not be forgotten that mission of the meeting is to study the questions discussed, and to give their opinion and advice, but it is not the task of the Congres, to impose its resolutions in an absolute manner, nor to adopt any prohibitive measures regarding any method whatever.

The tendency of the proposal is to recommend the method of Dr. Koch, preferably for uninfected parts, but not to defend the use of the blood method, as seems to be supposed by certain speakers.

Such an explanation was not foreseen, when the proposal was framed.

In order to avoid such misunderstanding, it would be good to add the following amendment to the end of the paragraph after the words «and therefore it must only be confided to the hands of experienced men.»

«It would be desirable that the various Governments preserve absolute freedom as to the choice of the method to be employed in parts not already inflicted.»

The Chairman had not expected that his amendment would be the cause of so long a discussion.

With a view to the importance of the subject, it is however better to discuss it thoroughly.

He is convinced that by the use of the Koch method, the disease is spread, and he cannot consent to the Boers being urged to apply this method, as has been recommended in the proposal. His opinion in this respect is unshakable.

Dr. Danysz remarks that in the case of uninfacted districts, it must be recommended either to take recourse to preventative measures only, disinfection etc., or to use the one or other of the two methods, applying however in the first instance the gall method

He is of opinion that in the last resource, the question of the choice of the method must be left to the judgment of the various Governments, without trying to influence their decision.

Consul von Herff replies that notwithstanding it is the duty of the Congress to indicate which method in the different cases is the most recommendable.

He requests that the original text be accepted; if this text is not accepted, he will be obliged to demand that the reasons why he is in favour of the proposal be mentioned in the reports of the Congress.

He ends by requesting to close the discussions, which request is supported by Mr. Turner.

The discussions are thereupon closed.

The amendment of the Chairman is put to the vote, but is not accepted.

As regards the amendment of Dr. Bordet, Mr. von

Herff requests that this amendment be placed at the end of the whole proposal.

Dr. Bordet is of opinion that the amendment thus placed, would loose its signification, because it only refers to the first part of the proposal and not to the whole text.

He again requests that the amendment be taken up at the end of the first part (first case) of the proposal.

The meeting not complying with his request, Dr. Bordet withdraws his amendment.

Dr. Danysz proposes the following amendment:

The words «Is the gall method pure and simple the only one to which recourse can be taken».....to be replaced by the following words: «the choice of the measures which must be taken, must be left to the authorities interested.»

Dr. Danysz stating his motive for proposing this amendment says, that in the 2nd and 3rd case (cases mentioned in the proposal Bordet) the choice of the method is fully indicated; on the contrary material for discussion remains with regard to the first case, and the proposal should onder those conditions be extended, leaving full freedom, and not exclusively imposing one of the methods.

Mr. Turner does not in the first case consider the choice of the method very doubtful, and is of opinion that in places not yet affected by rinderpest, the gall method must be employed.

The discussion is closed.

The amendment of Dr. Danysz is put to the vote and rejected.

The first part of the proposal Bordet is therefore accepted without any modification.

The meeting is closed. The next meeting takes place to-morrow, 11th August, at 9 o'clock a m.

Wednesday, 11th August, 1897.

The meeting was opened at 9 o'clock in the morning.

On the order was the continuation of the discussion on the proposal Bordet.

The examination of the part of the proposal, contained under the heading «Second Case,» was being dealt with.

Consul von Herff proposes to proceed at once to vote, as everyone had already sufficiently formed his view in connection with yesterday's discussion.

The meeting accepts the proposal of Mr. von Herff.

The paragraph of the proposal put to the vote, is unanimously accepted.

The same refers to the next part of the proposal, named «third case.»

The whole proposal was consequently accepted without alteration.

The examination of the instructions to be recommended to them who wish to apply the gall method, was then proceeded with. The following instructions were proposed by the Sub-Commission:—

1. The gall can be got from animals which have died of the rinderpest, either contracted in a natural way or caused by a virulent inoculation (pestblood).

2. The gall must be procured from animals which have recently died, or from those which have been slaughtered, when they were about to die and which

have not been sick for longer than seven days. No gall should be applied which has a smell of putrefaction or which cause voluminous contractions.

3. The best manner in which to obtain a sufficient quantity of gall, would be by the erection of stations, where the animals could be injected with a small quantity of virulent blood. In that case the temperature of the animals so treated must, if possible, be taken, and be slaughtered six days after the commencement of the fever or ten days after the injection with virulent blood, in order to obtain their gall.

4. The colour of the gall matters but little. Gall may be employed which is green, yellow or brown. No gall must be employed which has been coloured red by blood.

5. The gall must be preserved in a cool place for at least 24 hours before it is employed. Under no circumstance must it be preserved for more than 8 days.

6. The bottle, which is to receive the gall, must be carefully washed in boiling water and then cooled down. After the gall has been put into the bottle, the outerpart of it must be washed with a disinfectant.

7. Persons coming in contact with sick animals, who attended the inquest or assisted thereby, or who took the gall, must on no account be present at the innoculation of the animals

8. All kinds of gall obtained at the same time from different animals must be mixed.

This point gave rise to some remarks.

The Chairman asked whether it was desirable to mix the different kinds of gall, emanating from different animals. He put the question because an instance was known to him that the animals died in consequence of the inoculation with different kinds of gall; he had explained this fact by taking into consideration that there might have been a bad kind of gall in the mixture.

Mr. Turner was of opinion that the mixing of gall should be recommended, because when one of the kinds contained a too strongly acting virus, this virus would be moderated in consequence of the influence of the other kinds of gall with which the first named was mixed. However, he did not attach such a very great importance to the preparation of this mixture, because he was convinced that the injection with gall does not cause the rinderpest.

Dr. Bordet believed that the mixing of different kinds of gall should be recommended, not only for the reason mentioned by Mr. Turner, but also because it is more preferable to inoculate all the animals of the same herd with the same material. In fact, if it is afterwards desired to get the assurance that the animals have been properly vaccinated; it will be sufficient to experiment on some animals in order to become enlightened as to the condition in which all the others are and also to become properly acquainted with the results obtained.

Dr. Bordet proposed to have article 8 abovementioned, and article 10, reading as follows:—« The immunisation caused by means of the gall, may be increased by an injection with virulent blood applied 10 or 15 days afterwards,» replaced by a new article.

The new article proposed by Dr. Bordet, to replace articles 8 and 10, reads as follows:—

«8. The kind of gall to be applied to one and the same herd, must be mixed, in order that all the animals of the same herd receive the same substance and consequently the same degree of immunisation. It is

to be recommended that those injections take place on one and the same day.»

When the treatment with gall has recently taken place, that means to say, under six weeks, injections with the virulent blood may be applied, in order to increase the power of immunisation which those animals received. Those injections with virulent blood must preferably be applied between the 10th and 20th day after he injection with gall. It is, however, desirable to first inoculate with the virulent blood, a few animals which are isolated. If the inoculations with virulent blood do not cause mortality amongst such isolated and separated animals, the inoculations may be extended to the whole herd, which are vaccinated under the same conditions, at the same time and with the same kind of gall. In case the treatment with gall was applied more than six weeks ago, the animals should be brought into contact with runderpest, and be subjected to the treatment with blood from immunised animals.

The Chairman asked, why it was necessary to separate or to isolate from the remaining part of the herd, those animals on which the experiments with virulent blood were taken.

Mr. Bordet replied, that in case the vaccination communicated by the gall, should prove too weak, the animals, experimented upon, with the virulent blood, could get the disease and become dangerous to the remaining part of the herd, therefore they should be separated and isolated.

The Chairman subsequently asked, why it was necessary to wait for 10 days after the injection with gall, before applying the inoculation with virulent blood.

Mr. Turner replied, that the animals injected with gall only become immunised after the expiration of a certain time, about one week, the virulent blood might consequently kill the animals when applied too soon. When injected after 10 days, it does not cause the disease, but increases the power of the animals to resist the rinderpest.

Mr. Henning drew attention to the fact, that the animals inoculated with virulent blood, 10 days after the injection with gall, may get a very lasting immunity, without having been sick.

The Chairman cannot agree with the view taken by the other members of the Congress, he is convinced that the injection with gall causes the rinderpest. He wished to ask the members of the Congress once again, whether they consider one single injection with gall necessary.

Mr. Henning replied in the affirmative.

The amendment Bordet was accepted and formed art. 8 of the instructions.

9. As far as our knowledge at present goes, the kind of gall must be applied in their natural state without any additional substance; the mixture with other substances would cause the action of the gall to be decreased.

10. The animals which get the rinderpest after the injection with the gall, may be treated with good results by means of defibrined blood from immunised animals. The whole of the instructions for the application of the gall, so composed, was accepted.

Mr. Danysz thereupon read the instructions with regard to the application of the method of blood of immunised animals:

Instructions regarding the treatment of the rinderpest by the defibrined blood of immunised animals.

§ 1. In order to treat the animals with defibrined blood, it is above all required to prepare a sufficient number of immunised oxen.

§ 2. In order to obtain well acting defibrined blood, the immunised animals must be treated in the following manner:

1. They must receive a first injectien of virulent blood, 2 or 3 days after the cure, that means to say after the temperature becomes normal again, and will be kept under 100.5 in the morning and 10.3 at night.

2. When those first injections within the typical time cause a reaction, which is generally the case, a second injection must be applied of 200 to 500 c.c., 2 or 3 days after the temperature has again become normal.

3. Those injections, under the same condition, must be repeated another two or three times, if possible, that means to say, if the present circumstances permit it.

4. The more injections, applied under those conditions with virulent blood, an ox will have undergone, the more active his blood will be, but in urgent cases, the preparation may be limited to two, even to a single injection with virulent blood.

5. In case the injection with virulent blood only works in a very weak manner, the subsequent injections may be applied with shorter intervals, that means to say, the virulent blood may be injected every 10 days instead of every 15 days.

6. An animal prepared in this manner, must only be bleeded at the earliest, 15 days after the end of the first reaction, following on the injection with virulent blood.

7. Unless the absolute assurance has been obtained that an animal has recovered (either naturally or in consequence of some treatment) from a severe attack of the disease, it must on no account be bleeded and his blood applied, unless it has at least once been injected with a strong dose of virulent blood.

In case such injection causes a strong reaction, at least one month reckoned from the day of the injection, must have expired before a bleeding is applied.

On the other hand, in case no noticeable reaction takes place, such an animal may be bleeded, 15 days after the injection with virulent blood has taken place.

§ 3. The animals which have got cured, either naturally or in consequence of the treatment with defibrined blood, procure, either injected or not with virulent blood, the best acting blood, 45 days or two months after the cure and may for 2 monts be bleeded every 5 or 6 days.

§ 4. The immunised animals, after having been of service for two months, may be injected afresh, with a strong dose of virulent blood and may then again be bleeded 4 or 5 times, 15 to 30 days after such injection, according the injection being followed by a noticeable reaction or not.

§ 5. The immunised and bleeded animals must always be well fed and kept.

§ 6. The preparation of immunised animals, as prescribed in § 2, must be entrusted to persons, specially instructed for the purpose. The bleeding and injections do not require any particular precaution and many be left to the farmers without danger.

§ 7. The immunised animals must be transported to- and must remain at the place, where the inoculation must be applied. It is indeed preferable to inject

the defibrined blood in a fresh condition, as soon as taken and defibrined, if it cannot aseptically be preserved.

§ 8. The course to be followed for the treatment of the herds with defibrined blood is as follows:

HERDS STILL HEALTHY.

1. Every animal to be injected with 100 c.c. of defibrined blood,

2. Contamination of the animals treated by bringing them in contact with sick animals, or by abundantly rubbing the nostrils and the mouth with a mixture of that blood and of the contents of the guts of an animal recently dead of rinderpest or of an animal which died at the moment of its being very sick, at the moment of the inoculation.

3. Inject the whole herd with a fresh dose of 100 c.c. 5 or 6 days after the first injection.

4. The animals which would only become sick 15 to 30 days after the contamination, must receive a third injection of 100 to 200 c.c. of defibrined blood, at the moment, the first signs of the disease appear.

5. In the case of herds treated, the animals still healthy must be kept together with the animals already sick.

HERDS ALREADY PARTLY AFFECTED.

1. At least 200 c.c. to be injected in the case of animals already sick and 100 c.c. in the case of animals apparently still healthy.

2. The animals still healthy to be contaminated.

3. A second dose of 200 c.c. to be injected in the case of animals which do become visibly sick, one to six days after the first injection; these animals must in fact be considered as having already been attacked at the moment of the first injection.

4. A second dose of 100 c.c. to be injected in the case of animals still healthy, 6 of 7 days after the first injection.

5. The sick animals to be injected with so much defibrined blood as can be obtained, taking in consideration that in case no sufficient quantity of blood can be obtained to treat the whole herd with, it is more desirable to allow the animals already very seriously affected, to die without having been treated, in order to be able to inject those, which are expected to be saved, with a stronger dose.

The meeting adjourned after Dr. Danysz remarks. The Congress would again meet that day at three o'clock in the afternoon.

The meeting was reopened on Wednesday the 11th August at 3 p.m.

On the order was the proposal of Dr. Danysz, read in the morning.

The instructions were again read point after point and then accepted without any alteration being made.

Dr. Danysz thereupon proposed to add the following recommendation to the combined instructions:

We advise not to start with the treatment of the herds in districts which are quite safe, either with the one or the other method, recommended by the Congress, before having made sure of a quantity of gall or immunised animals, sufficient to treat the herds of the whole neighbourhood.

Consul von Herff was of opinion that the expression « districts which are quite safe » is too vague. He proposed after the words « districts quite safe » to insert

the following words « at least 100 miles distant from any centrum of contamination ».

This modification was accepted, and the proposal Danysz, thus modified, was accepted with 5 to 4 votes.

A proposal of Mr. Von Herff reading as follows was unanimously accepted :

« It deserves recommendation that in all interested States the treatment, either with gall or with blood can, if required, be applied at once and without any hindrance.»

On the order of the day was still the examination of letter D of the programme : communications on the laws and resolutions enacted by the different Governments for the purpose of combatting the rinderpest or preventing the spread of it; discussion on those laws and resolutions, and resolutions relating thereto.

Mr. Theiler reminded the meeting that the second Rinderpest Congress at Vryburg prohibited the industrial use of hides, horns, etc., originating from animals which died of rinderpest. Dr. Koch afterwards proved that infected hides, kept for a fortnight in the shade and in a dry place, entirely loose their power to communicate the disease.

It might therefore be recommended no longer to bury the hides from animals which died of rinderpest, but to allow the trade in them, after they have been subjected to a drying process for at least a fortnight.

Mr. Theiler also proposed to allow of the fat of the infected animals being employed for the manufacture of soap.

The Chairman was of opinion that the fat, when used in the manufacture of soap could no longer spread the pest, but he believed that it would be very difficult for the Government to grant permission for the hides being no longer buried. This consideration caused the Chairman to refrain from voting in favour of the proposal, how much he otherwise wished to meet the poor burghers. He advised to take no decision in this respect without having just asked the various Governments whether they agree to this course being taken.

Mr. Henning insisted on the experience of Dr. Koch. The hides dried in the shade for a fortnight and afterwards saturated with salt, are no longer of a dangerous character.

Mr. Haslam remarked that experiments similar to those of Dr. Koch, but taken in India, have given different results. In India, people are fully convinced that the hides are dangerous, even after having been dried ; they are therefore burned or buried under a cover of lime.

Dr. Danysz remarked that the manner in which the pest is spread, is not quite known yet; the necessary care should be taken with regard to Mr. Theiler's proposal.

Dr. Bordet was of opinion, especially with regard to Dr. Koch's experiments, that the hides could easily be disinfected. If only the necessary guarantee could be given that the measures required would be strictly observed, no fear would need to be entertained. But the matter would perhaps be abused, and the disinfecting measures might be neglected, by carelessness or neglect.

Mr. von Herff was of opinion that the question was too uncertain, he would, if need be, have no objection to the hides being conveyed to Europe, the journey is of long duration. But the conveyance through the Transvaal would be dangerous, because, in consequence of the small distances, the infected merchandise might reach its destination without the germ of the rinderpest having been destroyed.

Dr. Danysz intimated that Dr. Roua, who has for a long time studied the rinderpest in Egypt, has observed, that animals may still get the rinderpest in a field from which the rinderpest has already disappeared for three months. The germ of the rinderpest, perhaps may, under certain circumstances, be preserved for a long time.

Dr. Turner gave a similar example observed by him in South Africa.

Mr. Henning contended that as regards these examples the rinderpest might very well have been conveyed from another place. The causes, which cause the appearance of the disease, have in truth not yet been brought to light. Quite contrary examples might be stated. In Griqualand West, animals have been brought on a piece of ground, on which six months ago sick animals had been kept. The corpses had been buried in the ground, but these animals did not contract the disease.

The Chairman closed the discussions.

Several proposals were handed in.

A proposal of Dr. Bordet, reading as follows, was unanimously accepted:

« Without entering into details as regards the resolutions, regulations and decisions promulgated by the different Governments of South Africa with the object to prevent the spread of the rinderpest, the Congress entertains the following desire;

« Considering that the Congress, in a series of recommendations, has as distinctly as possible expressed the course to be taken for combatting of the rinderpest under one circumstance or another;

« Considering that those recommendations or regulations regarding the application of the methods, must be so constructed that, in order to be useful, they can be followed up in practice;

« *Therefore* it is to be desired, that in case in some instance, any such resolution or regulation previously taken, might stand in the way of the so-called methods, the respective Governments, should this happen, will not act contrary to the advice of competent persons and in particular of them, who have followed the labours of the Congress, and will, if need be, proceed to withdraw any such resolutions, the maintenance of which would finally prove a stumbling-block in the way of the application of the most useful measures.»

The following proposal of Messrs. Henning and Theiler was thereupon put to the vote:

1. The farmers may, without danger, be allowed to make use of the fat of animals succumbed to rinderpest, for the manufacture of soap and candles.
2. The germ of the disease can not be conveyed by the hides of animals, which have suffered from rinderpest, if they are properly salted and afterwards dried during at least a fortnight.

This proposal was not accepted.

The meeting adjourned.

The next meeting to take place, on the next day, Thursday, at 9 o'clock in the morning.

Thursday, August 12, 1897.

The meeting was opened at 9 o'clock in the morning.

The order of the day contains the subjects indicated on the programme of the Congress as follows:

1. The use of the erection of an international station for the rinderpest.

2. Description of the measure to be taken against the rinderpest in the whole of South Africa.

3. Short review of the knowledge of the injection.

4. Proposals regarding experiments on the rinderpest, for the purpose of having the methods adopted by the Congress, improved or simplified.

Dr. Danysz discusses point 1 on the order of the day:

Remarks regarding the use of a Central Rinderpest Station by Dr. Jean Danysz.

Gentlemen,—After having collected and arranged everything which is known to us about the rinderpest, and which we have been able to find out from experiments, I do not believe that the labour of the Congress complete if we did not point out what still remains to be done te complete our knowledge of this disease, so that theoretically correct information may be drawn from our labour.

It is especially required to point out to the interested Governments that it is not sufficient to make known the remedies for the protection or immunisation of the animals against the rinderpest, but, in order to obtain the results which we have fixed in the course of our discussions, it is still required to organise and arrange the treatments which have recently been adopted by the Congress in its resolutions.

In accordance with the order of labour for this last meeting we now must consider the question of use in connection with the erection of an international station, which in fact means to say, an investigation or examination of the following points:

I. The use of the establishment of an information office or offices, at which would be collected all the information regarding the extension of the epidemic, the treatment applied in the different parts, the results obtained in different parts, the improvements on the methods at present known.

II. The constitution of a permanent commission, the members of which, on the strength of the information obtained in this manner, would from time to time meet, or would keep up a correspondence in order to agree upon the course to be followed for combatting the rinderpest in the most efficient manner, so as to be able at any time to enlighten their Governments on the subject.

III. The continuation of the experimental study of the Rinderpest, in order to make sure on certain points still obscure, on the knowledge of which the more or less rapid success of our battle against the disease may depend.

In fact, from what we already know regarding the action of the gall and that of the defibrined blood of immunised animals, we are led to hope that yet something better may be obtained, which if discovered, will necessarily result in a higher percentage of animals saved than obtained at present; the continuation of that study appears to me for that reason of indisputable instance.

The principal object of that proposal, taken as a whole, consists in arriving at a complete understanding between the interested Governments, as far as the battle against the rinderpest is concerned.—even as the object, so luckily attained by this Congress, has been to establish friendly relations between us, and also to arrange the treatment against the rinderpest, so long as this disease will remain in South Africa—everyone

in his capacity and within his own sphere of labour.

I do not believe that we would be able to take a definite resolution in this respect, I therefore kindly request you, gentlemen, when discussing these proposals, only to regard them as wishes, to be submitted to your respective Governments. A final remark before coming to a close. We have seen that the existence of the rinderpest is required in order to apply the treatment against this disease, by either of the two methods at present known. What then must be done in case the rinderpest should reappear in places, through which it already passed, or in case it should make its appearance in a country hitherto quite unaffected? The reply to this question appears to be on hand: The gall of the first animal, which dies of rinderpest is taken, and the other animals of the same herd are inoculated with it.

At the same time the blood (virulent) of that animal is taken, and the animals treated with the gall are inoculated with this blood, 4, 5, 6, 8 or 10 days after the injection with gall.

Sacrificing in this manner part of the herd, a lasting immunity will be given to the remainder, and the first batch of immunised oxen will have been obtained the blood of which will protect the neighbouring herds against the contagion and at once on its appearance put a stop to the epidemic. This point, which in order to be studied thoroughly, will require a more explicit explanation and has less regard to what occupies us at present, was only brought forward to again confirm the importance of the discovery of Professor Koch, which has been so successfully applied by Dr, Turner, who continued the experiments of the learned Professor in the Cape Colony, and by Messrs. Henning and Brain in the Orange Free State,—and to make it clear that the mission of professor Koch has taken a separate place in this long series of work, undertaken or excuted, since the appearance of the Rinderpest in South Africa.

The experiments taken at Kimberley, have enabled Professor Koch to enrich the bacteriological world with a new principal, to make a discovery of great importance to the biological science in general.

Professor Koch has demonstrated the fact hitherto unknown that the virus of the rinderpest contained in the organism of the animals affected by tbis disease, in the course of the disease, becomes transformed in the gall to a true vaccine, and this fact is so important from a theoretical point of view, that, even if the practical results obtained by the application of this principle, did not altogether give him the satisfaction, the science will be none the less gratefull to him.

I propose to the congress to confirm by a vote of thanks, the acknowledgement which the South African farmers and the science owe to the learned professor for his important discovery.

Mr. Turner declared that in case a central rinderpest office should be erected, he would give such institution his full support.

Captain Haslam reminds the meeting that two years ago, Natal and the Cape Colony had founded a similar institution, however without any considerable advantage.

If Mr. Haslam saw but the slightest advantage to be derived from this institution for Natal, he would agree with Dr. Danysz, proposal.

Mr. Henning remarks that a central station is not absolutely necessary for the further study of the application of the method in practice

A central station would perhaps be of service for

purely theoretical studies however. without any immediate advantage to practice.

There are many other diseases in South Africa which have not yet been studied, and which are very difficult to combat.

If therefore a central station is to be erected, it would be better to devote it to the study of such diseases.

Mr. Theiler is of opinion that the scheme hardly warrants execution, however he considers it very useful for the members of the Congress to meet often and to convene a new meeting next year, in order that the results obtained by each of the two methods may be submitted.

Consul von Herff agrees in principle to the erection of a Central station, but is of opinion that in South Africa such a scheme hardly warrants execution. He reserves to himself the right to collect as many information as he possibly can regarding the results obtained respectively by the two methods, and to communicate the same to the interested Governments.

Nobody having anything further to say on the subject, the discussion is closed.

Mr. Danyzs does not wish to press the point, as the members of the Congress have already made known their views, as derived by him.

The Governments will allow themselves to be led by the view expressed by the members of the Congress.

The Chairman is also of opinion that the respective Governments will be able to collect some useful information from the labours of the Congress.

Mr. Turner, on behalf of the members of the Congress, tenders his best thanks to the Chairman, who during the whole time the congress lasted, has executed his task in such an excellent manner, notwithstanding the many difficulties which presented themselves, especially as regards the difference of language, Mr. Turner, who has some experience of Congresses knows that if the debates are good and instructive, such is due for a great part to the Chairman, who has to guard against the discussion on a certain subject taking a wrong course.

The Chairman has fully accomplished this difficult and important task.

Mr. Turner, on behalf of himself and the other members of the Congress is, however reluctantly obliged to decline the kind invitation to partake of a dinner made by the Chairman, the several members are, on account of pressure of business, obliged to return to their countries with all speed.

The Chairman, however, can be assured that they all carry with them the most pleasant remembrance of the reception accorded to them in Pretoria.

Captain Haslam as delegate of Natal, is pleased to join in this vote of thanks.

The members of the Congress did not always agree regarding the proposals handed in, but they will certainly be at one with the proposal handed in by Mr. Turner.

Mr. Haslam could not help admiring the quiet and correct judgment of the Chairman during the discussions.

Consul von Herff considers it a pleasant duty to tender to Messrs. Danysz, Bordet and Theiler the best thanks of the Congress for the eminent services they have rendered to South Africa by the scientific application of the method recommended by them, being based on the use of the blood of immunised animals. The Congress has listened with the liveliest interest to the communications made by them and to the report of

the results obtained; the Congress has been able to convince itself as to the value of the method, and the services which may be rendered by it for the vaccination or curing of herds.

The kindness of Messrs. Danysz, Bordet and Theiler and the fair consideration they have shown on behalf of the method of Professor Koch and the usefulness of it, have contributed to a great extent to the solution of the question to be dealt with by the Congress as to the measures to be taken to organise, with any reasonable chance of success, a war against the rinderpest. Mr. von Herff is therefore convinced that, in proposing a vote of thanks to Messrs. Danysz, Bordet and Theiler, which thanks are due to them from the whole of South Africa, he will interprete the feeling of the whole Congress.

This proposal is supported by Messrs. Henning and Brain.

Dr. Danysz expresses his thanks for the consideration with which the members of the Congress appreciated the labours of Messrs. Bordett, Theiler and himself. Africa owes a great deal to Professor Koch and Dr. Danysz proposes to the Congress to give expression to the high appreciation of the labours effected by the celebrated savant.

Mr. Turner is very pleased to support the proposal of his French Colleague. After the unjust way in which Mr. Koch has been treated, it is very pleasing that men, capable of appreciating the value of his work, publicly express their high opinion regarning the experiments conducted by Professor Koch. Even his nationality has been reproached to Professor Koch, public opinion has ever treated him unfairly, the Press generally adopted an unfavorable attitude.

Mr. Theiler, on behalf of the Congress, thanks the Secretary-General and the Secretaries for the zeal with which they have bent to their task.

The Chairman, on behalf of the Government of the South African Republic, tenders his thanks to the different Governments who sent representatives to the Congress; at the same time he wishes to remind them that the pest in South Africa has suddenly assumed such gigantic proportions that it was impossible for the different States to make combined arrangements as regards the adoption of joint measures. The Government of the South African Republic, on being convinced that there were means of curing the rinderpest, at once decided to convene an International Congress. He is happy and thankful that they have acceded to the call. Only after some hesitation he accepted the chair, which appeared very difficult to him indeed on account of the difference of languages, but the questions to be submitted to the Congress were of such evident importance to the Boer population, that he could not refuse.

The attitude taken up by the members of the Congress during the discussions, cannot be too highly appreciated, the success of the Congress must undoubtedly be attributed to it. The Chairman is convinced that when the delegates will have returned to their homes, they will fully recommend the application of the resolutions taken by the Congress, and ends by wishing the members of the Congress a pleasant return journey.

Captain Haslam wishes to thank Mr. Turner, who has taken such an active part in all the debates and who has made himself so very useful by the translation of the French communications.

The Chairman declares the task of the Congress completed.

The meeting is dissolved.